

This transcript of the Advisory Board on Radiation and Worker Health, Idaho National Laboratory (INL) Work Group, has been reviewed for concerns under the Privacy Act (5 U.S.C. § 552a) and personally identifiable information has been redacted as necessary. The transcript, however, has not been reviewed and certified by the Chair of the INL Work Group for accuracy at this time. The reader should be cautioned that this transcript is for information only and is subject to change.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL 1
NATIONAL INSTITUTE FOR OCCUPATIONAL
SAFETY AND HEALTH

+ + + + +

ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

+ + + + +

WORK GROUP ON IDAHO NATIONAL LABORATORY

+ + + + +

TUESDAY
JUNE 21, 2011

+ + + + +

The Work Group convened in the Frankfurt Room of the Cincinnati Airport Marriott, 2395 Progress Drive, Hebron, Kentucky, at 9:00 a.m., Phillip Schofield, Chairman, presiding.

PRESENT:

PHILLIP SCHOFIELD, Chairman
JOSIE BEACH, Member
JAMES M. MELIUS, Member
GENEVIEVE S. ROESSLER, Member

ALSO PRESENT:

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

This transcript of the Advisory Board on Radiation and Worker Health, Idaho National Laboratory (INL) Work Group, has been reviewed for concerns under the Privacy Act (5 U.S.C. § 552a) and personally identifiable information has been redacted as necessary. The transcript, however, has not been reviewed and certified by the Chair of the INL Work Group for accuracy at this time. The reader should be cautioned that this transcript is for information only and is subject to change.

TED KATZ, Designated Federal Official

2

PETE DARNELL, DCAS

BRIAN GLECKLER, ORAU Team

STU HINNEFELD, DCAS

JODI JENKINS, ORAU Team

JENNY LIN, HHS*

JOHN MAURO, SC&A

STEVE OSTROW, SC&A*

MATTHEW SMITH, ORAU Team*

JOHN STIVER, SC&A*

TIM TAULBEE, DCAS

*Participating via telephone

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

This transcript of the Advisory Board on Radiation and Worker Health, Idaho National Laboratory (INL) Work Group, has been reviewed for concerns under the Privacy Act (5 U.S.C. § 552a) and personally identifiable information has been redacted as necessary. The transcript, however, has not been reviewed and certified by the Chair of the INL Work Group for accuracy at this time. The reader should be cautioned that this transcript is for information only and is subject to change.

	3
C-O-N-T-E-N-T-S	
Roll Call	4
Airborne Releases	
Comment Numbers 1 and 2 (Reactor Discharges, Chem Plant, Aircraft Nuclear Propulsion Program)	8
Internal Dosimetry, Comments 4 through 10	64
External Dosimetry	190
Deliverables and Meeting Plans	322

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 P-R-O-C-E-E-D-I-N-G-S 4

2 CHAIRMAN SCHOFIELD: This is Phil
3 Schofield. This site covers approximately 190
4 square miles. It was started in 1949, it's
5 had 52 working reactors. They have covered
6 everything from fuel handling, reprocessing to
7 complete meltdown testing.

8 There's been 99 documented episodic
9 releases. There's been a number of incidents
10 of releases that actually were measured at the
11 perimeter. So it's a very large, complex site
12 with a lot of potential for internal exposures
13 as well as high levels of external exposures.

14 I guess we're ready to start on the
15 matrix, unless anybody else has any comments?

16 Okay, on the matrix, the first issue is
17 talking about the routine airborne releases.

18 And the finding was, "Routine
19 airborne releases: source terms provided
20 require improvement for use in determining the
21 worker intake from airborne releases at

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 different INL facilities. 5

2 The data NIOSH uses do not take
3 into account the deficiencies in the
4 environmental monitoring equipment and their
5 locations. And in addition, NIOSH does not
6 assess the uncertainties associated with
7 mineralogical -- meteorological, excuse me,
8 dispersion model used for the INL site.

9 Most importantly the source terms
10 do not account for worker inhalation of
11 resuspended contaminated soils or materials
12 around the INL facilities." So now it's your
13 game, NIOSH.

14 DR. MAURO: Excuse me, this is John
15 Mauro. Just to set the stage a little bit
16 might be helpful. It's my understanding that
17 since we originally reviewed the INL Site
18 Profile, which I don't recall, it must have
19 been four years ago, perhaps --

20 DR. OSTROW: This is Steve, it was
21 1996.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. MAURO: '96, okay. Five years
2 ago. And, Steve, you probably know a little
3 bit more about it than I do. There has been,
4 subsequently, revisions.

5 MR. KATZ: 2006.

6 DR. MAURO: 2006, I lose decades
7 all the time.

8 (Laughter.)

9 DR. MAURO: And in light of that, I
10 guess it would be helpful to me and I'm sure
11 then everyone else, a little bit of what has
12 transpired since our original review.

13 There clearly were a number of
14 revisions to the Site Profile, some of which
15 may have responded to many of our concerns,
16 some may have not. We, SC&A, are aware that,
17 now, Steve, you could help me out a bit. In
18 the matrix there is a column to the right of
19 the comments that has been filled out by
20 NIOSH.

21 And when I reviewed it over the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 weekend, I said to myself, well, it appears
2 that these are comments that weren't there
3 before, but they're there now and they reflect
4 the latest information that NIOSH has as a
5 result of the revisions to the Site Profile.
6 Would that be a correct characterization of
7 the matrix?

8 MR. DARNELL: Some of the answers
9 were in this matrix in 2006 when it started,
10 they've been updated and completed over the
11 time period.

12 DR. MAURO: That helps, yes.

13 MR. DARNELL: Yes, it is mostly new
14 information for the Work Group.

15 DR. MAURO: And when was the last
16 Site Profile revised?

17 MR. KATZ: April of 2011.

18 DR. MAURO: Okay, so it's
19 relatively recent. And was that a major
20 revision, several of the chapters or just the
21 one, you know?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DARNELL: Yes, these are all
2 major revisions. We actually combined the two
3 sites into one Technical Basis Document.

4 DR. MAURO: For the purpose of the
5 Working Group, SC&A did not do a formal review
6 of that. So really we're right now on the
7 recipient end to discuss, I guess, these
8 important developments, in light of our
9 original comments, it sounds like that is a
10 lot.

11 Now, Steve, I don't recall us going
12 through a review cycle where we did a formal
13 review of these revisions.

14 DR. OSTROW: No, what happened is
15 that our original Site Profile Review which
16 was did in 2006, then in December of 2008, we
17 took a look at the -- NIOSH had revised the
18 Site Profile, or the TBDs, we had issued a
19 supplementary report.

20 And we updated a few of the issues,
21 number 25, 26, 29 and 35 and we added three

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 new ones, 36, 37 and 38. And that was
2 December of 2008.

3 And everything's sort of lain
4 dormant since then. NIOSH subsequently
5 updated all their TBDs. The most recent was
6 the external, which was April of 2011, which
7 we didn't review any of these.

8 As was just mentioned, NIOSH
9 combined the INL and ANL web together with all
10 the TBSs, changed their methodologies in a
11 couple of places, updated a lot of things.
12 And you'll see, a few days ago, in that
13 matrix, the column with the NIOSH response,
14 this is updated.

15 And, as we're discussing today, the
16 last column might be a little bit confusing
17 with the Board Action. This, I think, NIOSH,
18 Pete Darnell, added this as sort of comment.
19 This is whether we, SC&A, had changed the
20 issue from the original matrix.

21 The first comments, under 1, it

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 says under Board Actions, SC&A comments on
2 matrix and we didn't change anything when we
3 did our review in 2008.

4 A few of them later on, we had
5 changed the 2008 revisions. That's sort of
6 where we stand right now.

7 MR. KATZ: Thank you, Steve. Pete,
8 do you want to walk us through?

9 MR. DARNELL: Well, actually we had
10 planned for Brian to be the main lead with the
11 responses, is that --

12 MR. KATZ: Oh, sure.

13 MR. DARNELL: -- he explained that
14 what we wanted to go through the responses or
15 --

16 MR. KATZ: Sure.

17 DR. MAURO: If I can help, you
18 know, for my benefit and everyone. Because
19 it's been some time and because we haven't
20 read -- I haven't read, and I think others
21 haven't read -- a bit of a story about each

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 one. 11

2 In other words, obviously, in the
3 first item we're concerned about atmospheric
4 dispersion modeling and the resuspension
5 factors and how it was done originally.

6 And maybe the way in which the
7 story could unfold is to explain the degree to
8 which you have developed perhaps a revised
9 approach to dealing with atmospheric --
10 Because if I recall, on the first one, it was
11 a matter of the way in which the modeling was
12 done, the kind of data that was used, whether
13 or not resuspension factor was taken into
14 consideration.

15 For workers that were actually on
16 the different areas on the site and if, in
17 fact, you have come up with a new strategy
18 maybe conceptually explain that strategy, the
19 data upon which it was based.

20 More of a story than it is getting
21 into the nuts and bolts. I suspect what will

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 happen, not to overstep my bounds, but, ¹~~12~~
2 guess, once we understand conceptually how the
3 changes were, then the Work Group could decide
4 whether or not they'd like SC&A to take a
5 closer look to see how it was done, check some
6 numbers, that sort of thing. Or perhaps
7 judge, you know, that looks like it answers
8 the question.

9 MEMBER BEACH: Well, it sounds
10 like, it looks like to me too there's also
11 some action item imbedded in this for SC&A
12 already.

13 DR. MAURO: Okay. Yes.

14 MR. DARNELL: Just one thing. To
15 answer your question before we got started,
16 there are 1,422 claims for INL.

17 MEMBER BEACH: Okay.

18 CHAIRMAN SCHOFIELD: This area, the
19 site is on the Snake River Plains there in
20 Southeast Idaho. It's considered a high
21 desert, about 5,000 foot elevation across most

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 of the site. 13

2 And one thing this area of Idaho is
3 known for is a lot of wind. So the modeling
4 is very crucial for those people who were not
5 monitored, or maybe they were only monitored
6 for certain things because of the fact that
7 this area does have a lot of high level winds,
8 you might say. I mean, it's very well known.

9 It's referred to, I think, by a lot
10 of people in that area as the Rexburg wind,
11 which encompasses the site. So the modeling
12 unit, I don't know exactly how you can do that
13 kind of modeling over such a large area with a
14 great deal of accuracy.

15 I mean, that's just my opinion, you
16 know, and I would like to hear NIOSH's
17 explanation how they feel they can do this.

18 MR. HINNEFELD: Well, I can say, in
19 a general sense, atmospheric dispersion models
20 work best at great distances in large areas.
21 It's when you approach the source term, which

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 is probably the source of the comment, that¹⁴
2 you have difficulty with the interpretation of
3 the atmospheric model.

4 And a high wind actually disperses
5 the radioactive effluent more and makes
6 exposure potential less from a particular
7 release. A high wind in a dispersion -- if
8 you're worried about the dispersion, exposure
9 from dispersion, a windy situation is better
10 than a calm situation.

11 But the fact remains that the use
12 of that atmospheric model to predict close-in
13 concentrations is problematic. So that, I
14 think, is the point. I'm not so sure we've
15 gone very far on that particular part of the
16 finding.

17 The finding has two actual sort of
18 pieces. One has to do with deficiencies in
19 the monitoring approach, in addition to, what
20 about uncertainties in the model?

21 The deficiencies in the monitoring

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 approach -- I'm paraphrasing here, I hadn't¹⁵
2 planned to talk very much today. I'm
3 paraphrasing here, but the deficiencies in the
4 modeling approach relate to some findings
5 related to non-compliance with NESHAPs
6 requirements, EPA/NESHAPs requirements, which
7 a lot of our data was collected for other
8 purposes than what we're using it for now.

9 But it provides a level of
10 stringency that probably much of the
11 monitoring does not. EPA was very specific
12 about where we should comply with NESHAPs, we
13 shall do things, these things have to be
14 compliant. And whether or not the fact that
15 they were not completely compliant with
16 NESHAPs obviates their utility for this is not
17 clear to me.

18 It seems to me that despite those
19 findings about those sampling locations, that
20 data is probably still good for the purposes
21 we're using. We're talking about the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 environmental release pathway which, you know¹⁸
2 as you said, Phil, there's potential for
3 certainly high external exposures and
4 containment fields at these places, there
5 would be some internal exposure potentials as
6 well.

7 And so you're talking about an
8 environmental pathway which is, you know, kind
9 of at the vanishing end where people are going
10 to be exposed. So I just wanted to throw that
11 in as some context here for this particular
12 finding. And I don't really know what, if
13 anything, has been done to address this
14 particular question.

15 MR. GLECKLER: As far as when the
16 revision of the environmental TBD took place,
17 we didn't change any of the values in the
18 assessment other than we, Jodi added iodine-
19 129 intakes because, as time goes on, the
20 iodine-131 was decaying off for the later
21 years after the reactors were shutting down

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 and we didn't have any iodine, so we're
2 concerned that thyroid cancer claims might be
3 underestimating internal doses.

4 So we added iodine-129 into that
5 because that does become a significant isotope
6 as the iodine-131 disappears. But outside of
7 that and extending the year, some of the
8 intakes for the subsequent years, it's like
9 those values haven't been changed.

10 And I guess part of the question we
11 originally had and I think to their responses
12 of what tells us, you know, it's like what's
13 wrong, basically what's wrong with the model
14 that was used and why isn't it applicable?

15 DR. OSTROW: This is Steve. I
16 looked into a little bit. First time I think
17 we discussed the responses last week, I didn't
18 get a chance to look at the new responses but
19 I reread older ones.

20 I think our basic problem is I
21 think NIOSH is using the INL historical Dose

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Evaluation Report as a basis. And they're
2 using the mesoscale model that is in that.
3 And I looked into it a little bit.

4 As you mentioned before, it's
5 probably fine at long distances like off-site
6 type dispersions but it's not really accurate
7 for close in. It's not really accurate, even
8 less than about 20 kilometers it loses a lot
9 of accuracy, because it can't really model the
10 local topography too well.

11 DR. MAURO: Yes, I'd like to add a
12 little, it's coming back to me now from the
13 last meeting. I'm familiar with a lot of the
14 off-site dose reconstruction work done as part
15 of this program. The dose reconstruction work
16 that CDC Radiation Studies Branch has
17 supported, in fact, I was involved in a lot of
18 that work.

19 And the modeling that was used
20 which was mainly devoted to people that did
21 not live onsite. And as you can imagine we're

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 talking fairly large distances. 19

2 Now I remember the last time we
3 were here and you start to look at each of the
4 work areas and you'll have a facility that
5 might be, let's say, the Chem Plant or TAN or
6 these various locations.

7 They might have emissions, both
8 chronic, which they had. And also, more
9 importantly, these episodic emissions. And it
10 was more of a conceptual problem.

11 And then you had people working in
12 the immediate vicinity of these sites. Let's
13 say within a few hundred yards of where the
14 release point was.

15 And I remember my concern was that
16 when you're up close to a source, certainly
17 within a few hundred yards, what happens is
18 the Gaussian dispersion model, which you take
19 the average annual releases, you multiply by
20 average annual chi over q and that works great
21 if you're a kilometer, two kilometers, three

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 kilometers away. 20

2 But when you're in the near field,
3 my concern was that building turbulence,
4 episodic nature of the releases, all of a
5 sudden the type of work that was done for, I
6 guess, the off-site dose calculation that was
7 originally done is, I believe, RAC did it,
8 Risk Assessment Group did the original work.

9 And it seems to me that that
10 extrapolation has some flaws to it. And to
11 make sure that you don't underestimate --
12 because when you're in the near field, those
13 models just break down. Especially if you're
14 close to a building wake effect, the whole
15 thing doesn't really work anymore.

16 Now the degree to which a case
17 could be made that you use certain assumptions
18 in the near field that would tend to bound it,
19 that there are ways of tricking these things
20 to try to get to it.

21 But I guess all I can say is right

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 now I can't say whether or not that's what you²¹
2 folks did.

3 MR. GLECKLER: In all honesty,
4 we're not aware of what was done because we're
5 not the original authors on the TBD on that.
6 And some of them just aren't on the project at
7 this time.

8 And so it's tracking down some of
9 that information could be tricky to find out
10 those details.

11 DR. MAURO: Yes, as it turns out,
12 just coincidentally, I spent several years
13 looking at the off-site doses from this
14 facility and the models. And, in fact, we ran
15 different models to see how wrong the Gaussian
16 model might be.

17 We ran three-dimensional puff
18 advection models and stuff like that. So what
19 I'm getting at is that this happens to be a
20 subject that I happen to know a lot about.

21 And, you know, people run into this

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 problem all the time. You've got lots and
2 lots of met towers collecting wind speed,
3 direction, stability class. And that's your
4 raw data and there were dozens of these. In
5 the early years, there was just three, later
6 years, you had a lot more.

7 But a lot could be done with that
8 data in order to do far field and near field
9 modeling. And I guess we were hoping to hear
10 a little bit more about that story.
11 Acknowledging that that situation exists and
12 how you come to grips with that situation when
13 you're trying to reconstruct doses to people
14 who are close to the source.

15 MR. GLECKLER: I'm not aware of any
16 near field monitoring models out there for
17 this type of radioactivity.

18 DR. MAURO: When I was working at --
19 I did a lot of work at commercial nuclear
20 power plants just for this reason. And we
21 used to have to calculate the doses to workers

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 who were working on Unit 2 while Unit 1 was²³
2 being built within, you know, a few hundred
3 yards.

4 And that was a requirement and
5 there are ways of dealing with that. And
6 there are Reg Guides out there, there are
7 strategies. So there are, people have had to
8 deal with this kind of class of problem
9 before.

10 And I guess when we originally
11 reviewed this we were hoping to see a little
12 bit more attention to, okay, how do we come to
13 grips with this dilemma?

14 It sounds like that dilemma still
15 might exist. And we'd be glad to look at it,
16 I guess, if so desired by the Board, and
17 identify why these are weaknesses.

18 And if so desired by the Board, we
19 could also identify possible strategies for
20 coming to grips with those. Because those
21 strategies exist.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 MEMBER ROESSLER: John, would you²⁴
2 explain more about the RAC measurements? Was
3 that independent?

4 DR. MAURO: I believe all this work
5 was done based on the -- RAC took, what they
6 did is they collected all of the effluent data
7 that they could from every facility in the
8 entire plant. And then they went through a
9 classic atmospheric far field mesoscale
10 dispersion modeling.

11 Because they were concerned with
12 off-site doses. So what happens is, so now
13 you're ten miles away. Now the question is --

14 MEMBER ROESSLER: No close-in?

15 DR. MAURO: No, all of a sudden you
16 -- and everything sort of averages out. You
17 know, the winds are blowing, but when you
18 bring it in it's almost like, you know, you
19 have a release from here and you're interested
20 in the doses over here, to people living over
21 here. But you've got people living over here.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 What happens is you get building²⁹
2 wake effects that affect what's actually here.

3 Eventually those building wakes effects are
4 all schmeared out and things sort of tend to
5 average out at far distances. Especially if
6 you're doing it over the course of a year,
7 let's say.

8 But let's say you have an episodic
9 release. And in theory the episodic release
10 will come out of here on this day and the wind
11 could be blowing it that way. And there would
12 be no impact for people here.

13 So, I mean, it becomes a completely
14 different kind of problem.

15 MEMBER ROESSLER: So RAC's method -
16 -

17 DR. MAURO: RAC did that.

18 MEMBER ROESSLER: -- was off-site?

19 DR. MAURO: RAC was off-site,
20 absolutely.

21 MEMBER ROESSLER: That's what I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 wanted to know. 26

2 DR. MAURO: RAC was entirely off-
3 site. And it was, you know, in those days
4 they were concerned about, the Radiation
5 Studies Branch was researching whether they
6 needed to do any epi work off-site. And they
7 used the RAC as a way to, first, let's take a
8 look at the collective burden on the
9 population groups that live in the area, what
10 kind of dose they may have gotten and if it
11 was high enough, they would have triggered an
12 epi study. And that was the whole mission
13 behind RAC.

14 MEMBER ROESSLER: Okay. Good,
15 thanks.

16 DR. TAULBEE: So if I understand
17 what it is that the Board or SC&A is concerned
18 here with these particular releases are the
19 routine releases coming from the sites and we
20 use the RAC data in order to estimate those
21 doses and you feel that we should be looking

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 at a more detailed analysis. Taking into
2 account near field --

3 DR. MAURO: Yes, what adjustments
4 might be needed. Yes. As far as the, I agree
5 with you by the way, Stu, regarding the Clean
6 Air Act and the isokinetic sampling issues.
7 They were operating at a level of resolution
8 that had to do with compliance with the
9 radionuclide NESHAPs.

10 Which, I think, probably came much
11 later. And it certainly would be
12 inappropriate to hold it, there's some very
13 fine-structure issues there. So the degree to
14 which we may have referenced that, in my
15 opinion, is the bigger problem. The
16 fundamental problem of how an atmospheric
17 dispersion model is doing, than, let's say,
18 some fine-structure NESHAP requirement.

19 MR. HINNEFELD: Okay.

20 CHAIRMAN SCHOFIELD: The
21 resuspension issue, particularly, what was

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 brought up by some people who have worked²⁸
2 there, is they had these evaporation ponds
3 where they might have held three million
4 gallons or something to this effect of waste
5 material was pumped into these ponds and then
6 it was allowed to evaporate, they brought in
7 loaders and they would scoop this up and they
8 would bury it. And the big question is a lot
9 of those people had, is they said, we weren't
10 wearing face masks, you know, once we start
11 doing this it gets very dusty, then for some
12 time after this work is finished they said you
13 can be going past there and you'll actually
14 have the dust being kicked up from these
15 evaporation ponds, you know, and you're
16 driving right through this cloud of dust from
17 them.

18 And this is an area of concern that
19 some people have expressed. And I could not
20 find anything, so far, in the database that
21 gives me any real confidence about how these

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 were monitored, these evaporation ponds. 29

2 MR. HINNEFELD: Don't we know the
3 location of the evaporation ponds?

4 CHAIRMAN SCHOFIELD: I don't
5 remember off the top of my head.

6 DR. TAULBEE: There's multiple
7 ones.

8 MR. HINNEFELD: Yes, there are
9 several.

10 CHAIRMAN SCHOFIELD: And how these
11 are going to be addressed.

12 DR. MAURO: If it helps any, we've
13 learned a lesson, I guess, on Nevada Test
14 Site, which is an interesting challenge. We
15 encountered a lot of problems but in the end a
16 couple of strategies were identified which
17 seemed reasonable that, in theory, could apply
18 here.

19 If you know that over many, many
20 years you've been releasing airborne
21 radioactivity, that a certain amount of that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 material may have deposited on surfaces. And
2 very often at a site like this, I can't say to
3 the degree to which it was done.

4 We have a pretty good idea of the
5 number of becquerels per meter squared, or
6 picocuries, becquerels per gram, in the
7 surface soil.

8 And if you're concerned about
9 resuspension factor to me the simplest
10 approach is say, well if I have some
11 information on the dust loadings, milligrams
12 per cubic meter in the air, and in and around
13 where people might be working.

14 And very often, those kinds of data
15 are collected. And you know the picocuries
16 per gram in the soil, well, you know, you
17 don't need meteorology anymore. You just
18 simply say, well, listen, if I know I've got
19 typically one milligram per cubic meter of
20 airborne dust.

21 And I know typically the soil

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 contains one picocurie per gram of whatever³¹
2 You could just assume that that would be the
3 dust load, that would be what would be
4 available in the dust that a person might be
5 inhaling.

6 This is a way to come to grips with
7 these kinds of problems. It's really
8 straightforward. And some could argue that
9 under some circumstances that could
10 overestimate because -- or underestimate. I'm
11 sorry, this is just a subject that I'm so
12 familiar with because I've done it so many
13 times.

14 The particle size distribution
15 that's in the soil is different than the
16 particle size distribution that's in the air.

17 What happens is what's in the air is usually
18 finer particles, things that are larger than
19 50 microns stay down.

20 So what happens is you actually get
21 an enhancement. So what's in the air, if you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 get a certain amount of picocuries in the ³²
2 topsoil and you get a certain number of the
3 picocuries, you're going to assume that
4 whatever the picocuries per gram is in the
5 topsoil that's the picocuries per gram that's
6 in the soot in the air.

7 Well, it turns out there often is
8 an enhancement because the particles in the
9 air are finer particles, they're the ones that
10 are more likely to be resuspended. And as
11 finer particles, we know that they carry more
12 activity per unit mass.

13 So there may be enrichment. But
14 there's literature on that, in fact I wrote a
15 report on that. The enhancement factor from
16 that process. All of which is trackable.

17 CHAIRMAN SCHOFIELD: Now to go back
18 to your other problem you brought up, and this
19 is another point that has been brought up by
20 some of the people who've worked up there, is
21 that, particularly in the earlier days, the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 exhaust ventilation systems for a lot of these³³
2 reactors wasn't as effective as it is
3 nowadays.

4 They don't have high quality HEPA
5 filters in a lot of these facilities stuff, so
6 the materials that was escaping or off-
7 gassing, a lot of these people said, well, you
8 know, we were only 200 yards from the reactor
9 and that's where we, you know, our change room
10 was, our lunch room was.

11 We had the metal shop over here
12 and, you know, in summer we had the doors
13 open, in the winter we took our air, the air
14 that was brought in was not filtered that was
15 being brought into the buildings. And that's
16 a big area of concern about what some of these
17 people are getting in there.

18 Particularly these people who were
19 not on a bioassay program, what potential
20 levels they were getting.

21 MR. GLECKLER: Yes, one thing to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 note is the ones that were on a bioassay³⁴
2 program would have had the same exposures as
3 some of the ones that weren't.

4 You know, is that the vast majority
5 of the bioassay results of the INL facility,
6 or the INL site were negative, something
7 around the 90 percent of the results were
8 negative, below the detection limits.

9 CHAIRMAN SCHOFIELD: So you could
10 actually use that as a bounding number?

11 MR. DARNELL: The current TBD for
12 environmental doses uses those stacks to
13 calculate the doses. That's what the majority
14 of the environmental dosing is based on is
15 stack release data.

16 MR. GLECKLER: I guess the issue is
17 whether the model that was used is appropriate
18 or not for near field in estimates. And it
19 seems like I remember, did we touch on the
20 issue of looking at the onsite ambient
21 monitoring data on that?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. MAURO: I recall during 35
2 Steve, please jump in, you know me, I start
3 talking I can't stop. So jump in, correct me.

4 I recall that there was some measurements
5 made along the fence line of some of these
6 areas, which is certainly useful data.

7 DR. OSTROW: If I recall, there was
8 two types of environmental monitoring
9 programs. They had lots and lots and lots of
10 TLDs, film badges, around the site perimeter,
11 but they also had a lot of monitoring around
12 the fence perimeters of the different
13 facilities.

14 Because INL spread out the
15 facilities over a larger area of land and each
16 facility was a little bit like an island and
17 they had a boundary fence.

18 So they did airborne monitoring at
19 the boundary fences of each of these different
20 facilities, a lot of the different facilities
21 with that data too. Not just site boundary

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 data but also fence data from the different³⁶
2 facilities.

3 DR. MAURO: So you got this, you
4 know, big, gigantic site. And inside the site
5 is broken up into very large areas.

6 MR. GLECKLER: Major operating
7 areas.

8 DR. MAURO: Major operating areas
9 which are very, very big also, where you
10 probably have some good data on the internal
11 fences around each of the area, which are
12 helpful in knowing really how much left this
13 area and is on its way over to another area.

14 But it doesn't help too much on the
15 people that might be inside the area. Because
16 I think the spacing is pretty big. So in
17 other words, you could have an area the size
18 of this table, let's say this is the TAN area
19 or the CPT, okay, this is the area.

20 And there could be a building over
21 here having its releases and people working

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 over here. And in my mind, the data you³⁷
2 collect, you know, where Josie is, is not
3 going to be too helpful to you, if people were
4 here.

5 It would be if the area was so
6 small that yes, your site boundary data -- or
7 not site, but your area boundary data was in
8 close proximity to where people were, so that
9 might work. But I think at this site the
10 spacing, the distribution, if you would --

11 MR. GLECKLER: So even like the
12 onsite monitoring data might be too far out.

13 DR. MAURO: If it's at the fence
14 line, it might be. And there's a case to be
15 made. I mean, it really is a matter of
16 looking at the layout, lay of the land, where
17 the people are, where the monitoring is.

18 And it's almost a judgment it's,
19 just, you know, just too far away where you
20 really have to question whether you could use
21 that data for these people.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. OSTROW: But, you know, Steve³⁸
2 again, I think one of the arguments that NIOSH
3 has mentioned, I think it was Stu just said it
4 a few minutes ago, that over 90 percent of the
5 bioassays were negative. So they're using
6 that as an indication that the people who were
7 monitored didn't pick up any particularly high
8 airborne from anywhere.

9 So the idea that people weren't
10 monitored probably didn't get exposure, I
11 think that was part of NIOSH's claims in the,
12 when you wrote this.

13 DR. MAURO: Could I add one more
14 thing? This is one of the times when we
15 started at the place where usually this is not
16 the big source of exposure.

17 Usually at any site, there's
18 environmental issues, I mean, Nevada Test Site
19 that was a big deal, of course, because of the
20 nature of the operation.

21 But most operating facilities, you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 worry about the guys inside the buildings,
2 that are doing the work. And we're sort of
3 starting this at a place where, in all
4 likelihood the exposures were certainly there.

5 But my guess it that's not where the big
6 exposures were.

7 The big exposures was the people
8 handing the material, doing whatever they do
9 inside the buildings. But we happened to
10 start here.

11 So to keep perspective, these are
12 issues that are certainly on the table but it
13 may turn out there are more important issues
14 of where people could have gotten
15 substantially higher exposures that are of
16 concern inside the buildings.

17 MEMBER MELIUS: Just to follow up
18 on that, then to me I'm not sure it makes a
19 lot of sense for NIOSH to do a very elaborate,
20 you know, labor-intensive modeling of these
21 exposures.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 It seems to me that, you know⁴⁰
2 maybe you need to do more and maybe you need
3 some sort of a factor to take into account for
4 the near-term near-source exposures.

5 And that's going to be a safety
6 factor or something. I mean, I get your point
7 looking at that. But I'm not sure you'd want
8 to do a very elaborate model.

9 DR. MAURO: I agree. I agree. Yes,
10 we may have actually, I think the way it was -
11 -

12 MEMBER MELIUS: Let's clear the
13 whole table, it can get filled up with sources
14 and monitors.

15 (Laughter.)

16 DR. MAURO: It turns out and it's
17 SC&A's ball, when we wrote this proposal I
18 think we did pay a lot of intention to
19 environmental issues. Because we knew a lot
20 of about environmental issues. But the
21 reality is the action is inside the buildings.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIRMAN SCHOFIELD: So is there⁴¹
2 any real purpose in you guys going back to
3 look at the modeling that they did on this?

4 MR. HINNEFELD: I think the first
5 action is probably ours. To look at the
6 model, you know, and get a picture and we
7 understand the model and look for a fairly
8 simple near field adjustment that maybe should
9 be made to the models that we're using.

10 Or whatever, or to provide a
11 thorough argument. If we believe we're fine
12 where we are, provide a thorough argument as
13 to why that's the case. So I think the action
14 on this is ours at this point.

15 MEMBER BEACH: So NIOSH did ask for
16 reference that SC&A used to determine
17 uncertainties not accounted for in the --

18 DR. OSTROW: We did but --

19 MEMBER BEACH: -- meteorological
20 dimension, is that necessary still?

21 MR. HINNEFELD: Well to my way of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 thinking that was just the general near field₄₂
2 issue with expert --

3 DR. OSTROW: Yes, we didn't have
4 anything specific in mind, just the near-field
5 issue --

6 MR. HINNEFELD: Yes, so I don't
7 know --

8 MEMBER BEACH: That was an SC&A
9 request. I mean that was a NIOSH request --

10 MR. HINNEFELD: Yes, and what I'm
11 saying is, having heard the discussion today,
12 you know, you don't need to go find a
13 reference for that, you know, they just do
14 that in --

15 CHAIRMAN SCHOFIELD: I think that
16 kind of closes out the first comment and it
17 definitely goes into Comment Number 2 --

18 DR. OSTROW: Well, I'll comment on
19 this perhaps. This is Steve. We had made the
20 comment about episodic airborne releases and
21 particularly at the initial engine tests at

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the Aircraft Nuclear Propulsion program where⁴³
2 they blew radioactivity out all over the place
3 into the air and we said that some of it might
4 have been underestimated.

5 The release is by a factor of two
6 to 16 and NIOSH asked then in this comment
7 where'd we get the number of two to 16 from?
8 Well, we had referenced that in our original
9 Site Profile Review Report from 2006.
10 Actually, if one wants to look it up it's on
11 page 56 of our Site Profile.

12 We had referenced them, I think
13 John alluded to this earlier perhaps. And we
14 had done a report in 2003: A Critical Review
15 of Source Term for Select Initial Engine Tests
16 Associated With the Aircraft Nuclear
17 Propulsion program in INL. So we had done
18 that report in 2003.

19 And in that, we had concluded that
20 for some of the initial engine tests that the
21 quoted releases were underestimated by a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 factor of up to 16. 44

2 In particular, the initial engine
3 test number four underestimated noble gases by
4 up to a factor of 16, halogen by up to a
5 factor of seven and solids by a factor of up
6 to two.

7 And our original report in 2003
8 elaborates what our basis was for that. John,
9 are you familiar with this report?

10 DR. MAURO: Yes, I was in it up to
11 my eyeballs when we did that work. It was
12 quite controversial because at the time we
13 were, in effect, reviewing work done by RAC as
14 part of the off-site dose calculation.

15 And we were asked by Radiation
16 Studies Branch to independently review the
17 source terms that were used by the Risk
18 Assessment Corporation on behalf of the
19 Radiation Studies Branch.

20 And we found some very significant
21 underestimates and we go into it in agonizing

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 detail. And to this day we feel very strongly₄₃
2 that they significantly underestimated those
3 source terms for the reasons given.

4 And anyone reading the report can
5 make the judgment themselves whether or not
6 our position was well-founded or not.

7 It's been published by the
8 Radiation Studies Branch of CDC and I don't
9 know if any action has been taken on it. But
10 SC&A has looked very carefully at this
11 question on behalf of CDC now, and has on the
12 record published why we believe those source
13 terms are low.

14 DR. OSTROW: That's the basic
15 point, I guess perhaps the action here would
16 be, would NIOSH just take a look at that 2003
17 report and see, you know, either agree with or
18 if you don't agree with it why you think your
19 current model is better.

20 MR. HINNEFELD: Yes, I agree that
21 it's a NIOSH action, yes. It's just first you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 start with reading that report and I think⁴⁶
2 it's relatively straightforward to find in our
3 files, they're on our website.

4 DR. OSTROW: Well, if you can't
5 find it --

6 MR. HINNEFELD: We got it. I think
7 I looked it up a couple weeks ago.

8 DR. OSTROW: Okay.

9 MR. DARNELL: One of the things
10 that we were wondering though, these are not
11 listed in the TBD as being significant
12 releases.

13 MR. GLECKLER: And you identified
14 several of the initial engine test releases as
15 being significant but these specific ones that
16 you guys evaluated aren't listed in there as
17 being significant.

18 And the other thing I wanted to
19 point out is, noble gases don't contribute any
20 significant internal dose so it doesn't really
21 matter if we underestimate those.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. MAURO: I can help you ^a₄₇
2 little, and I'm not disagreeing with you.
3 When we remember what the purpose of these
4 analyses were by the Radiation Studies Branch
5 is mainly whether or not there could have been
6 -- did RAC come up with a reasonable estimate
7 of the sources?

8 There were many, many, many sources
9 that came out of Idaho National Lab. The two
10 of them were identified as the big bankers,
11 these are the ones that anything is going to
12 have a significant off-site impact it's going
13 to be the Chem Plant and the Aircraft Nuclear
14 Propulsion program.

15 And so they went through the
16 screening process, there may have been one
17 more. And because of the importance of those
18 source terms and in order to achieve closure,
19 whether or not they've adequately looked at
20 the important ones, we were asked to come
21 independently and look at all of this.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 And we agreed that they picked the⁴⁸
2 right ones as being the problem ones. And so
3 we looked very carefully at the way in which
4 RAC modeled the effluents, routine and
5 episodic from the Chem Plant and routine --
6 well, it really isn't routine -- episodic from
7 the Aircraft Nuclear Propulsion program.

8 We found that the Chem Plant, they
9 did a nice job. The source, the curies per
10 year and even the emphasis on the episodic
11 releases were well done, well within a factor
12 of two.

13 However, we found that, and the
14 evidence that we've laid out is very
15 comprehensive, that when you're running one of
16 these aircraft nuclear propulsion, you
17 actually allow it to run until the fuel melts.

18 So that melted fuel is being vented directly
19 to the atmosphere, which included everything.

20 Everything went up. And it was a
21 lot. And we believe that not only the noble

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 gases but iodine's and other radionuclides⁴⁹
2 were released. And it would be more of a
3 local phenomenon because some of them would
4 come down pretty quickly.

5 But it was still, you know, our
6 position is that this is a pretty nasty, dirty
7 operation. The degree to which, and it was a
8 major source term at the site, when that
9 operation was going on.

10 And to use the source terms that
11 RAC used for the purposes of reconstructing
12 near field doses to workers that might have
13 been in the vicinity, we feel would have
14 underestimated by about those factors, which
15 are not small, factor of 16, factor of two or
16 three, depending on the isotope.

17 So in our mind taking a look at
18 that, say okay, obviously there's another
19 opinion out there, here's the work that was
20 done, would it change things very much if we
21 were to use those instead of the RAC values?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 And, in other words, all of 50
2 sudden, do the doses involved in the Aircraft
3 Nuclear Propulsion Program change
4 substantially in light of the fact that
5 there's new source terms, whether it's noble
6 gases or otherwise?

7 MR. HINNEFELD: So an outcome here,
8 I mean, I think we're obliged to look at this
9 and the fact that the Site Profile says such
10 and such is not a major release does not --

11 DR. MAURO: Because --

12 (Simultaneous speakers.)

13 MR. HINNEFELD: -- necessity to
14 evaluate the finds.

15 DR. MAURO: It was a major release,
16 and that's why they were looked at twice, once
17 by RAC, once by us.

18 MR. HINNEFELD: It may resolve in
19 almost no change to anybody's dose.
20 Especially in this noble gas issue.

21 DR. MAURO: That's true.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MR. HINNEFELD: So it may not do
2 that but we're obliged to investigate, you
3 can't just say that without investigating.

4 DR. MAURO: Yes, sir.

5 MEMBER ROESSLER: So that already
6 is an action item for NIOSH.

7 MR. HINNEFELD: Well, it is now.

8 MR. GLECKLER: One other thing on
9 that. It's like one of the documents I do
10 remember reading those tests for the initial
11 engine tests. It's like they only took place
12 under certain meteorologic, they're very
13 specific in those documents on that.

14 DR. MAURO: Yes, but remember that
15 was primarily to protect the public. You
16 know, I mean, we don't want the wind blowing
17 in the direction that there's populated areas.

18 Now there may be more to the story than that
19 but you're right, they did take the times --

20 MR. GLECKLER: I think the
21 documents talked about the workers too.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. MAURO: It may have been the ⁵²
2 workers too, at the time.

3 DR. OSTROW: Well, I read about
4 that yesterday a little bit. Apparently
5 that's true, what happened with the engine
6 tests with actually running them was that they
7 couldn't run them a lot of the time because
8 they were waiting for the perfect
9 meteorological conditions both for off-site
10 and for on-site.

11 They didn't want the releases to
12 blow out over one of the other test areas
13 either. So there were a lot of days when they
14 couldn't operate at all which really hampered
15 them.

16 DR. MAURO: So you're right. I
17 mean the point is that certainly may
18 ameliorate the potential. Even though these
19 emissions may have been higher it may not be
20 of any significance.

21 MR. GLECKLER: Yes, and the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 evaluation that was done for this, were those⁵³
2 meteorological conditions factored into that,
3 do you know?

4 DR. MAURO: When we ran it?

5 MR. GLECKLER: Yes.

6 DR. MAURO: Yes, we actually ran a
7 much more sophisticated, a puff trajectory
8 model, you know, as opposed to --

9 MR. GLECKLER: Using either the
10 actual augmented conditions or what --

11 DR. MAURO: No, we modeled --

12 MR. GLECKLER: -- the best
13 condition specification was?

14 DR. MAURO: We modeled the
15 emissions based on a lot of indirect data on
16 the failure of the fuel. In other words we
17 knew how much fuels they started out with.
18 And we knew after it was over what was left,
19 and it wasn't there.

20 MR. GLECKLER: Yes, but what was
21 the meteorological data set that you used?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. MAURO: Oh, we had great⁵⁴
2 meteorological data. In fact this may be the
3 lead federal facility in the world of
4 meteorology. They have more met towers there
5 than you can shake a stick at.

6 MR. GLECKLER: But was it specific
7 to the testing time frame or?

8 DR. MAURO: No, what happened is,
9 nice work, they only had three towers at the
10 time. But then later they had 20 something
11 towers. Then they calibrated the met data and
12 wind fields that you would calculate using
13 only the three field wind data, because you
14 have the joint ones, frequency data. You've
15 got three towers, right.

16 And you could theoretically create
17 a wind field, they use wind field as opposed
18 to standard Gaussian, this is a nice
19 technology which you're probably familiar
20 with.

21 So you almost could picture using

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the data, which comes in every 15 minutes,⁵⁵
2 Wind speed, direction, stability class, they
3 make little arrows in three dimensional space.

4 This is the wind field at 2 o'clock
5 in the afternoon on July 5th. And this is the
6 wind field at 2:15, you know, and this goes
7 on, so you have this wind field.

8 You puff something into it, okay, a
9 puff comes up and it enters the wind field and
10 the puff sort of dances along inside the wind
11 field, spreading, according to the way the
12 wind field is. I mean it's a great model.
13 It's called the puff advection model.

14 Now, later, 20 years later, they
15 don't have just three towers, they've got 20
16 something towers. Okay, they say let's
17 reconstruct the wind field using, as best we
18 can, to see how much added value do the extra
19 towers provide you.

20 Does our understanding of the wind
21 field change, for example now is now, if we

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 were to construct the wind field now just⁵⁶
2 using three towers as opposed to constructing
3 the wind field using all 27, do we really
4 vastly change the picture of these arrows?

5 And the answer is no. The answer
6 is those extra towers are nice. They maybe
7 expand the distance over which you could start
8 to get good wind field.

9 Take into consideration maybe far
10 away there is a mountain and a valley and you
11 want to be able to see where the wind is
12 blowing out there.

13 But in the near field it really
14 didn't change things too much. So what we get
15 is the data was out there, they did a great
16 job, the met data was there.

17 The models were there and we
18 benefitted from the fact that we had access to
19 that data and we could run those models.

20 MR. GLECKLER: Correct me if I'm
21 wrong but what it sounds like is you're using

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 a long-term meteorological data set to ~~do~~^{do}
2 short-term episodic release models.

3 DR. MAURO: No. All the towers
4 give you is wind direction and stability class
5 at the location of the tower.

6 MR. GLECKLER: What about the time
7 frame of the data?

8 DR. MAURO: We'll show you the
9 time. No. They give it like this, the tower
10 is sitting there and it's -- every 15 minutes
11 is putting out the wind speed over that 15
12 minutes.

13 The stability class, that's the
14 delta T. The temperature difference between
15 the higher sensor and the lower sensor, wind
16 speed and direction.

17 So it says in this 15 minute
18 period, and it's a real 15 minute time period,
19 so date, the time, that at that time the wind
20 was blowing in this direction. The Delta T,
21 the difference in the above tower sensor and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the low was this, which gives you stability⁵⁸
2 class and direction.

3 And that's changing every 15
4 minutes, every 15 minutes. And it's almost
5 like a living, and you got all this data.

6 So you can construct, you could ask
7 yourself the question, if I ran an initial
8 engine test on this particular date and it
9 lasted this long and this is what was puffed
10 out during that time period, that one hour
11 test let's say.

12 You place that, and you know that
13 this is the amount of radioactivity that came
14 out, or you could estimate as best you can.

15 Let's say it's a noble gas or an
16 iodine, whatever, came up and was put into
17 that wind field, you could do a great job in
18 tracking now where did that puff go over the
19 next 10 hours.

20 MR. GLECKLER: Is that what was
21 done for this though?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. MAURO: That's what -- 59

2 MR. HINNEFELD: That was done for
3 the earlier work.

4 DR. MAURO: No, the earlier work
5 did not use puff advection, we did.

6 MR. HINNEFELD: You did that before
7 you did this work for EEIOCPA?

8 DR. MAURO: We didn't do that work,
9 we just cited it. In other words all that
10 work was --

11 MR. HINNEFELD: Okay, so you cited
12 that work that was done earlier --

13 DR. MAURO: We cited that work that
14 was done.

15 MR. HINNEFELD: -- in what you did?

16 DR. MAURO: In what we did, you've
17 got it.

18 MR. HINNEFELD: Okay. Great.

19 DR. MAURO: Does that help?

20 MR. HINNEFELD: Yes, I couldn't
21 understand exactly what you were saying.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. MAURO: I wasn't making myself₆₀
2 this was all done years ago.

3 MR. HINNEFELD: Okay. And the
4 model is sort of a simulation, it sort of --
5 it does this 15 minutes and it does this 15
6 minutes?

7 DR. MAURO: Right.

8 MEMBER MELIUS: Can I suggest for
9 our next meeting we have a scale model of the
10 whole site?

11 DR. MAURO: In 3-D, like a movie.
12 We can make a movie, Avatar.

13 MR. HINNEFELD: We'll call Pixar.

14 (Simultaneous speakers.)

15 MEMBER MELIUS: That way John won't
16 have to move glasses around and wave the wind.

17 MR. GLECKLER: I know the
18 meteorological specifications for performing
19 those tests were such that, you know, the wind
20 was blowing, the wind would not blow the
21 radioactivity towards any occupied areas on

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 site.

61

2 Unless there was an unplanned
3 change of direction and meteorological
4 conditions. So the effect of those tests
5 should be minimal on --

6 DR. MAURO: You know what? I'd be
7 the first to admit that, in all likelihood the
8 action, again, is inside the buildings. And
9 maybe we're over here gilding the lily. You
10 know you could really do a great job on
11 something that's not important.

12 But quite frankly we haven't
13 demonstrated that it's not important. I can't
14 really -- because let me tell you they put a
15 lot of radioactivity out during those initial
16 engine tests. A lot.

17 MR. GLECKLER: Short-lived
18 radioactivity though.

19 DR. MAURO: Yes, short-lived but,
20 yes. You know, it was there.

21 MR. GLECKLER: Because the big

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 thing is it would be a notable incident in the ⁶²
2 INL records if the radioactivity got blown
3 back into an occupied area and contaminated
4 that area with any significant level of
5 contamination.

6 DR. MAURO: Again I'll be the first
7 to admit that. But it was picked, in other
8 words this is important. The Aircraft Nuclear
9 Propulsion program and the Chem Plant were
10 picked out of all of the different sources.

11 They must have had 50 different
12 sources and episodic events, as these are
13 where the action is. If there's going to be a
14 problem with off-site impact that might
15 require epidemiological follow-up it's going
16 to be these.

17 And that's the only reason we were
18 brought in, to look at that. So it's not that
19 these happen to be the insignificant ones, no
20 these were the big ones.

21 And if any place there's going to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 be a local outdoor insult, it's going to be
2 these.

3 MR. GLECKLER: When you say these
4 are the big ones are you specifically talking
5 about the ones listed here in the 2006 report
6 or the initial engine tests?

7 DR. MAURO: Amongst, no, no.
8 Amongst the initial engine tests there were so
9 many tests. They were three, four and ten.
10 It's coming back to me, three, they had --

11 MR. GLECKLER: It went higher than
12 that.

13 DR. MAURO: They went way above
14 that. But these are the ones where the most
15 severe meltdowns occurred. And these are the
16 ones where if there's -- where the biggest
17 releases occurred.

18 The others we didn't even look at
19 because on the scale they were like another
20 order of magnitude lower in potential for
21 having airborne remissions.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 MR. GLECKLER: Okay, so you're ⁶⁴
2 saying the ones listed in the 2006 review on
3 that are the probably the most significant
4 ones?

5 DR. MAURO: Yes. And --

6 MR. GLECKLER: Or some of the most
7 significant ones.

8 DR. MAURO: Quite frankly what I
9 would do is say let's go take a look at that
10 work and see if in fact it adds, you know, use
11 some modelings, looks at the source terms.
12 We'd be the first to say well if RAC was here,
13 I forget the president of RAC, he's very
14 famous.

15 MR. GLECKLER: John Till.

16 DR. MAURO: John Till. If John
17 Till was there he'd probably say, no your work
18 is junk. You know, he won't, he would be
19 wrong.

20 He wouldn't, he's a nice man. He
21 wouldn't, but he may not agree. But we'd

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 strongly disagree with him, we think that they⁶³
2 missed it.

3 But nevertheless it's on the
4 record. NIOSH, CDC has accepted our work, has
5 published our work, it's out there for the
6 public to see.

7 And I guess the question is if it
8 turns out, in fact, our assessment is
9 legitimate, probably have an obligation to put
10 it to bed or to say the degree to which it has
11 relevance here.

12 MR. KATZ: I think that's our
13 action item --

14 MR. HINNEFELD: Yes.

15 MR. KATZ: Great.

16 CHAIRMAN SCHOFIELD: Here's the
17 date of the study.

18 DR. MAURO: That was the work we
19 came off of, so sometime after that date that
20 we looked at it.

21 CHAIRMAN SCHOFIELD: All right.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Any more discussion on Item 2? Looks like ⁶⁶
2 NIOSH has to work. Then I guess we'll go on
3 to Item Number 3 here. These are the fence
4 line measurements, boundary measurements. It
5 sounds like you may have got a lot of this
6 already addressed.

7 MR. GLECKLER: I thought we had
8 this addressed, on that at the last meeting to
9 where we had some concurrence out of it?

10 DR. OSTROW: Yes, this is Steve,
11 unless John has any more opinion on this I
12 think SC&A considered it satisfied and
13 withdraws this issue. Or whatever, we're
14 satisfied with NIOSH's response here.

15 And this is sort of subsumed in the
16 general environmental issues that we have. I
17 don't think we need to carry this as an issue.

18 DR. TAULBEE: So we can consider
19 this one closed?

20 DR. MAURO: Let me just understand.
21 So I remember the original concern is that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 you really can't use TLD sitting on ^a₆₇
2 fencepost to represent real people who are
3 working inside. But you're saying that no,
4 these real people were wearing TLDs, so what's
5 the problem?

6 MR. GLECKLER: -- get inside that
7 fence line is --

8 DR. MAURO: Can't argue with that.
9 Okay.

10 DR. OSTROW: Yes, I think we can
11 consider this issue closed.

12 CHAIRMAN SCHOFIELD: Okay.

13 DR. OSTROW: We're making progress.

14 MR. KATZ: That's a good one.

15 CHAIRMAN SCHOFIELD: Okay. We're
16 going on to Issue Number 4. It's the quality
17 and completeness of the internal dosimetry
18 program.

19 And I know there's been some issues
20 here raised by some of the personnel work
21 facility about missed data, the absence of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 data in some cases. Would you like to address
2 that?

3 MR. GLECKLER: As far as the
4 completeness of that data, or the quality,
5 it's like I am usually, I guess our generic
6 response to the Tiger Team stuff is it wasn't,
7 you know, the Tiger Team, say that, like their
8 focus was different than what our focus was on
9 that.

10 And their intent was different than
11 what our intent for using the information was.

12 But the one key thing that we have done is
13 completely revised the internal TBD on that.

14 And now for the activation fission
15 product on that we're now using the OTIB-54
16 approach on that. And for the actinides I put
17 together a similar approach that OTIB-54 uses,
18 we still use ratios, but it's based on site
19 specific data on that.

20 And it's a boiled down list to
21 where so we've got a much broader list of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 nuclides that are now being accounted for and
2 I believe that was the biggest concern in the
3 last meeting, that was expressed in the last
4 meeting, was the list of nuclides that we were
5 factoring in was too limiting on that and some
6 organs might miss out on dose because of key
7 nuclides not being factored into that.

8 So hopefully what we have in there
9 now is sufficiently broad.

10 DR. MAURO: OTIB-54 is a very good
11 OTIB. What it basically does, and I'm trying
12 to draw a bridge between what you just said
13 and OTIB-54.

14 MR. GLECKLER: Okay.

15 DR. MAURO: OTIB-54 says listen, if
16 I happen to have urine samples from workers,
17 let's say a comprehensive set of urine
18 samples, where I did gross beta-gamma analysis
19 on it. I've got a pretty good idea of the
20 gross beta-gamma that was in that urine.

21 The problem I don't have is what

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the mix of radio nuclides are. It -- what ~~is~~⁷⁰
2 it, the strontium-90, cesium-137, is --
3 whatever it is. So it sounds like I'm not
4 quite sure what was done originally, you know,
5 the approach taken originally.

6 But ultimately if you're saying
7 your starting point was gross beta-gamma
8 measurements and originally you went about
9 calculating the dose from that data. But now
10 you say no, we're going to do it a better way.

11 We're going to use the OTIB-54.

12 Now embedded in the OTIB-54 is a
13 mix, there's mixes, and you could pick and
14 choose which mix of radionuclides. In other
15 words you could be at this reactor, or could
16 you could be at that reactor.

17 And the reactors could be different
18 enough so that the kinds of beta-gamma
19 emitters that might become airborne from that
20 reactor could be substantially different than
21 the beta-gamma emitters from this reactor.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Now, and what OTIB-54 says if you
2 know which kind of reactor you're working
3 with, more or less, you probably could work
4 with this mix. Saying that this is the way in
5 which the beta-gammas would be mixed as
6 opposed to this reactor.

7 And all of that was fine in OTIB-
8 54. We reviewed it, Joyce Lipsztein reviewed,
9 and others reviewed it and said, no, that
10 looks like a really good way to come at this
11 problem.

12 So you basically are saying you
13 basically have gotten to a place where for
14 workers at this site you know that we have
15 bioassay data

16 You assigned that worker to a
17 particular type of reactor, one of the 52
18 reactors that are at the site, or class of
19 reactors.

20 MR. GLECKLER: No, OTIB-54 takes
21 those individual reactors and comes up with

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 basically a homogenized or collective set of
2 ratios that are representative of all the
3 reactor types.

4 DR. MAURO: That's the one place we
5 had a problem with OTIB-54.

6 MR. GLECKLER: Yes -- there's some
7 changes that are being looked into for OTIB-
8 54.

9 DR. TAULBEE: That's correct.
10 OTIB-54 is under revision right now.

11 DR. MAURO: Okay.

12 DR. TAULBEE: But in general the
13 description from reactor to reactor, it's my
14 understanding that the mixed fission product,
15 the mixture, doesn't change significantly from
16 reactor to reactor as much as it does from
17 reactor to separations area?

18 DR. MAURO: Yes.

19 DR. TAULBEE: And so that's where
20 this huge delta is. That the ones within
21 reactors are actually more time dependent than

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 anything else. 73

2 DR. MAURO: Yes.

3 DR. TAULBEE: With the ten day, 60
4 day, 180 day, right?

5 DR. MAURO: Mixing -- Yes.

6 DR. TAULBEE: Right. And so it's
7 really not so much different type of reactor
8 it's the time sequence associated with the
9 reactor and then the difference from the
10 separations area.

11 So by incorporating OTIB-54 that's
12 where they're taking into account those
13 radionuclides that take the highest dose
14 associated with whichever time period, how
15 long they kept the fuel there, how often they
16 changed it, et cetera, that that's where that
17 mixture is going to be changing. And that's
18 what I believe you've incorporated into the
19 revised TBD, correct?

20 MR. GLECKLER: Yes, for the most
21 part when it comes to the OTIB-54, and that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 revised TBD says basically just use OTIB-54₇₄
2 It gives specific guidance on the decay
3 periods for specific facilities and that are
4 applicable and the reasons why those decay
5 periods are applicable to those facilities.

6 In the instance like the ICPP
7 there's multiple decay periods the
8 instructions are to basically evaluate all the
9 potential decay periods and use the one that
10 results in the highest dose.

11 DR. MAURO: Well see ICPP was not,
12 see I think, OTIB-54 was really written for
13 reactors.

14 MR. GLECKLER: It covers both.

15 DR. MAURO: No, it does both?

16 MR. GLECKLER: It covers waste
17 sites and reprocessing type facilities as
18 well.

19 DR. MAURO: Okay.

20 MR. GLECKLER: It's a pretty broad
21 scope document.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. TAULBEE: Well it seems to me
2 that since this revision was really
3 significant that maybe SC&A might want to take
4 a look at the new revision?

5 MEMBER BEACH: That's for O-54?

6 DR. MAURO: See to me --

7 MR. HINNEFELD: No, for Finding
8 Number 4.

9 MEMBER BEACH: Four, right.

10 DR. TAULBEE: Right.

11 MEMBER BEACH: But OTIB-54 is under
12 review right now also, correct?

13 DR. MAURO: One area is, that one
14 aspect. This homogenized issue. Where if you
15 don't know what reactor and you're going to
16 work with a generic reactor, maybe we had a
17 problem with that.

18 MR. HINNEFELD: If you give me a
19 little bit I can probably find out.

20 DR. TAULBEE: I know we are
21 revising it right now, internally, with a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 slightly modified mix due to some better data⁷⁶
2 that we've got. But I don't know that that's
3 hit for you all to look at yet.

4 CHAIRMAN SCHOFIELD: So how would
5 this be applied say for those people working
6 up at TAN, in that area, versus those people
7 at the Chem Plant who have a number of
8 different reactors.

9 I shouldn't say in that -- in that
10 particular area. So now you have these two
11 areas and you have, maybe you have personnel,
12 which I assume there were many personnel that
13 went back and forth between the two. How are
14 you going to apply that to that particular
15 person?

16 MR. GLECKLER: Okay. This would
17 typically be applied to individuals with
18 bioassay data, so let's say the person worked
19 there prior to 1960, they would typically have
20 a gross beta and urine sample results, or
21 multiple sample results going on.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 We would take that gross urine
2 sample result, and Table 7-1 of OTIB-54 has
3 some ratios. Test Area North, it's an area
4 with operating reactors -- reactors were still
5 operational back in that time frame we'd use
6 the ten day TBD. The INL TBD says to use a
7 ten day decay period for that time frame.

8 And that which yields the highest
9 rations from Table 7-3. Now table 7-1 of
10 OTIB-54 accounts for the fraction of the urine
11 that's attributable to strontium and cesium.

12 And for the gross-beta we would use
13 the amount that's attributable to strontium.
14 And then we take the intake that we calculate
15 using that ratio and that information and
16 apply the ratios in Table 7-3, I believe. I'm
17 pretty sure I got these table numbers right,
18 but I'm not positive.

19 But for all the other activation
20 fission products in OTIB-54 there's a list of
21 ratios for each decay period. There's a ten

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 day, a 40 day decay period, 180 day decay
2 period and a one year decay period.

3 And the highest ratios for the
4 activation fusion products come out of the ten
5 day decay period. So that would yield pretty
6 much the highest doses and intakes possible
7 using the OTIB-54 approach.

8 DR. MAURO: You got me on that one.

9 I would have thought that as the core ages,
10 in other words the reactor is operating for a
11 long time period.

12 And what happens is as time goes on
13 the importance of cesium-137 and strontium-90
14 is starting to become more and more greater
15 inventory of the total curies inside the
16 reactor.

17 And therefore, those are the ones
18 that, if you are going to inhale some airborne
19 articulates, they're the ones that are going
20 to give you the greatest dose per becquerel
21 inhaled, as opposed to the shorter lived,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 which are not going to really, see the shorter⁷⁹
2 liveds are going to go out and then stop.

3 Even if you've operated for long
4 periods of time the inventory's going to stop
5 here. On the longer lived they're just going
6 to keep climbing.

7 MR. GLECKLER: Yes but cesium and
8 strontium are pretty much accounted for by the
9 bioassay measurement to where the, in the
10 Table 7-1 values, are not as time, as the
11 decay period goes up, yes, the ratios get a
12 little higher.

13 Let me see, I've got it here --
14 forget which way they go.

15 DR. MAURO: See to me a ten day mix
16 is not going to be as damaging as a one year
17 mix. In terms of the airborne gross beta-
18 gamma.

19 What the mix of radionuclides is
20 going to be you're going to have your dose per
21 unit intake is going to be much higher for a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 one year mix. 80

2 Let's say you have a becquerel per
3 cubic meter. The one year mix of becquerel
4 per cubic meter is going to be a lot more
5 harmful, theoretically, than a ten day mix,
6 unless I'm thinking about it wrong.

7 On a per becquerel per cubic meter
8 or becquerel per liter, in urine, is the
9 older, is the age material that's going to, on
10 a per unit activity, is going to give you the
11 higher dose. Because you have longer lived
12 radionuclides that are making up that mix.

13 And by longer lived ones, of
14 course, are going to deliver a greater dose
15 commitment.

16 DR. TAULBEE: What OTIB-54 is
17 looking at is ratios. So I think it's just
18 giving you the ratio on the different
19 radionuclides. They are not doses, which is
20 what you're talking of it being longer. So I
21 think we're actually talking two different

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 things here. 81

2 DR. MAURO: Okay.

3 MR. GLECKLER: Yes, because
4 specifically this will have to do with
5 intakes. But typically the doses will still
6 yield higher because cesium and strontium are,
7 you know, basically around the same sort of
8 half life. And so they're going to be out
9 the, and like the Table 7-1 values are the
10 urine activity fractions.

11 And it's like 7-3 where they use
12 that indicator nuclide, which is cesium or
13 strontium. Now if you calculate the others,
14 and like for the cesium, if you're strontium
15 the cesium ratios do not change from ten days
16 to one year.

17 And so it's the same throughout but
18 you get a much larger mix of other short-lived
19 nuclides at the ten day mark with much higher
20 ratios. But part of what you said is true but
21 not for that reason that you're indicating.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 It's because of the actinides⁸²
2 because the actinides tend to go yield a
3 higher result with the longer decay periods
4 the way that they're dealt with in this TBD
5 revision.

6 DR. MAURO: For the purpose of the
7 work we're in the place what I think is
8 important. What I'm getting at is this is the
9 internal dose to workers inside the building
10 exposed to airborne radioactivity from
11 whatever the facility is.

12 And this, in my mind, this is where
13 the action is for internal events.

14 CHAIRMAN SCHOFIELD: John, can I
15 ask you a question on that? What about say
16 personnel who worked in the reprocessing of
17 some of these fuel pins and stuff, like CTP,
18 was that 602 I think it is, where they redid
19 these. So they would have been exposed to a
20 lot of the -- particularly the actinides.

21 DR. MAURO: I have to say I always

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 thought of 54 as more of a reactor thing than ⁸³
2 a reprocessing tool, but I may be wrong.

3 MR. GLECKLER: As far as what, I'm
4 not familiar offhand with what that area did,
5 could you elaborate on what that specific area
6 was involved with?

7 CHAIRMAN SCHOFIELD: Well the
8 development of the fuel pins, say extracting
9 the uranium back out to have it recycled
10 through the system. Or like the RaLa program
11 that went on up there for --

12 MR. GLECKLER: Because well you've
13 got RaLa, that's separate from the first thing
14 that you mentioned. Because the first thing
15 you mentioned deals with more the routine
16 operations that took place at the facility.

17 Then we're only talking about
18 uranium as the actinide predominately other
19 than it's recycled uranium. And there are
20 things that were added to the TBD that account
21 for the recycled component, you know, the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 other impurities from the recycled uranium. 84

2 And that's based on Y-12
3 information and material that they actually
4 got from the ICCP. Then for the most part the
5 other actinides stayed with the fission
6 products.

7 We don't have any indication that
8 they've ever separated plutonium out, that's
9 been something you see quoted a lot in a lot
10 of the INL documents and I haven't come across
11 anything to show that there's ever plutonium
12 separated.

13 So they all stayed with the fission
14 products on that. So that actinide scenario
15 that you're talking about is pretty much
16 recycled uranium. High enriched recycled
17 uranium on that.

18 And then for the RaLa there is some
19 specific guidance that I put in there because
20 the ICCP, the decay periods that are
21 recommended for that facility are the 40 day,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 the 180 day and the one year that we have to
2 evaluate except for the RaLa runs where then
3 we do the ten day as well, I believe.

4 There is specific guidance in the
5 revised TBD for individuals involved with that
6 work.

7 CHAIRMAN SCHOFIELD: How are you
8 going to apply that to, say personnel who may
9 have been exposed to both. Maybe they were
10 there in the Chem Plant processing this stuff.

11 MR. GLECKLER: Let me look real
12 quick.

13 CHAIRMAN SCHOFIELD: Then maybe
14 they were filling in at one of the reactors.

15 MR. GLECKLER: I believe the way
16 that I've got it written in there, because I
17 don't look at the RaLa stuff much because we
18 don't encounter it too much. But I think the
19 way I wrote it in there was that you just add
20 the ten day in the list of scenarios that you
21 have to assess.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 It's like then I believe you have⁸⁶
2 to assess all four of them at that point and
3 pick the one that's highest. I know that's
4 the case for normal ICPT exposure is you've
5 got the 40 day, 180 day and one year decay
6 periods that are applicable to that facility.

7 You have to assess all three and pick the one
8 that yields the highest dose on that.

9 And I believe I've got it written
10 to where we just add the ten day into that mix
11 for the RaLa workers, or workers that were
12 there when they were doing --

13 DR. TAULBEE: So I think to answer
14 your question, Phil, basically when somebody's
15 split between the two we assume them to be in
16 one or the other, and which ever one gives the
17 highest dose.

18 CHAIRMAN SCHOFIELD: Okay. What
19 about time frames? Say maybe they're only on
20 an annual urinalysis versus a person's on
21 semi-annual, quarterly or even monthly.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. GLECKLER: Because virtually⁷
2 you know, the vast majority of the bioassay
3 results are negative and that we're typically
4 just doing a missed dose calculation anyhow.

5 So we're only using the very last
6 bioassay result for a given monitoring period
7 -- and to deal with unmonitored periods and
8 unmonitored workers, out at INL we're still
9 doing the default dose approach that was
10 initially described in the original TBD.

11 And that's where we'll use a
12 hypothetical bioassay result on that and
13 assign them a missed dose. And that's
14 typically, if they're unmonitored in order to
15 get that for like a best estimate or
16 compensable claim they have to have at least a
17 positive external dose. Otherwise they'll
18 just get the environmental for a comp or best
19 estimate claim on that.

20 But the basis for only giving them
21 a missed dose for those unmonitored periods is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 the fact that we've got the bioassay data⁸⁸
2 over 90 percent of it was, you know, less than
3 detect.

4 DR. MAURO: I'm constructing in my
5 mind the logic sequence of how to get through
6 this situation where you have, you're saying
7 the rock you're really standing on is that
8 you've got urine samples for a lot of workers
9 and you've measured gross beta gap. That's
10 really to make a generalization. And it
11 applies -- no matter where they worked.

12 And at the same time you run into a
13 situation where those very people that were
14 monitored, the vast majority don't have
15 positive hit. They're less than the lower
16 limits of protection, but a few are above it.

17 So you're confronted with a
18 circumstance that says okay, for those that we
19 do have fairly good data, let's say quarterly
20 urine sample collection, gross beta-gamma, you
21 go back into maybe his work history. And if

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 he doesn't have a good idea of what his work⁸⁹
2 history was you go back and make the worst
3 plausible assumption.

4 Well if he happened to have been
5 working over here the worst thing that you
6 could assume was that he's working over here
7 and this was his mix, and we're going to
8 assign that to him. I mean that would seem to
9 be a reasonable way to go. And you've done
10 the right thing by that person.

11 But now you have a person, let's
12 say, that he has all his results come back
13 lower than limits of detection. All right, so
14 you say, and let's say he was only monitored
15 once a year. Okay, you got a guy, what do we
16 do with this guy. And I guess I'm not sure.

17 See to me it's always just a simple
18 story. All right, what are we going to do
19 about the guy that worked there for many
20 years. We took annual urine sample. We know
21 he could have worked in areas where he could

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 have been exposed to some airborne. 90

2 What am I going to do with him? I
3 don't have gross beta-gamma data on him, and
4 everything is less than the limits of
5 detection. How do I deal with him? I have to
6 build a coworker model to somehow deal with
7 him and assign him something. We can't just
8 say he wasn't exposed, especially if there's
9 evidence that he did work in areas where he
10 could have been exposed. See I like to hear
11 the story that way.

12 MR. GLECKLER: With INL it's like
13 they didn't conduct as much routine monitoring
14 as other facilities. Typically a lot of their
15 monitoring was based on workplace indicators,
16 air monitoring results, you know, something
17 occurring within the facility. It's like they
18 typically would, you know, you see this in the
19 exposure results and the bioassay data for the
20 workers.

21 They'll monitor a whole group of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 workers that were in the vicinity of where
2 there was a release event. And that and it's
3 like judge by what those bioassay results
4 yield.

5 So if they're all negative it's
6 like they're not, you know, not going to
7 monitor anyone else or do much follow up, if
8 any, at that point.

9 But if there's significant intake
10 and that sometimes they expand that out and
11 monitor some other workers, but they'll
12 typically have a whole series of monitoring
13 results for those workers that were involved
14 and had positive bioassays.

15 DR. MAURO: So they weren't, so all
16 workers weren't, it was just because they
17 happened to work in this area where routine
18 bioassay, on some kind of bioassay schedule,
19 it was sort of like episodic.

20 That is when we felt it was
21 necessary, it was done. When it wasn't, it

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 wasn't done. And the presumption being when
2 it wasn't done there was no need to do it.

3 MR. GLECKLER: From the most part
4 it looks like they relied heavily on workplace
5 indicators on that. It's like because there's
6 a handful of them that you do see to where
7 they do get annual bioassays.

8 But typically that's about the most
9 frequent of the routine monitoring that you'll
10 see is annual.

11 DR. MAURO: Annual. Now let's --

12 MR. GLECKLER: Or eventually annual
13 whole body counts.

14 DR. MAURO: But they all did have
15 film badge, were they all badged?

16 MR. GLECKLER: Yes.

17 DR. MAURO: So what we have is, is
18 there any argument that could be made that
19 there was a relationship between the film
20 badge reading and the bioassay?

21 That is if you're consistently

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 seeing a relatively low film badge reading, ~~is~~
2 there any -- I'm trying to find, I'm putting
3 myself in your shoes and to try to convince
4 myself.

5 You see, it sounds like you're in a
6 tough spot. You've got a place where there
7 was airborne radioactivity. The reactors, the
8 Chem Plant, the Aircraft Nuclear Propulsion
9 Program.

10 But you have relatively limited
11 amount of positive readings, or a limited
12 amount of bioassay, annual bioassays and only
13 for select people.

14 So somehow you've got to have a
15 hook that says why is that we believe that we
16 could bound the doses to all workers, internal
17 doses.

18 Because we have this indirect
19 evidence, whether it's air sampling data, film
20 badge data, operational data. In other words
21 you've got to have a hook to allow yourself to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 walk away. 94

2 And say, well for these particular
3 people here's the reason why it's okay we're
4 not assigning you any internal dose. Or we're
5 assigning this internal dose.

6 And I'll be the first to say, you
7 know, I didn't read all this material. But
8 I'm trying to give you an idea of how I think
9 about these things and how SC&A thinks about
10 these things.

11 So you've just got to make like a
12 common sense argument why in the end what
13 you're recommending rings true. And
14 unfortunately these matrices don't really help
15 us understand that kind of story.

16 MR. GLECKLER: But if you're saying
17 that the workers that were monitored their
18 exposures aren't indicative of the, you know,
19 the workers that were unmonitored might have
20 had equal or higher exposure, or more
21 importantly, higher exposures than effectively

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 a coworker, you know, you're saying that you
2 wouldn't deem a coworker study valid for that
3 site.

4 MR. HINNEFELD: Well I think the
5 conclusion though is for a coworker study to
6 be valid that you have to have some confidence
7 that there wasn't a systematic exclusion of
8 most highly exposed people.

9 DR. TAULBEE: Let me, Page 5 of
10 this, this actually comes under another issue
11 a little bit later when we talk about gross
12 beta-gamma. You know we've got 90,000 urine
13 samples here at the site, and 98 percent of
14 them were below detection limit.

15 So that's what effectively, I
16 believe, Brian correct me if I'm wrong here,
17 that's why we're banking on the MDA assignment
18 as being reasonable for somebody not being
19 monitored.

20 You know they've taken almost
21 100,000 urine samples, and only two percent

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 are showing positive. Therefore, for somebody
2 who's not monitored, or we only have one urine
3 sample, you know, for a year, and we assign a
4 missed dose for that entire year based upon
5 that, that's where we feel confident here.

6 If the sampling was based upon
7 workplace indicators, and we have 90,000
8 results and that's the only sampling that was
9 done, and only two percent are showing
10 positive, the workplace indicators seem to be
11 pretty significant as far as detecting
12 something.

13 DR. MAURO: And that story is all
14 laid out in your Site Profile?

15 DR. TAULBEE: That's what I'm --

16 MR. GLECKLER: It goes into now the
17 number of bioassay samples that, the different
18 types of bioassay samples. Like the gross
19 beta in urine, gross gamma in urine, how many
20 of them were, you know, negative and stuff.
21 It goes into some of those statistics now that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 would chart in the matrix. 97

2 And that's a lot of that got in, I
3 wrote the stuff for the matrix first, I
4 believe, and incorporated it into the TBD, so
5 the statistics are now in the TBD. But the
6 big thing is, yes, it's not like they weren't
7 monitoring people.

8 And it's not the scenario where
9 they were only monitoring people sparingly and
10 yes, like 98 percent of them or whatever, it's
11 like were negative and well that's not
12 representative.

13 You know they took a large amount
14 of samples. Almost, just short of 100,000
15 bioassay samples, and they were negative.

16 DR. MAURO: To speak, I mean, what
17 you just said is the story I like to hear.
18 You have got 90,000 urine samples and it cuts
19 across just about every activity you could
20 possibly imagine, over all the years.

21 And we're getting this non-detects.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 That's a pretty strong statement. It's also⁹⁸
2 common sense that I'm not looking for heavy
3 statistical analysis --

4 DR. TAULBEE: Right.

5 DR. MAURO: Okay. And here's why
6 you believe. And this almost becomes self
7 evident. If you have 90,000 measurements
8 representing, I don't know, how many. How
9 many people over what time period in every
10 facility.

11 MEMBER ROESSLER: Well there's two
12 questions. How many people and over what time
13 period.

14 DR. MAURO: Yes, right.

15 MEMBER ROESSLER: That helps us
16 better evaluate the significance of it.

17 DR. MAURO: Yes.

18 DR. TAULBEE: Well I guess back to
19 my, you know, we opened this particular one.
20 The internal TBD has been revised
21 significantly since the last time this Work

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Group met. 99

2 So it seems to me it would be
3 important for SC&A to look at that again and
4 make those types of comments. These 90,000
5 followed at this time period, workers on the
6 TBD, make that comment and we can follow up
7 on that. But that seems like -- that seems to
8 me where -- the step we're at.

9 DR. MAURO: Anyplace where you
10 could be fooled by the gross beta-gamma. That
11 would be another dimension of the problem is
12 that if you're working in a place where you're
13 dealing with transuranics, you're taking gross
14 beta-gamma.

15 MR. GLECKLER: Right. That's why I
16 think perhaps SC&A should look at this new
17 revised internal TBD using OTIB-54 and the
18 methods that Brian's talking about here.

19 MEMBER ROESSLER: Just for my
20 information while we're on it, over what time
21 period were those urine samples taken?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. GLECKLER: Typically the gross¹⁰⁰
2 beta-gamma urine samples stopped somewhere in
3 the mid `60s. And like the gross beta stopped
4 around 1960, and the gross gamma stopped, you
5 don't see hardly any of those after like the
6 mid 1960s where once they got a lot more
7 confidence in the whole body counting which
8 started around 1960 and later.

9 On that they pretty much went to
10 whole body counting for the bulk of the
11 workforce and in later years you start to see
12 some Pu bioassays.

13 MEMBER ROESSLER: So the urine
14 samples started back in '49?

15 MR. GLECKLER: I forget what the
16 start year is. The initial year that they
17 started operations at the site there weren't
18 any bioassay results that we could find. But
19 I believe it's the following years when they
20 started up, like `53 --

21 MEMBER ROESSLER: So we're looking

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 at a period of maybe 12 to -- 12 years¹⁰¹
2 something like that and how many people?

3 MR. GLECKLER: That we could
4 probably -- I didn't do that sort on the data
5 on that to figure out how many different
6 individuals were there, but I think the
7 information in the database would allow us to
8 sort that if you really want that information.

9 MEMBER ROESSLER: That would give
10 us a idea of how representative these urine
11 samples were for the group we're interested
12 in. That's close enough.

13 DR. MAURO: No, and I agree, and we
14 all know the operations at these different
15 areas was just completely different, time and
16 space and I know a lot of attention was placed
17 on the reactors. But there were some very
18 exotic activities going on like the Aircraft
19 Nuclear Propulsion Program.

20 This sweeping statement regarding
21 in the early years they were taking gross

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 beta-gamma analysis is sort of like the rock¹⁰²
2 you're standing on, at least for the early
3 years.

4 Then later you're saying chest
5 count data became the currency for making sure
6 that they understood what the internal doses
7 were, and that would apply, again, universally
8 to the diverse activities that took place.

9 And why that would work and why it
10 wouldn't necessarily be important. I mean in
11 the end when I'm reviewing these things I just
12 look for these simple things. You know, and
13 start again.

14 A funny way what I do is I say what
15 could have tricked me into thinking I know
16 what I'm doing when I don't?

17 I almost look the other way around,
18 not looking for reasons why I think
19 everything's okay. No, looking for reasons
20 why things might not be okay. It's sort of
21 like flipping it. I like that way of looking

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 at almost testing yourself, where in here
2 could I have been fooled. And anyway.

3 MEMBER ROESSLER: So later on it
4 would be the chest count in addition to whole
5 body counts so they got most of the stuff plus
6 the plutonium.

7 MR. GLECKLER: Yes in the later
8 eras they start doing some PU bioassay and I
9 don't know really why --

10 MEMBER ROESSLER: He said chest
11 counts, I don't think you did. But --

12 DR. MAURO: I thought you said
13 chest count, it wasn't chest count?

14 MR. GLECKLER: I meant it in vivo
15 Yes, they're whole body counts.

16 DR. MAURO: Whole body counts.

17 MR. GLECKLER: Yes, whole body
18 counts. They do lung counts too for some
19 workers at the --

20 CHAIRMAN SCHOFIELD: Was everybody
21 badged on a yearly, did they have a whole body

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 scan done? 104

2 MR. GLECKLER: What's that?

3 CHAIRMAN SCHOFIELD: Were there
4 personnel who were badged who didn't get these
5 whole body counts done on a yearly basis or
6 these quarterly, semi-annual?

7 MR. GLECKLER: Yes, there's a
8 number of personnel that don't have any
9 bioassay results on that to where ones that
10 were monitored at all typically if they're in
11 the whole body count era it's like they
12 typically have annual whole body counts on
13 that.

14 Unless there's a one check to
15 special, that usually means that there's a
16 workplace indicator then that triggered that
17 one to be taken.

18 And they also did a lot of
19 termination whole body counts for workers.
20 Even sometimes that's the only bioassay result
21 for individuals is their termination whole

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 body count. And that's, so they might not
2 have been monitored during any of their
3 employment but they could receive their
4 termination whole body count.

5 MEMBER MELIUS: So, John, when you
6 look at this, like one of the other issues I
7 thinking that so needed to be in the Site
8 Profile itself is look at were there groups of
9 workers that were missed?

10 DR. MAURO: Yes, that's a --

11 MR. GLECKLER: Yes and I don't see
12 that data in here, I would expect to see it
13 but if that's something you could look at.

14 DR. MAURO: And also exposure
15 scenarios that could have been missed by a
16 gross beta-gamma when a person is exposed to
17 transuranics, whether it's urinalysis or chest
18 count or a chest count or a whole body count.

19 MEMBER BEACH: And also the lab
20 workers it sounds like had a possibly higher
21 exposure potential. And I'm curious of what

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 labs that they were looked at because it's ^{not}₁₀₆
2 listed in here also.

3 DR. MAURO: Yes, you know the
4 reality is it's been six years since we looked
5 at this. It sounds like an awful lot of work
6 was done, a lot of NUREGs came out -- OTIBs. I
7 think we have to look at this again.

8 MR. GLECKLER: The approach now is
9 very different from the previous approach and
10 in defense of the old approach it's like from
11 what I've been seeing is, you know, the old
12 approach is still claimant favorable in most
13 situations.

14 It's like it might be, you know,
15 the argument that SC&A originally had is that
16 for certain organs not having a certain
17 nuclide in the list is like might result in an
18 underestimate of dose.

19 But from what we've been seeing
20 with some claims that come back for rework for
21 added cancers and that we haven't put them

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 through the PDR process yet. But some of them
2 have come back for rework and their doses
3 typically go down.

4 But the problem with the old
5 approach is no one that put that approach
6 together was still on the project and we
7 didn't have the data to defend it,
8 unfortunately, other than we hear that there's
9 a lot of effort put into coming up with that
10 approach, and it seemed fairly good.

11 But right now after comparing it to
12 the new, the comparisons that we've done with
13 the old approach and the new approach it seems
14 like it was claimant favorable.

15 DR. MAURO: Well I could imagine if
16 you defaulted to strontium-90 on your gross
17 beta analysis and did -- assumed it was all
18 strontium-90 and the guy was doing his own
19 dose, I mean you're going to come off the
20 charts.

21 And then later on you back off and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 say well we're going to do a realistic mix₁₀₈
2 But I can see that are those just dropping
3 like a rock.

4 MR. GLECKLER: Yes.

5 MR. KATZ: Yes. No, I had the same
6 question, I don't understand, but --

7 MEMBER MELIUS: Well was the old
8 metric just not documented? It's making me
9 nervous.

10 MR. GLECKLER: Yes, it sounded like
11 it was documented but not in a manner that, it
12 was with an individual where the project never
13 recovered those files from them after they
14 created them in the first place, you know, to
15 support was done. And so essentially it would
16 be counted as not documented, but not to, it
17 wasn't completely undocumented.

18 They did the legwork on it and
19 there's documentation out there to support it,
20 but the individual that would have had those
21 records is retired and after a few years

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 never, you know, saw fit to retain them. 109

2 Ideally we would have recovered
3 those and put them into the SRDB or somewhere
4 where they were retrievable. That's why we
5 just, by the time that this become an issue
6 and now it's like OTIB-54 was out there and
7 issued.

8 So it's like that was one of the
9 reactors from INL was used for the basis for
10 OTIB-54, so it just seemed natural to go with
11 that approach and be done with it.

12 MR. KATZ: Water under the bridge
13 at this point I guess.

14 DR. MAURO: No, I'm just trying to
15 --

16 (Simultaneous speakers.)

17 MR. KATZ: I think I'd just suggest
18 that the Work Group task SC&A with doing this
19 but as you're doing your work reviewing it
20 that you raise questions as you go with DCAS
21 about issues that seem to be unaddressed, or

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 what have you, before reporting out. 110

2 That way next time we have a
3 meeting that kind of interaction on
4 clarifications and so on, what was done, why
5 and what might be missing. You'll already
6 know answers to that at least instead of
7 thrashing them out here and utilizing this --

8 DR. MAURO: Yes, I have to say one
9 of the things I'd really like to do in
10 circumstances like this is while we're reading
11 your work products, have a chance to talk to
12 you. And not to find, just to get
13 clarification -- and this has been -- now as
14 we have in the past we informed the Work Group
15 that we're about to have a conference call,
16 for clarification.

17 MR. KATZ: Yes, that's fine. And
18 then Work Group Members can sit in and listen
19 to those calls. I think it'd be a good way to
20 move it forward as opposed to waiting for the
21 next Work Group meeting.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. MAURO: Absolutely. 111

2 MEMBER BEACH: I have a question.

3 MEMBER MELIUS: And just one sort
4 of procedural, then there'll just be some sort
5 of documentation then of what happened at the
6 work --

7 MR. KATZ: Technical call.

8 MEMBER MELIUS: Yes, so that we're
9 not, just so when we meet again we don't say,
10 well I think we did that.

11 MR. KATZ: Then if one of the other
12 Work Group Members want to know what happened
13 they don't have to rely on the one Work Group
14 Member who was there or what have you.

15 MEMBER MELIUS: Or if a Work Group
16 Member has a question about a certain --

17 DR. MAURO: I have to say I think
18 we've got to do a lot more of that as we're
19 working on problem. We're working on so many
20 Site Profiles and SECs and when we're reading
21 it what is it you really mean here. And

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 document it and put it on the record. And
112
2 there'll be almost a new way, because we don't
3 do enough of that. That's how I feel.

4 MEMBER MELIUS: Well also I think
5 it facilitates giving the time frames here and
6 what's happened with this particular Site
7 Profile.

8 MR. GLECKLER: Yes, because just
9 sitting down and going through the TBD and
10 trying to hash it out unfortunately, you know,
11 I tried to write it as clearly as possible.

12 But, you know, based on questions I
13 get from our dose reconstructors and that and
14 walking them through stuff it's not 100
15 percent clear. So it's like it's, we'll
16 probably need some help with understanding
17 what was intended there and stuff.

18 DR. MAURO: Let's say during one of
19 these conference calls we say, it seems like
20 you've got a hole here. Let's say that
21 happens based on blah, blah, blah, blah, looks

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 like you got a hole here. 113

2 It's almost like a finding, and
3 usually we try to avoid having, it's not a
4 finding, but it's a conversation saying based
5 on what I'm hearing it sounds like that we're
6 still a little uncertain about how you
7 actually will deal with this particular
8 isotope under these particular circumstances.

9 Which, in a way, would be the first
10 step in identifying a possible finding. I for
11 one would like to be able to have that
12 conversation and pass on that concern during
13 such a call.

14 Document it, make sure that
15 everybody's aware that we raised this concern,
16 it's on the record. And in a way then it's
17 almost moving into the Work Group arena, so I
18 worry that --

19 MR. KATZ: I don't think we're
20 moving in -- I mean I think it's fine if you
21 come in and you say you don't understand how X

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 situation is being dealt with here and if they¹¹⁴
2 don't have an answer, I mean that ends up
3 being in your final report.

4 And they have a cue that they
5 better be ready at the Work Group meeting to
6 address because they already know you have
7 some concerns about something. I don't see
8 any problem in that.

9 MEMBER MELIUS: Or if NIOSH/ORAU
10 agrees then they can be working to resolve it
11 and --

12 MR. KATZ: Absolutely.

13 MR. HINNEFELD: Come to the meeting
14 saying get --

15 MR. KATZ: That's right.

16 MEMBER MELIUS: This is what --
17 it's not --

18 MR. KATZ: You don't have to argue
19 and arm wrestle, it's just --

20 (Simultaneous speakers.)

21 MR. HINNEFELD: Yes, we're pretty

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 much leaving those days behind. 115

2 MR. DARNELL: In the past there
3 were concerns about independence of this
4 between SC&A and NIOSH.

5 MR. HINNEFELD: Yes, that's come up
6 periodically.

7 MR. DARNELL: Okay.

8 MR. HINNEFELD: But if these
9 explanatory I mean, these technical
10 conversations can be so much more helpful than
11 just showing up down here.

12 MR. DARNELL: I agree
13 wholeheartedly. I just wanted to make sure
14 we're not crossing that independence thing.

15 MEMBER MELIUS: No, as long as the
16 Work Group knows that it's occurring and
17 secondly that there's a record of the call.

18 Dr. MAURO: All right, you got it.

19 (Simultaneous speakers.)

20 Dr. MAURO: I mean, Gen, you've been
21 on so many --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 MEMBER BEACH: We can listen -- ^{it}~~it~~
2 moves it along.

3 MR. KATZ: People listening could
4 ask questions, whatever.

5 MEMBER MELIUS: Or if you're not on
6 the line you could get the memo and if there's
7 something outrageous or wrong or whatever
8 then, you know.

9 MR. KATZ: Right.

10 MEMBER BEACH: So, Pete, I have a
11 question. Your responses are all based on the
12 new Site Profile Review that came out in
13 April, is that correct?

14 MR. DARNELL: Yes. It's --
15 information.

16 MEMBER BEACH: And the issues were
17 based on the old Site Profile?

18 MR. DARNELL: Correct.

19 MEMBER BEACH: Okay. I just wanted
20 to make sure --

21 MR. GLECKLER: The most recent

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 version that was released. 117

2 MEMBER BEACH: -- that you actually

3 --

4 MR. GLECKLER: Only the external
5 one came out in April, all the others came out
6 prior to that.

7 MEMBER BEACH: How much prior?
8 They came out since our last meeting?

9 MR. GLECKLER: Yes.

10 MS. JENKINS: The internal came out
11 in March of 2010, roughly.

12 MEMBER BEACH: Right.

13 MR. GLECKLER: Going back there --

14 MS. JENKINS: Actually it was
15 January of 2010, external was May of this
16 year. Site description was August of last
17 year.

18 Oh, Environmental was February of
19 last year. Those are the dates that we have
20 on the network as far as when they get there.

21 Because the dates probably on the actual

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 reports tend to vary a little bit. 118

2 MEMBER BEACH: Thank you.

3 CHAIRMAN SCHOFIELD: Based on what
4 they have in the TBD there looks like the,
5 whether this has any effect I don't know,
6 that's why I'm asking this question.
7 Basically when they're doing these fuel rods,
8 running them back through and reprocessing
9 this stuff.

10 It seems they've had three
11 campaigns of highly enriched uranium,
12 neptunium and RaLa Programs. Now how that's
13 going to effect these people who had a in vivo
14 done or who maybe were missed, I don't know
15 if, is that going to have any real effect on
16 them?

17 MR. GLECKLER: From what I've seen
18 the ones during the RaLa release incidents is
19 like they'll send a whole group in for
20 bioassay and then depending on whether they're
21 positive or negative, a lot of them had really

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 high positives for iodine. 119

2 And most of those intakes for the
3 RaLa work it's like were real high positive
4 iodine, or real high iodine intakes, and they
5 very short lived. And then it shows they'll
6 take a whole series of subsequent bioassays
7 after that in the subsequent days and it drops
8 off really quick.

9 So there's no indication that
10 there's anything longer lived, like cesium and
11 that present. So for those instances we could
12 actually limit those acute intakes to just
13 iodine. Because they've -- the site has in
14 most cases gone in and written in what
15 specific isotopes.

16 And I think they'll do a gamma spec
17 on the urine sample in most instances when
18 there's, especially when there's a significant
19 bioassay result and that they'll typically go
20 in and do a gamma spec on it and determine
21 which nuclides are the culprits, so to speak

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 and then -- 120

2 DR. MAURO: Yes, and you track that
3 and watch the iodine go away and then you can
4 start to see there's a urine sample where
5 you're doing gamma spec and the iodine starts
6 to go away, as expected, and what's left
7 behind would be some of the lesser amounts for
8 possibly important radionuclides, like
9 cesium.

10 So the process, because you could
11 almost see the iodine swapping your count.

12 MR. GLECKLER: And I've only seen
13 one incidence to where the iodine tailed off
14 and then you could definitely tell that there
15 is cesium there.

16 DR. MAURO: There's always cesium
17 when you have iodine.

18 MR. GLECKLER: Well most of these
19 instances it drops below detection --

20 DR. MAURO: Right off the radar.

21 MR. GLECKLER: It drops right below

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 the detection limit within a couple days. ~~And~~
121
2 if there's any cesium there you should be able
3 to see it.

4 DR. MAURO: You should see it.

5 MR. GLECKLER: Should be able to
6 see it there for quite a bit longer.

7 DR. MAURO: Well I was thinking
8 that maybe the iodine was just like a thyroid
9 count but it's not.

10 MR. GLECKLER: No this is
11 typically, I think that's the gross beta and
12 gross gamma in here and there, it's one of
13 those two areas.

14 But I think it's the end of the
15 gross beta in urine era and the beginning of
16 the gross gamma in the urine era is typically
17 where most of those RaLa runs were done.

18 And so I think a lot of it's gross
19 gamma now that I think about it. But you see
20 it in the bioassay results tail off within a
21 couple days on that so there's --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. MAURO: There wasn't a gamma¹²²
2 spec on this, this is just a gross? The gross
3 count.

4 MR. GLECKLER: Yes, they'll just do
5 a gross count. But in instances they'll do,
6 when they're real high, they'll do a gamma
7 spec and label, they won't give you the gamma
8 spec result. It looks like they're just using
9 the gamma spec to identify the nuclide.

10 DR. MAURO: Okay.

11 MR. GLECKLER: And they'll have in
12 the record they'll write down what isotope.

13 DR. MAURO: Yes, what peaks they
14 saw.

15 MR. GLECKLER: That they saw, and
16 typically it's one of the iodines. Almost
17 always especially if it's -- and there's
18 usually an incident report for the RaLa runs
19 or incidents.

20 And for the routine stuff you don't
21 tend to see as many incident reports with

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 positive bioassays, the real big incidents you¹²³
2 do definitely see the incident reports for.

3 But you'll see whole groups in the,
4 even though they redact out the names of the
5 other individuals, well we've got the
6 unredacted data too, it's like in the database
7 now. It's like in the exposure reports for
8 individuals you'll see that they sent a whole
9 group in.

10 And the whole group's got a lot of
11 significant positive bioassay results on that.

12 So they're not just sending one worker in
13 because of a workplace indicator, they're
14 sending in groups of people that were in the
15 affected area, and they typically show up on
16 the same bioassay card.

17 MEMBER MELIUS: Can I ask a
18 different sort of global question just so I
19 understand? This new profile incorporates
20 Argonne West.

21 Is there any differences in terms

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 of operations or worker, you know, types ^{of} ~~124~~
2 workers that are covered or something like
3 that? Because I think that makes some
4 difference in terms of what we would have SC&A
5 do, that's --

6 MR. GLECKLER: Originally the Site
7 Profile included ANL West, we just recombined
8 it.

9 MEMBER MELIUS: Okay.

10 MR. GLECKLER: Because they were so
11 closely related to where they had, you know,
12 pretty much the same radiological control
13 organization up until the very later years I
14 think they were a little more separate.

15 And then once Argonne West
16 basically has since disappeared and got
17 reincorporated into the site also, it's now
18 all part of the same health physics
19 organization or radiological control, so.

20 MEMBER MELIUS: And so
21 operationally it's always been --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. GLECKLER: The same -- 125

2 MEMBER MELIUS: Okay.

3 MR. HINNEFELD: Argonne West has
4 their own series of reactors, right?

5 MR. GLECKLER: Yes, they had their
6 own facilities.

7 MR. HINNEFELD: Yes, their own
8 facilities, they were reactor things like INL
9 had?

10 MR. GLECKLER: Yes.

11 MR. HINNEFELD: Different design of
12 the reactors but it was reactors but it was
13 reactor technology, basically.

14 MEMBER MELIUS: And the workforces
15 were, sorry, to some extent combined, I mean
16 in the --

17 MR. GLECKLER: Yes, you'll see like
18 maintenance workers are probably the best
19 example. Most of the maintenance workers work
20 out of the CFA.

21 They'll send maintenance workers,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 and the same maintenance worker will go to the ¹²⁶
2 ICPP as they'll send over to the ANL West at
3 times on that. So even other -- you'll see
4 them going to all the facilities out on the
5 site.

6 MEMBER MELIUS: I didn't think that
7 was our rationale then for combining --

8 MR. HINNEFELD: Yes that and
9 combined rate.

10 MEMBER MELIUS: Okay. I'm just
11 trying to remember a few --

12 CHAIRMAN SCHOFIELD: It looks like
13 on Number 4 that's SC&A's action items.

14 MR. KATZ: Right.

15 CHAIRMAN SCHOFIELD: We've got
16 OTIB-54 and how it's defined.

17 DR. MAURO: Oh yes. Absolutely.
18 Yes, we'll definitely take that.

19 CHAIRMAN SCHOFIELD: When the
20 internals, new internals come out.

21 MR. KATZ: Anybody need a break?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER BEACH: Sure. 127

2 MS. JENKINS: Sounds like a good
3 place.

4 MR. KATZ: So should we take a
5 break until 11:00?

6 Okay folks on the phone, we'll just
7 break until 11:00, so just put the phone --

8 (Whereupon, the above-entitled matter went off
9 the record at 10:46 a.m. and
10 resumed at 11:07 a.m.)

11 MR. KATZ: Okay. This is the INL
12 Work Group. We're reconvening after a break,
13 sorry it's a little bit longer than we
14 expected. Phil, where are we?

15 CHAIRMAN SCHOFIELD: One quick
16 issue here. I know that's one concern about
17 the high-risk jobs. I think for the most part
18 we've kind of addressed where SC&A and NIOSH
19 need to look because this, there again, goes
20 back to the internal possible missed doses on
21 Comment Number 5. Anybody have any feelings

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 on that? 128

2 MR. GLECKLER: Other than the
3 bioassay data it looks like they routinely
4 sent people in to submit bioassays or have
5 whole body counts when there was a workplace
6 indicators that indicated that they had a
7 potential exposure and that the vast majority
8 of those bioassay results were below the
9 detection limits.

10 DR. MAURO: We're going to look at
11 it. You miss those you've got a problem. I
12 mean we're --

13 DR. TAULBEE: Okay. So it's kind
14 of covered then under your review of internal?

15 MR. KATZ: TBD.

16 DR. TAULBEE: Okay.

17 CHAIRMAN SCHOFIELD: Okay. This is
18 an area where I've got admit I'm a little
19 short on, is the calibration of the
20 instrumentation and stuff, and accuracy in
21 calibrations.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 How they were done. I mean that
2 was a deficiency in the Tiger Team reports
3 which I think most of us throughout facility
4 got nailed on that, I think, in many ways.

5 DR. MAURO: Just a real quick
6 question. Pete, your response is that the
7 problems that Tiger Team identified regarding
8 calibration, et cetera, really are independent
9 of the issues that we're dealing with here. I
10 guess just a minute or two on why that
11 independence exists. For whoever, you know.

12 You would normally think that if
13 the Tiger Team challenged the validity of
14 calibration, low limits of detection, whatever
15 techniques it was, that that would have an
16 effect on the reliability of the data.

17 MR. DARNELL: Well, I'm trying to
18 go off of memory, I don't remember exactly why
19 I wrote this, looking back over the original
20 draft. I believe it had something to do with
21 the CFRs that were cited for that Tiger Team

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 report. 130

2 This 48, 50, which neither of CFR
3 48 and 50, neither of which have anything to
4 do with rad protection aspects. It had more
5 to do with generalized, yes, CFR 50 and 48,
6 excuse me, 40 CFR 50 and 58.

7 These are concerning primary
8 ambient air quality standards. The
9 requirements for those type of equipment to
10 measure air quality standards differ than the
11 --

12 DR. MAURO: Oh this has nothing
13 with bioassay data then? I mean because
14 really if there's an issue on bioassay and the
15 methodology used, that would fall within the
16 purview of the group.

17 MR. DARNELL: You're talking about
18 the CAMs right?

19 DR. MAURO: Okay. So you're inside
20 the plant? And so this is -- okay it has
21 nothing to do with the bioassay data, it has

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 everything to do with the continuous air
2 monitors and the validity of those data.

3 MR. DARNELL: Right.

4 DR. MAURO: If you're not using
5 continued air monitors but you're using
6 bioassay data we completely agree. Because we
7 would never use CAM data if we have bioassay
8 data.

9 It wouldn't hurt to look at the CAM
10 data to see if it's compatible with the
11 bioassay data, but I agree that that's not
12 your primary source of doing those
13 calculations.

14 CHAIRMAN SCHOFIELD: And that also
15 addresses the standards of the internal
16 dosimetry analytical equipment, too. It's not
17 just the monitors under Number 6, the CAMs and
18 stuff and the neutron detectors or whatever
19 instrumentation they're using. That almost
20 should be split into two different sections.

21 MS. JENKINS: I did the review of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 the site reports, I went back and looked ^{at} ₁₃₂
2 their dosimetry reports and their annual
3 assessment reports and other audits and looked
4 at the evaluation of the calibration and the
5 internal dosimetry program.

6 And they were found to be adequate,
7 it was all right. There were no, in other
8 audits, you know, in all the site assessments,
9 the program reviews, all of that over quite a
10 few years the program was deemed adequate as
11 far as calibration. You've got the
12 instrumentation and the implementation and all
13 that.

14 MR. DARNELL: One thing you have to
15 remember about Tiger Team reports, a lot of
16 the Tiger Teams were very much specifically
17 directed at one thing. Or they were going on
18 a, bad term to use, is witch hunt. But that's
19 really the idea. They were going after a
20 specific program or they were going after a
21 specific idea to go look at sites.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Usually didn't have the generalized¹³³
2 Tiger Team looking at everything. It was very
3 specific. And this particular Tiger Team
4 report, and I'm going off of memory now, I
5 apologize for that, was looking at air quality
6 type of stuff.

7 And even though they may have had
8 comments in this section where we're looking
9 at thyroid counters, whole body counters and
10 stuff it would more lean towards the standard
11 that had nothing to do with what we're using
12 the, putting in that data for. So we tend to
13 discount what that particular Tiger Team's
14 report says regarding these items.

15 DR. MAURO: We'll look at that.
16 That'll be part and parcel of what we'll look
17 at to put this to bed. If it turns out it's
18 irrelevant, it's irrelevant. That's all part
19 of internal dosimetry and reconstructing
20 internal doses.

21 MR. KATZ: SC&A will revisit it.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. MAURO: Yes, that's part ~~and~~¹³⁴
2 parcel with everything else we're doing.

3 CHAIRMAN SCHOFIELD: Number 7 about
4 the changes of internal dose limits. I think
5 we kind of have that covered under the
6 bioassay, Number 7 for missed doses? And the
7 MDA levels, what could have been missed. At
8 least that's my take on it.

9 MR. GLECKLER: Yes, because their
10 response was that the dose limits have no
11 impact on the missed doses.

12 DR. MAURO: I agree. I agree. The
13 only extent to which there's any relevance
14 here is that over time as the technology
15 changed so that the change in MDL, is there's
16 a change in MDL notwithstanding the limits. I
17 mean the limits are the limits.

18 They don't bear on whatever you're
19 doing, whether you're pulling a urine sample
20 or you're doing a whole body count, there's an
21 MDL and if you're getting non-detects with

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 that technology you deal with that information¹³⁵
2 in a way that is claimant favorable.

3 So we don't even look at that.
4 That's part and parcel again to all the
5 internal dosimetry questions. The fact that
6 the regs change doesn't really bear on
7 anything.

8 MR. GLECKLER: Right it might
9 change the monitoring frequency but --

10 MS. JENKINS: -- the internal TBD
11 has a table that they break down of the
12 applicable MDAs, and they are broken down by
13 time period. You can see how they change.

14 DR. MAURO: Now they could have
15 changed because of a change in the regulatory
16 structure, or whatever, that's fine. That
17 wouldn't be our driver for why we would do
18 this. We look at it solely from the point of
19 view of the change in the MDA and what effect
20 that might have in your coworker model and
21 your interpretation of the data. So I think

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 quite frankly we're covered, we're going ^{to} ~~to~~ ₁₃₆
2 look at that.

3 MEMBER BEACH: Well a couple of
4 questions came out earlier about the urine
5 samples, the time period, and how many people
6 were sampled, that 90,000 what it represents,
7 how many people. I think those related back
8 to Gen's questions.

9 MR. GLECKLER: Dose limits might
10 have some influence on monitoring frequency
11 but like with, probably not as much in the
12 case of the INL site because they tend to put
13 more on, you know, bioassay monitoring appears
14 to be more dependent on workplace indicators
15 and the need for the likelihood of an
16 individual being exposed for a given period of
17 time outside of -- if there wasn't any
18 workplace indicator that a lot of them were
19 not routinely monitored.

20 I mean if they were it wasn't any
21 more frequent than annual which is about the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 least frequent for a routine monitoring¹³⁷
2 program, what they call routine monitoring.
3 So it doesn't seem to influence the INL site's
4 monitoring frequency at all.

5 MR. DARNELL: And one thing, John,
6 that they had, in rereading the comment that
7 you guys made, it doesn't really talk about
8 MDLs, is that something else that the group is
9 going to be looking at? It's really just
10 asking about history.

11 DR. MAURO: Yes, I agree with you.
12 I mean that the comment really zeros in on
13 change of dose limits, and I agree that there
14 really is no -- and is the MDL and how it
15 changes over time that affects how you use
16 that information.

17 So the fact that the regulatory
18 limits change, my reaction is it doesn't
19 really -- I hate to say this, but I don't like
20 our Comment Number 7.

21 MR. GLECKLER: Do away with it?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. HINNEFELD: With respect to
2 Josie's question about number of people
3 monitored. Number of people from Gen's
4 question, I noted that on Number 4 as
5 something that we would try to answer.

6 And we can tell you the names, how
7 many people were monitored. The hard part
8 might be the denominator, you know, the people
9 that, that's not always apparent.

10 MR. GLECKLER: Yes I think that the
11 data we have we sorted that way.

12 MR. HINNEFELD: Okay.

13 CHAIRMAN SCHOFIELD: Given the
14 large number of contractors who have gone
15 through the INL is there any indication that
16 you've seen that changed from one contractor
17 to another?

18 MR. HINNEFELD: You mean the
19 companies providing the contractors change
20 from one --

21 CHAIRMAN SCHOFIELD: Yes, in other

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 words, did they, how would I say. Their¹³⁹
2 program they set it up so that maybe one
3 contractor felt this is, you know, people who
4 are likely to get less than 50 millirem per
5 year won't be badged or won't be on an in vivo
6 program.

7 Next contractor may come in and say
8 well anything under 100 millirem.

9 MR. HINNEFELD: When you're talking
10 about different contractors you're talking
11 about different prime contractors?

12 CHAIRMAN SCHOFIELD: Right,
13 different prime contractors and whether that
14 affected those numbers?

15 MR. GLECKLER: From what I've seen
16 in that on the data that I've reviewed and
17 all the numerous INL, ANL West claims that
18 I've reviewed and completed it's pretty much
19 seamless.

20 It's like by looking at the data
21 you can't tell that there's a contractor

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 transition other than maybe the format of the ¹⁴⁰
2 records might have changed.

3 The data for like the external
4 dosimetry, the format of that changes in
5 various eras, but you'll see that at any site
6 with the same contractor too, so it's hard to
7 tell. You know we haven't bothered to look.
8 But that's just a formatting thing, that's the
9 only thing that potentially could be evident.

10 But other than that the contractor
11 transitions, from our perspective, appear
12 seamless. There's nothing that stands out to
13 say, oh, this occurred starting this date
14 because this contractor took over the site.

15 MR. HINNEFELD: In other words you
16 didn't see like a 40 percent increase in the
17 number of bioassay samples one year when some
18 company or when a different contractor took
19 over.

20 MR. GLECKLER: Correct.

21 CHAIRMAN SCHOFIELD: Right, that's

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 what I'm talking about. And as far as the
2 calibration stuff wasn't AEC/ERTA/DOE
3 responsible for the --

4 (Simultaneous speakers.)

5 MR. HINNEFELD: It was the Russell
6 Laboratory that I thought had always run
7 radiation. Which is the AEC/DOE Laboratory,
8 I thought they always ran that.

9 CHAIRMAN SCHOFIELD: Well that was
10 my impression too, but I just, that's why I'm
11 trying to get a little clarification here.

12 MR. HINNEFELD: Yes, I know.

13 CHAIRMAN SCHOFIELD: That standard
14 was really being set by the Government.

15 MR. HINNEFELD: Yes.

16 CHAIRMAN SCHOFIELD: And basically
17 enforced because they were the ones doing the
18 calibration, the measurements of the film
19 badges and --

20 MR. HINNEFELD: Yes, from where I
21 sit they had a really good reputation too.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 I'd be interested in reading that Tiger Team
2 report, I mean I'll have to pull that out and
3 look the at it, because that puzzles me a
4 little bit that they would write those
5 findings up against Russell.

6 CHAIRMAN SCHOFIELD: I guess then
7 we'll go and take, hopefully, just a short
8 time for you to look at that. But otherwise I
9 think that's a closed issue.

10 DR. MAURO: Yes it's, to me, the
11 question that's posed is really off the table.

12 Yes, I would say that 7 is closed
13 and it's your answer that certainly we can
14 look at when you talk about MDLs. So the
15 question is posed really I don't think should
16 have been raised.

17 If anything should have been raised
18 is that, you know, how did the changing MDLs
19 affect your approach you're using to
20 reconstruct doses to workers as the MDLs
21 changed. That would be the issue and it

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 sounds like you have addressed that issue and ¹⁴³
2 we'll look at it.

3 CHAIRMAN SCHOFIELD: No problem.

4 MEMBER MELIUS: Yes but I think the
5 whole issue of the representativeness of the -
6 -

7 (Simultaneous speakers.)

8 DR. MAURO: That's the whole ball
9 game. That's the whole ball game, if you've
10 got, I mean, if those 90,000 urine samples cut
11 across every work category, time period, type
12 of operation that took place.

13 And it all is coming in in terms of
14 gross beta-gamma and then there is a bridge
15 built between, when I have gross beta-gamma in
16 this time period working in this facility how
17 do I use this information to reconstruct the
18 intake for that kind of work or doing that
19 job.

20 And you've got argument that's
21 bullet proof, it's over. But if it turns out

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 that you could have missed something important¹⁴⁴
2 because of the nature of that work you're not
3 going to see plutonium, or you're not going to
4 see this, well then you've got a problem. It
5 becomes that simple.

6 MR. GLECKLER: One think you will
7 not be able to get out of that data set is the
8 work category and what type of worker those
9 individuals were. You can sort them by name
10 but they don't say anything about occupation
11 or job site.

12 CHAIRMAN SCHOFIELD: You're
13 covering that under Number 4 right, Steve?

14 MR. HINNEFELD: Well we are
15 covering names. What we said we would do is
16 we would come up with how many people does
17 that represent, those 90,000 and change.
18 That's what we said we would do.

19 CHAIRMAN SCHOFIELD: Okay.

20 MEMBER MELIUS: Does it have work
21 area or something like that?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. GLECKLER: It does in most¹⁴⁵
2 instances it does define what major operating
3 area that the worker was working in. So we
4 can sort on that, but then there's a number of
5 those that are left blank.

6 So it's like you won't be able to
7 do a complete sort of, but we could also take
8 the number of ones that we don't have the area
9 for.

10 MEMBER MELIUS: Yes, let's have
11 them take a look at it.

12 DR. MAURO: That's how we always
13 start.

14 MEMBER MELIUS: Yes, just to start
15 with and then --

16 MR. GLECKLER: Because those
17 particular data sets are available in the
18 SRDB, they are not only partially sorted data
19 that was done to come up with these statistics
20 that are in the TBD and that and are in the
21 SRDB. So if you've got access to those SRDB

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 files you can look at those and even do you
2 own.

3 DR. MAURO: Right, that's what we
4 do on everyone of these.

5 MR. GLECKLER: Enough to just look
6 at the in the internal TBD where it says that
7 it will give the reference and back in the
8 reference section you give the SRB document
9 number and those are actually spreadsheets
10 now.

11 DR. MAURO: You know in the end we
12 create this box, I keep referring to it as
13 Rubik's cube thing, but we just try to see if
14 we can fill the boxes up. By time, type, job
15 category and facility. And say, okay, how
16 much data do you have in each one of those
17 boxes.

18 And there's absolute answer to it,
19 but if it looks like you have enough data
20 there to construct a coworker model where the
21 range of activities that took place. You

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 know, usually the problem you run into is that ¹⁴⁷
2 you don't know which box a person belongs to
3 and what do you do then.

4 MR. GLECKLER: Well the bigger
5 question is do we need to construct a coworker
6 model. The original TBD authors averted the
7 need to do that by coming up with what they
8 called the default missed dose approach.

9 And that's where the unmonitored
10 workers, if they any, positive external they
11 deemed that they likely got more of than the
12 environmental internal exposure so we'll give
13 them a missed down and they become
14 hypothetical bilaterally.

15 DR. MAURO: Yes you actually have a
16 procedure, I don't remember the number, where
17 you sort on that basis. Either you give them
18 the 95th percentile, you give them the median
19 or you give them the environmental. And this
20 is your fundamental approach to all workers
21 and it's actually a coworker model, in effect.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 And then as applied now ~~the~~¹⁴⁸
2 question always becomes is there a degree of
3 confidence that what box you're going to put
4 the worker in. That's always the problem you
5 always run into. It's not always easy to do
6 that.

7 But we first look at though whether
8 or not your 95th percentile, one of the things
9 that we're always concerned about it, okay,
10 here is the box that we call the up or down
11 guys.

12 So yes if we're going to put the
13 person into this box so we can try to
14 reconstruct his dose, are we confident that in
15 building that upper end case is it possible
16 you've missed some high-end exposures that
17 aren't captured by that distribution.

18 If that happens that's where things
19 start to collapse. When you're saying we
20 really don't know what the high ends were.

21 Because these, in a particular

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 category of worker, that was doing certain
2 kinds of activities that might have
3 experienced exposures that are not captured by
4 that distribution. And that's when we start
5 to run into problems.

6 But that happens more often in
7 older, this may go back in that to the 40s, it
8 may have that circumstance arise in the 40s, I
9 don't know, we'll see.

10 MR. GLECKLER: They'll specifically
11 still have claims of stuff like that, you
12 know, from the claimants that occurred.

13 It's like I know for INL there are
14 some claimants that have said that they were
15 involved with this major incident that's well
16 documented and has all these people that were
17 bioassayed but they specifically will state
18 that for some reason they weren't bioassayed
19 on that.

20 And so they identify that they were
21 identified in that study and it gets real

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 touchy of how you deal with that claim because¹⁵⁰
2 you don't have any real proof that they were
3 actually involved with that. Whereas that was
4 a heavily investigated incident in some
5 instances.

6 DR. MAURO: And is he part of that
7 group?

8 MR. GLECKLER: And that but they're
9 not listed in the names of individuals
10 involved in that incident or not bioassayed.

11 CHAIRMAN SCHOFIELD: So then you
12 always run into the problem in a lot of these
13 instances maybe the people are present at the
14 initial incident for bioassay where they were,
15 you know, checked out.

16 But then a lot of these people who
17 came in after the initial incident to do clean
18 up or to go in there when the levels might
19 still have been outrageously high or whatever,
20 aren't necessarily documented in that initial
21 group even though they were in there working.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. GLECKLER: That's a very ¹⁵¹
2 plausible scenario and from what I can tell
3 typically in instances where that might have
4 occurred they probably didn't bioassay them
5 because they had respiratory protect.

6 They went in, you know, they were
7 doing an accident response at that point to
8 where they made sure they had the proper
9 protection like respiratory protection and
10 stuff.

11 Whereas the ones that were
12 initially there when the incident occurred
13 it's like they didn't have the proper
14 protection in place. You know the engineering
15 control failed or they just weren't wearing
16 respirators at the time.

17 But the ones that responded would
18 have had proper respiratory protection. So
19 that's very likely why they might not have
20 been monitored but we don't have any way to
21 prove that that happened or didn't happen

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 actually. 152

2 You kind of can tell that that
3 might have happened by what people are seen in
4 their CATIs in the telephone interviews and
5 stuff. I think that's a distinct possibility.

6 DR. MAURO: Just as a quick aside
7 and then I'll let you move on. If those
8 92,000 urine samples all occurred post 1970
9 you realize you got a problem for the 40s, the
10 50s and the 60s.

11 DR. TAULBEE: They're all early.

12 MEMBER ROESSLER: It said 50s and
13 60s.

14 DR. MAURO: Oh they're all, you got
15 a whole body count?

16 MEMBER ROESSLER: Think it's up to
17 '65 which receipts the whole body counts.

18 DR. TAULBEE: I don't see many
19 after 1965, it dwindles off. They dwindle off
20 significantly after 1965. Then they go to
21 whole body counts.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIRMAN SCHOFIELD: So even though¹⁵³
2 the people, or workers, are on whole body
3 counts a lot of them were also on your
4 bioassay too? These ones on the two-prong
5 approach here. And they give urine samples
6 maybe quarterly or something or --

7 MR. GLECKLER: Initially a lot of
8 them were doing whole body counts and urine
9 monitoring on the workers, typically in that
10 area it was gross gamma in urine along with
11 whole body counts. And as time goes on it's
12 like the urine sampling dwindles off and it's
13 all whole body counts.

14 And from what I can tell, and this
15 is just from observing, you know, looking at
16 all the records they're basically just
17 building up their confidence level in a new
18 bioassay technique, which was the whole body
19 counting at the time.

20 And once they got their confidence
21 built up with that and realized that yes, it

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 confirmed that it's a much more sensitive¹⁵⁴
2 bioassay method and that to where they
3 eliminated the urine sampling for the most
4 part.

5 MEMBER ROESSLER: And everybody
6 prefers doing it that way. The worker and the
7 people that monitor.

8 MR. GLECKLER: Yes.

9 CHAIRMAN SCHOFIELD: Kind of
10 surprises me.

11 DR. TAULBEE: Well it's mixed
12 fission products. A big difference compared
13 to, you know, if you think of plutonium type
14 of operations you have a high missed dose --

15 (Simultaneous speakers.)

16 DR. TAULBEE: Right, exactly.

17 MR. HINNEFELD: You know, uranium -

18 -

19 (Simultaneous speakers.)

20 DR. TAULBEE: But on mixed fission
21 products you can. It's an easier way of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 measuring, and more accurate. 155

2 CHAIRMAN SCHOFIELD: Other kind of
3 problem is a canary in the coal mine that
4 maybe there's something there you need to take
5 a look at.

6 MR. HINNEFELD: I think what they
7 concluded and I think what I would judge to be
8 the case is in mixed fission product
9 environment can en vivo counter, or the whole
10 body counts, provides the, you do the
11 comparison for awhile and you recognize after
12 a while that that urine data is not telling
13 you anything that the in vivo count isn't.

14 And so after reaching that
15 conclusion they essentially did away with it.

16 To me an in vivo count in a mixed fission
17 product environment is pretty darn good
18 bioassay and is probably better than gross
19 gamma anyway.

20 CHAIRMAN SCHOFIELD: Was there any
21 indication that it was done more than annually

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 on, short of a person being involved in -- 156

2 MR. GLECKLER: Outside of annual
3 typically the only ones you'll see in the
4 records are specials and that which indicate
5 that there's a workplace indicator that
6 triggered it.

7 CHAIRMAN SCHOFIELD: So there is a
8 potential missed dose there.

9 MR. HINNEFELD: And that would be
10 in the dose reconstruct.

11 MR. GLECKLER: Yes.

12 MR. HINNEFELD: Dose reconstruction
13 would be that missed dose.

14 MR. GLECKLER: If all their
15 bioassays are negative they still get missed
16 dose on that, which is for fission products
17 it's typically much more significant to get
18 that chronic missed dose than the acute intake
19 of a fission product.

20 Usually we can, if a case is
21 potentially comp on that we can ignore the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 acute intakes because they don't amount ^{to} ~~to~~ ₁₅₇
2 anything on that.

3 A lot of times they're less than
4 one millirem on that for the year, total. Or
5 the accumulative dose for that acute intake
6 totals less than one millirem, it's a fairly
7 insignificant dose in a lot of instances.

8 CHAIRMAN SCHOFIELD: I'd have to
9 agree there.

10 MR. GLECKLER: So it's missed doses
11 that pack a pretty good whollop at INL based
12 on the MDA information.

13 CHAIRMAN SCHOFIELD: Okay. Well
14 that kind of answered my question. Going on
15 to Issue Number 8. The high fired plutonium
16 and uranium intakes. It looks like you've
17 already revised that?

18 MR. GLECKLER: In regards to
19 plutonium, yes.

20 CHAIRMAN SCHOFIELD: You got any
21 comments there?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. MAURO: Well yes, the fact that ¹⁵⁸
2 OTIB-49 or 47 covers it and we've reviewed it.

3 So I assume that you've just adopted that
4 protocol.

5 MR. GLECKLER: Exactly. And we
6 just, the TBD just now lists, or identifies
7 that Super S plutonium was a potential form of
8 plutonium at INL and needs to be evaluated in
9 terms with OTIB-49.

10 DR. MAURO: 49, and of course, as
11 always, the problem is who're you going to put
12 in that box and how do you determine who
13 you're going to assign that too. But that's
14 not a, you'll deal with that I guess.

15 You know, if you have any criteria
16 for circumstances under which, because usually
17 the high-fired occurs either because of this,
18 kind of, accident or fire --

19 MR. GLECKLER: It get's, that's
20 with everyone.

21 DR. MAURO: -- or the nature. Oh,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 everyone?

159

2 MR. GLECKLER: Yes.

3 DR. MAURO: Across the board?

4 (Simultaneous speakers.)

5 DR. MAURO: Yes, it's high-fired.

6 MR. GLECKLER: It's type M, type S
7 and Super S. We have to evaluate and use
8 whatever yields the highest for that
9 particular --

10 DR. MAURO: So you're doing this
11 the way you do the uranium, with the S or M or
12 --

13 MR. GLECKLER: Well for the uranium
14 I'm not really sure.

15 DR. MAURO: No, I just, let's go on
16 to uranium now.

17 MR. GLECKLER: Okay.

18 DR. MAURO: I have to say I seem to
19 recall that there are circumstances where you
20 get a high-fired uranium.

21 DR. OSTROW: This is Steve, I think

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 it was yesterday -- 160

2 DR. MAURO: Steve, yes. Please.

3 DR. OSTROW: I think it was a NIOSH
4 comment, what do you mean by high-fired
5 uranium, and apparently the Rover facilities
6 at the state's, where the state's programs
7 reprocessed graphite state reactor fuel and in
8 the process it resulted in the formation of
9 high-fired uranium oxide.

10 So that there was high-fired
11 uranium oxide at the site.

12 DR. TAULBEE: I talked with Dave
13 Allen yesterday about this particular issue
14 and he'd indicated that in other Work Groups
15 this is something that has been addressed and
16 so we can combine those former responses and
17 get back to you on this particular issue.

18 Dave indicated to me that really
19 ICRP 66 incorporates this, that it's the high-
20 fired uranium is effectively just type S it's
21 not a Super S scenario. But again we'll get

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 you the documentation on that. So we'll take
2 that action.

3 DR. OSTROW: Okay.

4 DR. MAURO: And I presume when that
5 comes in we have the green light to go ahead
6 and look at that because that's a little bit
7 separate from reviewing your -- because that's
8 currently in your TBD?

9 DR. TAULBEE: Correct.

10 MR. GLECKLER: Correct, it's not a
11 direct, yes we don't address anything other
12 than regular type S uranium.

13 CHAIRMAN SCHOFIELD: When they were
14 reprocessing this graphite, wasn't that with
15 238? Wouldn't that have been combined with PU
16 238, of the space program fuel? That's --

17 DR. TAULBEE: Which it was, 238
18 would be for RTGs but if this graphite uranium
19 was for some of the SNAP reactors those
20 wouldn't be RTGs, and so they could very well
21 be graphite uranium. I'm not that familiar

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 with this. 162

2 CHAIRMAN SCHOFIELD: So we don't
3 know which one of these are RTGs being brought
4 in to be reprocessed?

5 DR. OSTROW: No these are part of
6 the Rover which was actually a space reactor.

7 DR. TAULBEE: Yes, this would be a
8 space reactor, not an RTG.

9 CHAIRMAN SCHOFIELD: Oh, this is
10 not an RTG? Okay, none of the RTGs were also
11 being recycled too?

12 DR. TAULBEE: No.

13 DR. OSTROW: No.

14 DR. TAULBEE: You said that was
15 part of the Rover program?

16 DR. OSTROW: Yes.

17 DR. TAULBEE: Okay.

18 MR. GLECKLER: That's something
19 that was tested out at NTS I believe?

20 DR. TAULBEE: Most likely, yes.
21 I'm not sure where the Rover ones were tested

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 at. 163

2 MR. GLECKLER: Yes, I'm pretty sure

3 --

4 DR. TAULBEE: So if the fuel came
5 back at ICPP then --

6 MR. DARNELL: So on Comment 8,
7 plutonium's closed --

8 MR. HINNEFELD: Well I think we're
9 going to look at --

10 (Simultaneous speakers.)

11 MEMBER BEACH: So there's three
12 actions items out of there, SC&A has two and
13 NIOSH has one it looks like.

14 MR. HINNEFELD: What are the two
15 for SC&A?

16 MEMBER ROESSLER: SC&A was going to
17 look at OTIB-49 and then review --

18 MR. HINNEFELD: Oh, okay. Yes, I
19 kind of thought that was one. But, yes. To
20 review what we've done here in Item 4?

21 MEMBER ROESSLER: Yes.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 MR. HINNEFELD: Because 49 has been ¹⁶⁴
2 reviewed.

3 DR. MAURO: Yes, 49 has been
4 reviewed --

5 (Simultaneous speakers.)

6 DR. MAURO: -- within the context
7 of this application.

8 MEMBER ROESSLER: Within the
9 context of this.

10 MR. HINNEFELD: Yes.

11 DR. MAURO: And then after we get
12 some White Paper or feedback from NIOSH on
13 uranium we'll look at that? Okay.

14 CHAIRMAN SCHOFIELD: Okay. We're
15 on to Number 9 now?

16 DR. OSTROW: This is Steve. I
17 think the issue here were flakes of
18 radioactive material. Not the airborne
19 particles but actual flakes of object that may
20 land on the skin or face depending on the
21 person's job. And that wouldn't be picked up

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 by a, you know, a personal monitor. 165

2 MR. GLECKLER: So we'd be talking
3 about non-respirable particle sizes then?

4 DR. OSTROW: Yes.

5 DR. MAURO: This is an overarching
6 issue that's come up on a number of occasions,
7 where it's been NIOSH's position not to
8 calculate the dose to the spot under the skin
9 where there may have been a flake that landed
10 on it and caused the skin cancer.

11 The reason being that the people
12 were protected and that there were exit
13 monitoring related to that. I believe from
14 conversations, but nothing in writing, the
15 agreement was when you have a facility where
16 there was a lot of airborne particulates, and
17 a perfect example would be the Aircraft
18 Nuclear Propulsion Program, where a person
19 could have experienced particulates landing.

20 Now uranium's not as big a deal
21 because the dosimetry is such that you're not

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 going to really deliver some screamer. But
166
2 there are certain circumstances where you
3 could have a cobalt-60 particle.

4 I don't know. If it did land it
5 could contribute significantly to a localized
6 skin dose.

7 MR. GLECKLER: That's an external
8 dose.

9 DR. MAURO: And that's external.
10 So when I read, and, Steve, you help me help,
11 when I read this Comment Number 9, it sort of
12 reads about, at first it talks about this
13 direct facial skin contamination then moves on
14 to internal.

15 And I agree with NIOSH response
16 with respect to internal. That is they've got
17 internal covered to the extent, of course,
18 we're going to review that. But I agree with
19 you what you said, Steve, my greater concern
20 is what about we're now moving into external.

21 What about the particles that land

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 on the skin. And under what circumstances¹⁶⁷
2 does that have play when you're doing a PoC
3 for skin cancer? And whether or not that dose
4 can be an issue. This is a tough one. And
5 it's one that we've talked about on many
6 occasions.

7 And I don't think it's ever really
8 been resolved to a point where we say, okay,
9 here is NIOSH's policy, on what are we going
10 to do about situations where a person, yes,
11 could have experienced contaminant on his
12 neck, on his ear.

13 Because we're always seeing people
14 with skin cancer in the facial area, and
15 that's probably due to the sun, everybody
16 knows that.

17 But then again how do you rule out
18 the possibility that the guy working at the
19 Aircraft Nuclear Propulsion Program, you know,
20 this stuff is cooking.

21 I don't know what you do about that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 but it's certainly a legitimate question. ^{If} 168

2 I was person showing up with skin cancer I
3 would want to know an answer to that question.

4 How do you know that it wasn't due to the
5 particulates that landed on my skin?

6 MR. SMITH: This is Matt Smith,
7 with ORAU Team. And just for the record no
8 conflicts with INL. I've got a little bit of
9 input on that for the group to consider.

10 And that would be OTIB-17 does have
11 a section that discusses potential hot
12 particle dose, especially when you don't know
13 for sure.

14 In other words you have no skin
15 contamination report that shows a particle
16 landed or was found on the area of the skin
17 where the skin cancer was found.

18 So in other words it gives you a
19 way to do a distribution of dose based on the
20 area of the skin. So that's probably
21 something to consider when looking at this

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 particular item. 169

2 DR. MAURO: I'm sorry, is that
3 Matt?

4 MR. SMITH: Yes, it's Matthew
5 Smith.

6 DR. MAURO: Yes, Matt, I guess we
7 were thinking more of in terms of a person,
8 you know, the day is finished, he leaves.
9 There's no portal monitor that's checking him
10 out. And he could be carrying something on
11 his skin. Goes home, takes a shower, it maybe
12 goes away.

13 So you got this period of maybe
14 eight hours where there is this particle.
15 This is how I'm visualizing, on the skin
16 delivering a dose that no one knows about, and
17 is never recorded. Twenty years later he
18 shows up with a skin cancer on his neck.

19 And somebody asks the question,
20 well what makes you think that that skin
21 cancer at that location wasn't due to some

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 undetected particle that happened to fall ^{on} ~~170~~
2 the skin. Because we knew there was a lot of
3 that going on.

4 For example you know it was pretty
5 dirty at a lot of these sites. The Nevada
6 Test Site was one the places where this came
7 up and I know the Aircraft Nuclear Propulsion
8 Program can certainly be another place where
9 this issue could come up.

10 From time to time we see sites
11 where that was especially a concern. Airborne
12 particulates and not necessarily having an
13 exit monitoring program. You said something
14 that sounded like the tech, they knew that the
15 particle landed there. They knew where it was
16 and whether or not the cancer occurred there.

17 I misunderstood.

18 MR. SMITH: Well, more even a
19 situation where you lack the contamination
20 survey. So we're kind of talking the same
21 thing. In other words a situation where you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 have the potential for particles being
2 deposited on the skin, but you don't have
3 exact information.

4 You're also correct in developing,
5 you know, what is the residence time, that can
6 get to be tricky as well. And also knowing
7 the composition of that particle without some
8 additional information.

9 But the topic is discussed somewhat
10 in OTIB-17, and --

11 DR. MAURO: Yes, we reviewed OTIB-
12 17.

13 DR. SMITH: -- we know we've
14 applied it at sites like Hanford. In their
15 early years we've applied that methodology.
16 So just a little bit of input there for, you
17 know, formulating the path forward.

18 DR. TAULBEE: Well it sounds to me
19 like, you know, we initially read your comment
20 as being internal.

21 DR. MAURO: Right, and withdraw

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 that aspect of it. 172

2 DR. TAULBEE: And so this is
3 external, so I guess we should ask that you
4 look at OTIB-17, and this is how we apply it.

5 DR. MAURO: Well we have. We've
6 reviewed OTIB-17, and I don't recall, and I
7 have to say this issue was never resolved,
8 not our review of OTIB-17.

9 We'll certainly take another look
10 at it as a record with the Procedures Work
11 Group on this, and we've, but I've got to say
12 I don't recall this issue being resolved to
13 any degree in OTIB-17 review.

14 DR. TAULBEE: Well can we get a
15 revised comment then as to the concern?

16 DR. MAURO: We will revise our
17 comment.

18 DR. TAULBEE: Regarding that study
19 and address it.

20 MR. DARNELL: I have one question
21 here. Where you got this, mainly in regard to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the Aircraft Nuclear Propulsion Project ~~or~~ 173
2 someplace else?

3 If it's just the Aircraft Nuclear
4 Propulsion Project, we do have to remember
5 that the test requirements for doing those
6 included specific meteorological conditions,
7 so that whatever was put out by the test was
8 blown away from work force.

9 They actually stopped tests from
10 being conducted because meteorological
11 conditions changed, up until the last minute
12 they did that.

13 DR. MAURO: Yes, I was trying to
14 explain just something very conceptual. That
15 is, when we looked at so many Site Profiles
16 and the kinds of activities that took place,
17 we noticed that there were certain places and
18 I remember the Nevada Test Site was one, when
19 I think about the Aircraft Nuclear Propulsion
20 Program, where you're generating a lot of
21 airborne particulates that could be that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 small. 174

2 I mean they're, you know, in the
3 visible range, and that they could settle out
4 quickly, you know, that is blown up, and go
5 away and be dispersed.

6 They settle out locally and
7 quickly, and if a person isn't wearing proper
8 protective clothing it could easily settle on
9 the hands, the neck, the face, and that sort
10 of thing. So given that scenario, is a
11 realistic scenario at some sites under some
12 circumstances.

13 It's something that we felt needs
14 to be identified.

15 Yes, we have a situation here where
16 that is the scenario that could occur, and
17 that's confounded by the issue that there is
18 also some evidence that these people may not
19 have been monitored when they left. In other
20 words, they get the full scan to see if
21 there's any hot particles and, you know, and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 therefore they could've gone home with the
2 particle on them.

3 And I'd be the first to say even
4 then, okay, the person goes home, he's going
5 to take a shower. You know, so likely it's
6 going to be washed off.

7 MR. KATZ: I just have a question
8 because it seems like this has come up before,
9 the going home part and when you leave the
10 facility the exposure's no longer covered. Is
11 that not the case, because it's at such a
12 facility that your exposure is covered

13 MR. HINNEFELD: Dose at the facility
14 now, that is once you get to the point of
15 well, the particle landed while you were at
16 the facility but then when you walk home, then
17 the clock, you know the dose, start to
18 accumulate dose when you walk off of the
19 property, I don't know that anyone has
20 actually reached that judgment.

21 MR. MELIUS: I mean you could argue

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the same thing for any internal dose. 176

2 (Simultaneous speakers.)

3 DR. MAURO: No, no, we've got a
4 bioassay. We've got a bioassay.

5 (Simultaneous speakers.)

6 MR. HINNEFIELD: I think that an
7 approach might be here to find out what we can
8 about work controls at testing, because
9 realistically, you know, I was on the tour of
10 INL. We didn't see all of it.

11 We did see the engines out in the
12 air and they tested those out in the air.
13 But, you know, you go up there and ICPP has
14 got containment cells and operating corridors
15 and the fuel, you know, fuel reprocessing
16 facility went to, I forget what it's called
17 now, as people, you know, we walked down the
18 operating corridor in our street clothes. And
19 there were people there working in essentially
20 street clothes, and on the other side was, you
21 know, spent fuel on the send out that they

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 were dealing with. 177

2 So, you know, in terms of Idaho
3 there are I think a limited number of
4 situations, cell entries and these places.

5 Where you're going to have this
6 situation, as opposed to Fernald for instance,
7 or we'll say Weldon Spring, keeping out of
8 trouble, as opposed to Weldon Spring which is
9 a uranium foundry, which probably didn't have
10 any egress monitoring at any time during it's
11 existence, and uranium was treated like a
12 chemical and it was just kind of out there.

13 So in that instance you have
14 certainly a pretty significant potential for
15 people to have unidentified skin contamination
16 cancers.

17 Seems to me to be really, really a
18 different situation at INL, and I would just,
19 it'd kind of be interesting if we could
20 reconstruct, you know, work practices around
21 these jet engines or the nuclear engines, to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 determine whether or not this is really, you
2 know, you're going to have much life with that
3 there. Okay, because theoretically the plume
4 is, you know, if in fact things are what we
5 think the plume was being blown away from
6 workers as it ran --

7 DR. MAURO: These are particles are
8 --

9 DR. HINNEFELD: Well, those are
10 particles but they are going to blow the same
11 direction. They're going to blow the same
12 direction and then what do you do when the
13 people re-enter, when people had to re-enter
14 and examine the jet engine within some short
15 period of time afterwards. What controls were
16 done for that?

17 I mean that's sort of the question,
18 because it could be that they were dressed
19 down and had some pretty fresh monitoring.

20 So to me that's more the question
21 than to deal with the arithmetic of the dose.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. MAURO: I think the arithmetic¹⁷⁹
2 of the dose is easy. We've already done it.
3 We've done it parametrically up and down and
4 sideways. We could do it, you know, of our
5 skin or any kind of calc you could do it.

6 The real question is the scenario.
7 In other words, do we have an obligation to a
8 worker who worked at a facility, comes out
9 with skin cancer, and we say, well you fail?
10 Right now it's not as if the guy's wearing an
11 open-ended film badge, there's nothing there,
12 right.

13 Oh great, if there's nothing on the
14 film badge, well that means there's nothing
15 any place else. I find that hard to believe.

16
17 In other words, I find that it's,
18 you know, it may not have fallen on his film
19 badge because he already knew is, you know,
20 well we don't see any hot spots on the film
21 badge, you know. And one could argue, well

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 12 hours worth of exposure to one location,¹⁸¹
2 all of a sudden that dose is not small for
3 some particles. Uranium it turns out it's not
4 that big.

5 MR. HINNEFELD: Uranium?

6 DR. MAURO: Yes, but this has been
7 a concern we raised years ago, and really
8 we've never come to grips with it.

9 And it may be a generic issue,
10 that's something that has to be resolved here.

11 This may be one of these old global things
12 that needs to be dealt with. But I don't
13 think it has been yet.

14 DR. HINNEFELD: Yes. I think one
15 thing we should deal with if we're dealing
16 with it globally, is what kind of standards
17 are we going to use for triggering this kind
18 of dose restriction.

19 Is there far, there's some, you
20 know, a wide variety of work situations that
21 we're encountering at different facilities

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 over time, and so there's got to be some
2 constraints on there that's credible. It's
3 even credible terms.

4 CHAIRMAN SCHOFIELD: Okay. You can
5 get in contamination, and I say this from
6 having been there many times, without it
7 really showing up on your badge. But normally
8 when it is found or detected you don't sit
9 there and say, well it's, you know, it was
10 counting nearly 10 centimeters.

11 Technically speaking, if there is
12 even any record it will say, you know, skin
13 contamination found on left arm, left hand,
14 left side of their face and, you know, for
15 many times, and particularly the earlier years
16 before DOE regulations came, that was a simple
17 matter. You go away and you get it cleaned
18 up.

19 If it's all clean, that's good and
20 fine, there's no documentation anywhere about
21 this.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealgross.com

1 This is even true from a lot of the ¹⁸³
2 older guys who says, we never reported
3 anything unless we could not remove that
4 contamination, then it was reported.

5 MEMBER BEACH: Washed it off.

6 CHAIRMAN SCHOFIELD: What's that?

7 MEMBER BEACH: You just washed it
8 off on your own.

9 CHAIRMAN SCHOFIELD: Yes, you just
10 washed it off and went back to work, you know,
11 and --

12 MS. JENKINS: The general
13 contamination and hot particles are kind of
14 two different things.

15 CHAIRMAN SCHOFIELD: Yes, they are.
16 But I'm simply saying that even in where these
17 hot particles are a lot of times, say there is
18 a notation in somebody's file that, you know,
19 there was some found.

20 The problem with that is usually
21 they did not narrow it down to necessarily,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 they might have just said it was facial. And
184
2 they said, well actually it was on my ear not
3 the side of my face.

4 MS. JENKINS: Well I think that we
5 can, you know, if you had the skin cancer on
6 your face, and there was a facial
7 contamination with the hot particles mentioned
8 and it just said on the face, I think, you
9 know, we could just make the assumption that -
10 -

11 CHAIRMAN SCHOFIELD: It was at the
12 location.

13 MS. JENKINS: -- it was under the
14 particle. And we could, you know, do the
15 evaluation based, you know, they would give
16 you EPM per 100 or whatnot, and we could,
17 based on that we could run the calculations
18 and everything.

19 MR. DARNELL: And I think that's
20 pretty much the standard.

21 MS. JENKINS: Yes, if we know of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 something somewhere and it's in the vicinity¹⁸³
2 of the cancer, then we assume it's where the
3 cancer was.

4 DR. MAURO: And I agree with that
5 completely. And mine goes unfortunately to
6 the point where, there is no record that the
7 person had this contamination, but the
8 scenario was real. That is, it could've
9 occurred and it was missed. That's the one
10 that I brought up and am bringing up, and it's
11 a tough one deal with.

12 DR. TAULBEE: And that's what
13 you're going to flush out in this revised
14 comment for us?

15 DR. MAURO: Well what we'll do is
16 we'll just clarify. What I just said is going
17 to be what I'll write down. You just heard my
18 comment and I just fleshed it out. Certainly
19 if you need something in writing, we'll put it
20 down.

21 MR. KATZ: I thought one of the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 actions here, or the action here was to look¹⁸⁶
2 at the actual control processes used around
3 that.

4 DR. TAULBEE: And we will.

5 MR. KATZ: And that's the DCAS
6 action.

7 DR. MAURO: And that may make this
8 go away. I would say if you could demonstrate
9 that yes there was a, you know, a disciplined
10 program of monitoring people on a egress, and
11 that these were the steps that were followed,
12 as far as I'm concerned you put that to bed.

13 But if that program didn't exist,
14 then I think the concern is legitimate. That
15 is, you know, and I only use the Aircraft
16 Nuclear Propulsion Program as an example.
17 That intuitively to me sounds like one where
18 you could have a situation like that, maybe
19 not. But you understand the gist of my
20 concern here? I don't think --

21 DR. TAULBEE: Are there areas that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 have concerns? 187

2 DR. MAURO: I would look to you. I
3 mean I would say, you know, you look at the
4 operation practices at, you know, as Stu
5 mentioned, certainly at these AWE facilities
6 where they were grinding.

7 Now there was no doubt, people
8 probably were probably covered in the stuff.
9 Now, how much of it, but in those cases, you
10 would say that something would show up on a
11 film badge if they were wearing film badges,
12 but very often they weren't, because it's
13 everywhere.

14 And uranium, from our calculations
15 show even if it's a pretty large particle and
16 that you would do this, you know, what the
17 heck is that, you know, the dose under the
18 skin is not that high.

19 But listen, all I'm really saying
20 is that I think we just can't walk away from
21 the concern a person might have that listen, I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 got skin cancer. My film badge didn't show
188
2 any dose, but does that mean that I didn't
3 have stuff that fell on my face or my hands
4 that could've been responsible for my skin
5 cancer?

6 I think you've got to have an
7 answer and why you feel no, in your case we
8 don't think that that skin cancer was due to
9 some particles that might've fell on you.
10 Right now I don't think that answer is being
11 given.

12 MS. JENKINS: So we would look at
13 the site, determine which areas we feel, based
14 on the documentation, has a potential for this
15 to occur?

16 DR. MAURO: Yes.

17 MS. JENKINS: And then evaluate
18 those processes and how the controls were
19 implemented to see if it is a reasonable
20 scenario?

21 DR. MAURO: Yes. And then if you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 find out at the end of the process is that, ¹⁸⁹
2 holy mackerel, this could've happened here to
3 this guy.

4 DR. JENKINS: Then we have to say -
5 -

6 DR. MAURO: Then you have to say,
7 all right, how are we going to do his gross
8 calculation and his Probability of Causation?

9 But that, by the way, has always
10 been an enigma to me, a skin dose when it's
11 just a little spot.

12 And I talked to Dave Kocher about
13 this and he explained to me no, no, it's
14 trackable, and he explained it to me. And
15 I've got to say it was one of these kinds of
16 answers that I didn't quite get.

17 MR. HINNEFELD: Dave Kocher has
18 that affect on a lot of people.

19 DR. MAURO: Hey, I'm sure he's
20 right, don't get me wrong.

21 MR. HINNEFELD: Yes, I'm sure he's

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 right. I just don't know what he's saying, 190

2 DR. MAURO: It's one of his brain
3 teasers, you know.

4 CHAIRMAN SCHOFIELD: Going back to
5 Hanford we had a gentlemen speaking. I don't
6 remember if he was an electrician or he was a
7 pipe fitter, which it was, but he was talking
8 about them working on the outside of the
9 building, and he said there was these flakes
10 coming down.

11 Now whether they were paint peeling
12 off the stacks, whether it was corrosion, but
13 it turns out they actually had these chips of
14 material that were little flakes that were
15 falling down that it turns out they were hot.

16 MR. TAULBEE: Yes, hot particles.

17 CHAIRMAN SCHOFIELD: Yes, I mean
18 and it's not like, you know, if you're sitting
19 there testing the rover or something, you
20 know, or doing one of these nuclear propulsion
21 tests or Kiwi reactors or something.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 You know, this is a scenario where
2 these guys are working outside and they're not
3 expecting to be contaminated. They're not
4 wearing any kind of a face mask or anything,
5 but yet these hot particles are literally
6 raining down upon them. It was, true it's
7 unexpected.

8 MEMBER BEACH: Like REDOX?

9 CHAIRMAN SCHOFIELD: What?

10 MEMBER BEACH: REDOX? Did they say
11 what?

12 CHAIRMAN SCHOFIELD: And they
13 didn't turn out to be wearing radon something.

14 MEMBER BEACH: No, I said REDOX.

15 CHAIRMAN SCHOFIELD: Oh.

16 MEMBER BEACH: They had a fire in
17 contamination and they just locked it down and
18 went back to work. So years later the
19 particles just started coming off.

20 CHAIRMAN SCHOFIELD: Okay, yes,
21 because, you know, this gentleman talked about

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 them being out there and there was these¹⁹²
2 particles falling on them, and it turns out
3 they were --

4 MR. HINNEFELD: Was this at the
5 Chem Plant?

6 MEMBER BEACH: Yes, REDOX was a
7 Chem Plant.

8 MR. HINNEFELD: I think that's a
9 pretty well documented thing.

10 MEMBER BEACH: Yes I think so too.

11 MR. DARNELL: Yes, and you do
12 realize that visible flakes of something
13 falling on you is not a hot particle. Hot
14 particles are very small and with just --

15 CHAIRMAN SCHOFIELD: Right. All I
16 am saying is --

17 MR. DARNELL: -- the naked eye, you
18 don't see them.

19 CHAIRMAN SCHOFIELD: Yes, but
20 these, I mean, you know, you could have that
21 same type scenario, particles small enough

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 they are not noticing them. 193

2 But in this case they were
3 actually, you know, corrosion from pipe
4 buildup, whatever that particular particle
5 was, he did not know. But he did know when
6 they actually started measuring, these guys
7 were contaminated from these fallouts.

8 MR. HINNEFELD: Snowflakes.

9 MR. DARNELL: Snowflakes.

10 CHAIRMAN SCHOFIELD: Yes,
11 snowflakes, you know. And they were not
12 expected to be, you know, the reason they
13 didn't have any, you know, face masks on or
14 anything, they weren't supposed to be being
15 exposed, but it did happen to these gentlemen.

16 MR. SMITH: And this is Matthew
17 Smith again.

18 On those claims we definitely, this
19 is where we use that methodology from OTIB-17,
20 along with the information that's in the
21 Hanford Site Profile documents, to put it all

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 together and give a kind of a distribution¹⁹⁴
2 what that possible dose could've been to a
3 skin cancer.

4 There's no way to prove whether or
5 not that flake landed on that skin cancer spot
6 or not, so we worked it up as a probability
7 estimate.

8 CHAIRMAN SCHOFIELD: I'm sure Chem
9 Plant had corrosion within those stacks. I
10 mean this is --

11 MR. HINNEFELD: There is a well
12 documented event at the Chem Plant.

13 CHAIRMAN SCHOFIELD: You've got
14 some pretty nasty chemicals inside there. And
15 I know this is not just a problem at Hanford.

16 I know they had to replace the stacks in Los
17 Alamos because of material eating them up.

18 DR. TAULBEE: Yes, and the hot
19 particle issue is actually multiple sites. I
20 mean Savannah River has a measurement, we have
21 so many hot particles per square foot. They

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 had pans set out to measure it, so it's well
195
2 known.

3 DR. MAURO: Well Matt makes an
4 important point. He's saying that there is
5 the protocol to NIOSH to deal with this issue,
6 and they've been following the protocol. It's
7 in OTIB-17, and I have to be the first to
8 admit I don't recall OTIB-17 having the
9 machinery in place to deal with this issue.

10 If it's okay with Ted, I would like
11 to take another look at OTIB-17, maybe we
12 missed it.

13 MR. KATZ: Absolutely.

14 DR. MAURO: Yes. And if it's
15 there, or if there's an aspect to it that
16 doesn't cover some of our concerns, we'll say,
17 yes it covers this, but it doesn't cover that.

18 So we have an action on it.

19 MR. GLECKLER: Do that as, I guess
20 part of your own action to revise the comment?

21 DR. MAURO: Yes, yes. This is --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. TAULBEE: And we'll start ¹⁹⁶
2 looking at the different facilities, and the
3 potential for these particles and the rad
4 monitoring.

5 MEMBER BEACH: So that includes the
6 work controls then?

7 DR. TAULBEE: Right.

8 MR. KATZ: It's probably a good
9 time to break. I know Dr. Melius has a,
10 unless we're close to the end?

11 MR. HINNEFELD: No, we're not close
12 to the end. I just wanted to ask if number 10
13 is going to go on very far, because 10 looks
14 to me like it should be done. The breathing
15 rate, occupational breathing rate. To me --

16 DR. MAURO: Oh, let that go. Let
17 that go.

18 DR. OSTROW: This is Steve. I
19 think this is not an issue. We've discussed
20 this before and I think it's closed now.

21 MR. KATZ: Issue 10 is closed?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. OSTROW: It's closed. 197

2 DR. MAURO: Any more like that?

3 MR. HINNEFELD: No, I'm sorry.

4 That's my entire contribution of the day. The
5 entire conference, the entire useful
6 contribution of the day.

7 MR. KATZ: Dr. Melius has a call
8 now for probably at least an hour or so. It
9 might be a good time to break then if good
10 with everyone else.

11 MEMBER ROESSLER: Can we leave our
12 computers in here?

13 MR. KATZ: Yes, we'll just lock the
14 door, pull the door closed, unless someone's
15 staying in here for lunch.

16 (Whereupon, the above-entitled
17 matter went of the record at 12:05 p.m. and
18 resumed at 1:00 p.m.)

19 MR. KATZ: We're reconvening. This is the INL
20 Work Group after lunch break.

21 And let me just check on the line

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 and see, in particular, Steve Ostrow, do we

2 have you with us?

3 DR. OSTROW: I'm here, Ted, thank
4 you for asking.

5 MR. KATZ: Great. Okay, then Phil?

6 CHAIRMAN SCHOFIELD: Okay, we're
7 now on number 11. This is about the
8 background depleted uranium for non-
9 occupational workers. I guess I'm going to
10 turn this one over to Pete.

11 MR. DARNELL: Sorry, I'm re-reading
12 it.

13 CHAIRMAN SCHOFIELD: Oh, okay.

14 DR. TAULBEE: I guess I would have
15 a question for SC&A a little bit on this one
16 of, is the proposal from the comment that we
17 should get urine excretion data from non-INL
18 people in Idaho Falls?

19 DR. MAURO: Steve, do you want to
20 take a run at this or do you want me to take a
21 shot?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. OSTROW: Okay. I'll take¹⁹⁹
2 run.

3 DR. MAURO: Thank you.

4 DR. OSTROW: That was our original
5 idea. What I understand from the background
6 information is that at some point there was an
7 attempt made to get data from offsite people
8 to do the comparison, but these offsite people
9 didn't cooperate so it wasn't able to do that.

10 So the plan B was to get data from
11 people on the site who weren't exposed to the
12 DU, and use that as the background level for
13 non-exposed people.

14 And we were questioning whether
15 this was actually a valid approach, because we
16 thought that everybody on the site was exposed
17 to some level of DU over the years. That was
18 our basic concern.

19 John, do you have anything to add
20 to that?

21 DR. MAURO: Yes, my understanding

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 was if you're going to, you want to subtract²⁰⁰
2 background, and since everyone carries a
3 little bit of uranium, when you do your dose
4 reconstruction for a person at INL, and you
5 have your urine bioassay data and you get a
6 positive result, you would subtract from it
7 the normal background, which would be about
8 0.05 micrograms per liter, but 0.16 micrograms
9 per liter was what was subtracted.

10 So I guess, but your position is
11 no, 0.16 is the right number as to your
12 reference value in ICRP?

13 DR. TAULBEE: Right.

14 DR. MAURO: That being the case, I
15 guess we're okay. We may have been incorrect
16 thinking that the 0.04 to 0.5 would've been
17 typical of reference man, but maybe we were
18 wrong.

19 DR. OSTROW: Well, that could be.
20 I haven't had a chance to check the ICRP for
21 the NIOSH comments.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. MAURO: I mean, that was ^{my}~~201~~
2 understanding, that we were imposing on,
3 saying that 0.16 was too much to subtract. We
4 could've been wrong. I didn't check it. I
5 can't say that one way or the other that I
6 checked ICRP to see what the recommended
7 default values are for a typical, you know,
8 person with, everyone has some uranium in
9 urine.

10 MR. DARNELL: So the action on this
11 would be for you guys to go look it up?

12 DR. OSTROW: Well, I suggest that
13 we do a call with, we'll take a look at --

14 DR. MAURO: Go give Joyce a call.
15 She'll know in about one second.

16 DR. OSTROW: It's perfectly
17 reasonable to just close the issue. And we'll
18 take a look, but we'll take NIOSH's word that
19 --

20 DR. MAURO: Yes, yes.

21 CHAIRMAN SCHOFIELD: Okay, closed.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Okay, we're now at number 12, unmonitored²⁰²
2 workers potential displacements. The
3 resuspension, at least for the internal, I
4 think we've kind of already got that covered
5 from earlier.

6 DR. MAURO: Well, the answer here
7 is that you did do, the scenarios are
8 considered. In other words you did look into
9 resuspension exposures.

10 Okay. Was that something that was
11 always there and we just thought you didn't
12 but you did or is this something new? In
13 other words, the resuspension pathway, was
14 that always something that was in your --

15 MR. HINNEFELD: Well, now, there
16 are two situations. This is for, you know, if
17 you're using a coworker approach based on
18 monitored data -- make a copy. What did we
19 send here?

20 DR. MAURO: It has to do with
21 unmonitored workers.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. HINNEFELD: Yes, okay. 203

2 MR. GLECKLER: You've got two
3 categories of unmonitored workers. Ones that
4 were likely only exposed to environmental
5 internal levels of radioactivity. And ones
6 that were exposed to a higher level, which we
7 get a missed dose based on a hypothetical
8 bioassay result.

9 DR. MAURO: Yes.

10 MR. GLECKLER: Well, we might need
11 to address each one of those separately.

12 MEMBER BEACH: Well, this seems
13 real specific to me that it was from people
14 eating in a contaminated area that was
15 previously considered uncontaminated.

16 Is that from worker interviews, or
17 -- I guess I'm wondering where SC&A came up
18 with this issue.

19 DR. OSTROW: I believe I read, in
20 the last day or two, our entire Site Profile
21 Review from 2006.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 And if I recall correctly, this was ~~was~~²⁰⁴
2 from worker interviews with anecdotal that
3 they would be sitting, you know, outdoors
4 eating their lunch or it could've even been in
5 the lunchroom, whatever, and this was a
6 question.

7 They claim that -- they go through
8 an issue of, you know, breathing in
9 resuspended contamination when they were
10 eating in so-called clean areas.

11 MR. DARNELL: Something like this
12 occurring, you know, is going to be on a
13 worker-by-worker basis, basically. And that
14 type of scenario is accounted for when the
15 dose reconstructions are done.

16 I don't know that a TBD has to
17 address the scenario that some guy might've
18 been sitting in an office that two weeks later
19 is now a contaminated area, wondering if he
20 was eating contaminated food because he
21 happened to be sitting in there.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 That's something that every single²⁰⁵
2 time the dose reconstruction is done, that
3 type of thing has to be addressed in the dose
4 reconstruction. I don't know if that's
5 something that has to be in the TBD at all.

6 DR. MAURO: I would agree that, in
7 general, there's always a scenario of, you
8 know, a person's in an occupational setting,
9 he's exposed from airborne radioactivity due
10 to the occupation, it's the operation itself
11 and also to the residual radioactivity on
12 likely surfaces. And your standard approach
13 is to have both.

14 And usually the, you know, if you
15 have the bioassay data you're covered. If you
16 don't and you have air-sampling data, you're
17 covered.

18 So, you know, if it turns out you
19 don't have any data, though, on the person,
20 which means that okay, now we have to
21 reconstruct his dose and you have to consider

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 what are we going to assign to him? 206

2 One of the pathways, and you have
3 your standard methods for doing this is, we've
4 got residual radioactivity, you know what it
5 is in terms of becquerels per meter squared,
6 if you know what it is, and you assign a
7 resuspension factor, and of course we've had
8 some discussion on what that should be.

9 But it sounds like in this case
10 that, well, I guess you do. You're saying
11 that the scenarios are considered.

12 So you're saying that in your TBD
13 you do have circumstances where, guidance that
14 says if a person is unmonitored but possibly
15 could've been in an area that might've had
16 some residual radioactivity.

17 MR. DARNELL: It's actually stated
18 more, person's unmonitored, here's how you
19 calculate the internal dose if he had a
20 positive --

21 DR. MAURO: It was unmonitored.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. GLECKLER: Yes, unmonitored²⁰⁷
2 internal.

3 DR. MAURO: Right.

4 MR. DARNELL: Had a positive TLD
5 reading. Here's what you do if the guy,
6 different scenario, different type of thing,
7 here's what you do with the guy. It doesn't
8 specifically address someone sat down in an
9 area. It tells you what to do with how to do
10 the worker.

11 What I'm saying though is, this is
12 taking it to the next step, okay. In other
13 words, in the person's Computer-Assisted
14 Telephone Interview, he would say, I ate in
15 this one office and the day after I ate there
16 they said it was contaminated, you know, I got
17 exposure from that.

18 That would have to be addressed on
19 a case-by-case basis in the dose
20 reconstruction. There is no guidance to put
21 in the TBD for that, except guidance on how to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 handle the workers in general which is already ²⁰⁸
2 in there.

3 DR. MAURO: So you're saying that
4 in the circumstance where there's no reason to
5 believe that this person was exposed to any
6 airborne activity, whether direct or from
7 resuspension, you make that your guidance, and
8 you don't assign anything but an ambient?

9 MR. GLECKLER: Correct. If their
10 external doses are zero.

11 MR. MAURO: And if their external
12 doses are zero.

13 MR. GLECKLER: Zero, they only get
14 ambient.

15 DR. MAURO: But along comes a
16 person, let's say in his CATI. He says, but
17 wait a minute, I am concerned that maybe I may
18 have inhaled some radioactivity because of
19 this story.

20 MR. DARNELL: That would have to be
21 addressed in the --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 (Simultaneous speakers.) 209
2 DR. MAURO: I have to say, I'm
3 inclined to agree that that's a sensible way
4 to go. I don't know, Steve?
5 DR. OSTROW: I agree also.
6 DR. MAURO: Yes, let's withdraw
7 this. It's resolved.
8 DR. OSTROW: Okay.
9 DR. MAURO: Everybody else okay
10 with that? Yes, I'm sorry. I shouldn't be
11 speaking through -- when I say that I mean
12 SC&A sense on this.
13 MEMBER BEACH: Understand.
14 CHAIRMAN SCHOFIELD: But I think
15 NIOSH is agreeing with you so --
16 DR. MAURO: I apologize.
17 CHAIRMAN SCHOFIELD: -- no reason
18 to beat it around.
19 Okay, this next one's on the people
20 got a dose from naval reactor facility
21 workers. Thought this was a jurisdictional

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 issue. 210

2 MS. JENKINS: Can't do anything
3 about that.

4 CHAIRMAN SCHOFIELD: Unless there's
5 something that I don't understand.

6 DR. MAURO: Steve, correct me if
7 I'm wrong, though.

8 If a worker is not working for the
9 naval reactor facility, but a worker's working
10 for DOE or as a contractor, and somehow
11 receive some exposure because he happens to go
12 visit or do some maintenance work on behalf of
13 the naval reactor facility, I think that his
14 exposure of hazard --

15 MR. KATZ: It's not a covered
16 facility.

17 DR. MAURO: It's not a -- so any
18 exposures he might experience when he's on
19 assignment there --

20 MR. HINNEFELD: Is at NRF?

21 DR. MAURO: -- doesn't count.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 That's the end of the story, isn't it? 211

2 DR. OSTROW: Fine, good, close.

3 DR. MAURO: Okay.

4 MEMBER BEACH: It does say though
5 that if they are an NRF worker while
6 responding to an SL-1 accident, then they're
7 covered.

8 DR. MAURO: Oh, so go the other
9 direction.

10 (Simultaneous speakers.)

11 MR. HINNEFELD: Yes, there are
12 workers who work at the covered facility who
13 would be included.

14 DR. MAURO: Reverse, reverse.

15 MEMBER BEACH: So that part of it's
16 not captured in this comment.

17 MR. GLECKLER: We have encountered
18 that instance to where getting that dose, the
19 one case that I can think of specifically that
20 I was involved with, was like the individual
21 didn't have a SL-1 dosimeter, but there was a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 chance he might have taken his NRF dosimeter²¹²
2 with him when he went over to the S to
3 respond, he was an initial responder.

4 And contacting the NRF dosimetry
5 folks, you know, going through the DOE
6 dosimetry folks, that was a real bear, and
7 ultimately they would not give us that but we
8 finally got a response.

9 The only response that we finally
10 were able to get out of them is in regards to
11 that dose for that very specific time frame,
12 for that any dosimeter that covered the SL-1
13 accident time frame, you know, from January
14 3rd, '61, and that was that his doses were
15 indicative of his NRF exposures.

16 DR. MAURO: Oh, that was the
17 answer?

18 MR. GLECKLER: That was all we
19 could get out of them.

20 DR. MAURO: So you couldn't capture
21 any dose of that time period while he as at

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 SL-1? 213

2 MR. GLECKLER: Yes, they --

3 DR. MAURO: We could try.

4 MR. GLECKLER: So even if we needed
5 to count that data, it's like it's another
6 hurdle to be able to get it from the NRF
7 folks.

8 DR. OSTROW: What was the case with
9 that individual person? I'm curious. How did
10 you do a dose reconstruction if you only had
11 his exposure to the SL-1 accident? I
12 mean, how do you know whether the SL-1
13 accident caused the cancer or whether it was
14 exposure at NRF caused the cancer?

15 MR. GLECKLER: Oh, that we can't
16 determine.

17 MR. HINNEFELD: Well, from our
18 standpoint it's the same wash you face
19 everywhere else.

20 Program only considers, again, the
21 radiation exposure at a covered facility and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 if someone worked commercially, and maybe they²¹⁴
2 worked commercially for 30 years and they
3 worked two years at one of our facilities,
4 then 30 years of exposure doesn't count.

5 DR. OSTROW: Okay, that's true. I
6 understand it's the same type of situation.

7 DR. MAURO: So unless in this case
8 if they would've gotten back, you said no, you
9 know, there may've been a window of time where
10 he did experience some exposure while visiting
11 the SL-1 and that they could, somehow a number
12 could be put to that, you would've assigned to
13 that?

14 But right now the feedback was you
15 got was, there's nothing about this guy's
16 records that show his exposures are any
17 greater because he happened to have been at
18 SL-1.

19 MR. HINNEFELD: Right, right.

20 DR. MAURO: And I believe there's
21 nothing else, what else can you do?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER BEACH: So can we close ~~that~~²¹⁵
2 one?

3 DR. MAURO: Yes.

4 MEMBER BEACH: Okay, thank you.

5 CHAIRMAN SCHOFIELD: Number 14 on
6 the plutonium monitoring.

7 MR. GLECKLER: Yes, basically
8 plutonium, because plutonium wasn't separated
9 from the spent particulate fuel at INL.

10 It's like they relied heavily on
11 gross beta in urine, gross gamma in urine,
12 strontium in urine and whole body counts for
13 their bioassay program. And that which,
14 because the fission products were much more
15 readily detectable than what the plutonium
16 would be, they could use those easier to
17 perform analyses as an indication of an
18 intake.

19 And it's not until the later years
20 where they did start doing some Pu bioassay,
21 and typically what you see is that bioassay

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 data, there are a lot of false positives from ²¹⁶
2 the fecal sample results.

3 We got a lot of slightly detectable
4 Pu bioassays for fecal samples that aren't
5 detectable on any subsequent results, whereas
6 it should still be there if they had a real
7 intake. You don't see any real huge intakes,
8 they're just barely detectable results, if you
9 see any at all.

10 DR. OSTROW: Okay, this is Steve.
11 I'm a little bit confused because I thought
12 that some of the fuel at INL was reprocessed,
13 but you're saying that even then they didn't
14 separate out the plutonium?

15 MR. GLECKLER: Correct. That is
16 one thing that I encountered when I was
17 interviewing for my very first job with
18 Westinghouse, is I interviewed with some INL
19 folks and they were talking about the ICPP
20 facility and I say, oh, you're reprocessing
21 it, and they got very tense and irate.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 And it's like, no, we're ~~not~~²¹⁷
2 reprocessing, we're only extracting the
3 uranium, which, I guess, reprocessing implies
4 that they're also taking out the plutonium.

5 And that was a very -- I thought I
6 lost my opportunity to get my first job, but
7 fortunately they shuffled me over to the
8 Hanford folks who were the ones I wanted to
9 talk to anyhow.

10 (Laughter.)

11 But it's a very touchy subject,
12 from what I gathered back then. I find it
13 hard to believe that they've never separated
14 it, but I've looked high and low through the
15 documents and have always been on the lookout
16 for that and have not found anything to
17 indicate that they have, so, so far it checks
18 out.

19 CHAIRMAN SCHOFIELD: Well, one
20 thing, plutonium can be concentrated in the
21 leftover material after you remove the highly

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 enriched uranium. 218

2 MR. GLECKLER: It would still be in
3 the same concentration as what it was in the
4 mixed fuel, you're just extracting the uranium
5 out of the mixed fuel makers.

6 DR. TAULBEE: So you effectively
7 have the plutonium in the waste stream with
8 the mixed fission products, that ratio.

9 MR. GLECKLER: You have a little
10 bit that goes with the uranium and that's part
11 of the recycled uranium matrix, a mix, and
12 there's new things in the INL TBD that account
13 for the recycled uranium component.

14 DR. TAULBEE: The other thing to
15 consider here is that a lot of the uranium
16 they were reprocessing -- not reprocessing,
17 separating out, was enriched.

18 And so to be making plutonium, you
19 use more of a regular uranium-238. And so
20 this has got a much higher ratio at 235.

21 And so to get to the plutoniums,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 plutonium-239 in particular, is rather
2 difficult from that particular isotope, if
3 that's what you've got is mostly enriched
4 uranium.

5 So you have much less than what you
6 had at Hanford and Savannah River. That
7 concentration of plutonium in these fuels is
8 much smaller because of the enrichment.

9 DR. MAURO: The key here though is
10 that you've got your gross beta-gamma and
11 you're making an assumption regarding the mix,
12 which includes of course not only your beta-
13 gammas, but also includes your transuranics,
14 your plutoniums, everything else.

15 And so my position would be, okay,
16 in picking this mix given the variability and
17 uncertainty in what the mixes are from time to
18 time, place to place, or whatever, so there is
19 a variability here. Have you picked the mix
20 that is plausibly bounding for most workers?

21 I mean, really what you're saying

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 is did you pick like, especially if there's a
2 lot of variability. One of the things that we
3 would do if we were revisiting this question,
4 and maybe we did when we originally visited
5 it, was: what is the mix? And is it very
6 variable? And if it is very variable, did you
7 pick a mix that would be plausibly bounding
8 for all workers?

9 Because one of the problems we keep
10 running into over and over again is that, and
11 this is not really a criticism, it's just that
12 it's a mindset.

13 You look for the best number. This
14 is like a reasonable mix, yes, we've got a
15 reasonable mix here so it captures what we're
16 dealing with.

17 But that's not what we're doing.
18 What we're doing is picking the mix that we're
19 sure no individual got worse than that.

20 MR. GLECKLER: I can address that.
21 The approach that I put together for the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 actinides with INL, there's basically three²²¹
2 main types of fuel.

3 And they're identified by cladding
4 categories, where the bulk of the fuel that
5 was reprocessed at the ICPP was comprised of,
6 got aluminum-clad fuel, which it could come
7 from the NPR and TRA area reactors, then we've
8 got zirconium-clad fuel and stainless steel-
9 clad fuel.

10 And so we've got the mixture
11 information, we've got waste stream
12 characterization data for the ICPP for each of
13 those major fuel types. And that's where we
14 developed the ratios for the various
15 actinides from, and so with the INL TBD, we've
16 got actually four options.

17 Because we've got a maximizing
18 option on that, and it depends on where they
19 work, when they work there as far as for like
20 the reactor areas, the bulk of the reactor
21 areas at INL, like the MTR and such, they get

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the aluminum-clad fuel category. 222

2 If they worked at ANL West, they
3 get stainless-clad fuel ratios applied. On
4 the zirconium-clad fuel, ratios only really
5 come into play if they were naval type fuels
6 not at the ICPP. And if they worked with the
7 ICPP, you basically got to consider all three
8 cladding types after a certain date.

9 Prior to a certain date, they only
10 processed aluminum-clad fuels. But after that
11 certain point in time, I forget what the year
12 is, but it's identified in the TBD, that after
13 that point in time you have to consider all
14 fuel types.

15 And for an easy maximizing approach
16 I put in maximum values across the board, so
17 there's a maximum plutonium ratio amongst all
18 three cladding types. A maximum uranium
19 ratio, neptunium ratio and so on, for all
20 three of those cladding types, and they can
21 opt to use that set of ratios, that maximizing

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 set. 223

2 DR. MAURO: What about burn up?
3 There was I would imagine, the mix also is
4 affected by burn up?

5 MR. GLECKLER: Yes, it's based on
6 from burn up ratio. But it was -- I'm trying
7 to remember now. That goes into the document
8 or the INL document that we got that
9 information from.

10 DR. TAULBEE: All of this is in the
11 internal TBD, correct?

12 MR. GLECKLER: Correct.

13 DR. MAURO: And it's been there
14 from the beginning?

15 MR. GLECKLER: No. The actual
16 source document that I did use has been one of
17 the key references from the previous approach.
18 So I kept what that, one of their key
19 references.

20 That's from somewhere, I think
21 their original ratios that were just, you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 know, plutonium ratios, and I think they might²²⁴
2 have had a uranium ratio for certain areas and
3 certain years, but that was one of the key
4 documents that was used for that. So I kept
5 with that key reference.

6 DR. MAURO: I guess what I'm
7 looking toward is that -- the story you just
8 told is very cogent.

9 In other words, you looked at the
10 different types of fuel, and the different
11 burners, and on the basis of that and the data
12 that was presented to you in some source
13 documents, you picked a mix that you felt was
14 appropriate for different circumstances. And
15 then of course, the dose reconstructor is
16 giving you guidance on when to use what mix.
17 That would be the sensible thing to do.

18 Is that whole thing developed and
19 described in the original Site Profile, which
20 means that we probably shouldn't have made
21 this comment?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. GLECKLER: That was the problem²²⁵
2 with the originals. A lot of that wasn't, we
3 didn't have the documentation for those, you
4 know, it depended on what was in the original.

5 DR. MAURO: Got it. I would make a
6 recommendation that we should look at that.

7 MEMBER BEACH: I just wrote that
8 down.

9 CHAIRMAN SCHOFIELD: I had a
10 question on that.

11 EBR 1 and EBR 2, I don't remember
12 which one it is, one of them used what, I
13 think a three-meter fuel pin loading, and the
14 other one had used one-meter, I believe.

15 One of them was also being used a
16 lot for some test loadings of plutonium carbon
17 pellets and depleted uranium pellets. That
18 seems like to me it would definitely skew the
19 issue on the plutonium levels.

20 MR. GLECKLER: Yes, from what I --

21 CHAIRMAN SCHOFIELD: That was in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the '70s, I can tell you that much. 226

2 MR. GLECKLER: Yes, and from what I
3 can tell that was a relatively small time
4 frame in the operation of that reactor, if I'm
5 not mistaken.

6 And so, it's, you know, because
7 like all the fuel categories, ICPP processed a
8 lot of different fuels, some from other sites
9 even. And it's a wide variety and you'd have
10 to boil it down a little bit. And that is
11 like the, you know.

12 So we just went with what was the
13 major -- hopefully, you know, the basis that
14 I've put together now and hopefully
15 sufficiently documented will defend, you know,
16 what we did, the approach on the burn up
17 stuff, because I don't know if I've got, the
18 burn up stuff might be in my reference
19 material that I used, the basis for that.
20 It's somewhere.

21 DR. MAURO: This is John. It would

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 be helpful if any source documents that you
2 drew upon to come up with your mixes that may
3 not be in the Site Query Database, that be put
4 be in the Site Query Database so that we could
5 look at that, because we're going to look at
6 that.

7 MR. GLECKLER: Okay.

8 DR. MAURO: In other words, if
9 there's burn up information that played into
10 your decisions, we're going to need to look at
11 that.

12 MR. GLECKLER: Well, we don't have
13 the mix, the characterization data on the
14 other types of fuel from what I remember. I'm
15 not -- those are the main fuel types that they
16 characterized that the vast majority of the
17 fuel being processed at the ICPP at the time
18 or throughout its history.

19 And it's like we've got historical
20 information that shows what fuel types are
21 being categorized for the various years and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealgross.com

1 that throughout the ICPP's history. 228

2 That's how you can tell that, okay,
3 you know, the aluminum-clad, you know, prior
4 to these years was pretty much exclusively,
5 you know, processed at ICPP.

6 And then the later years, they
7 start handling all kinds of different cladding
8 or different fuel types with many different
9 cladding types and stuff.

10 But outside of having the detailed
11 characterization data, it might be difficult
12 to find anything on the other.

13 DR. MAURO: You know what it all
14 comes down to is, you know, what you used and
15 what your thinking was in terms of like,
16 listen, this is what I've got and this is the
17 assumptions I'm going to make, and why I feel
18 they're reasonable and we'll take a look at
19 it.

20 We realize that, you know, you're
21 never going to have complete information in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 trying to do something like this. And ^{the} ~~229~~
2 question becomes, given the information you do
3 have, you have to make certain assumptions.
4 And at some point you reach a place where you
5 know where it might be.

6 So put yourself in our shoes. What
7 we're looking at is, well, let's say you pick
8 a certain parts per million or whatever it is
9 of plutonium, relative to something else.

10 But there may have been scenarios
11 where workers could've been working with a
12 particular type of fuel, a typical degree of
13 burn up, where in theory, and this is
14 something where the nuclear physicists come in
15 with nuclear, you know, in theory you could've
16 had a very different mix at some period of
17 time, in some group of workers.

18 Well, that creates a problem.
19 Because it means that you really are going to
20 have a hard time saying, well, what would be
21 the upper end of the plutonium in that mix?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 So how do I interpret my gross beta-gamma
2 results?

3 I mean, that's all we really do,
4 it's nothing more complicated than that. We
5 look for scenarios that maybe you didn't have
6 the data, nobody's fault, it wasn't there.
7 But the scenario could have been real; there
8 may be enough evidence in the record that
9 these scenarios did occur.

10 And here's the judgment that we
11 always find ourselves making. Was the
12 scenario to such an extent that it's plausible
13 that a guy or a group of people could've
14 worked for an entire year with that type of
15 material, and how are we going to deal with
16 that?

17 You might have 99 percent of the
18 workers 99 percent of the time you've got it
19 cold. But there may be some real scenarios
20 where the real people could've been exposed
21 for an extended period of time, a year.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 And what are we going to do about²³¹
2 that, and is it important?

3 We would also ask the question,
4 well, all right, so we could've been off by a
5 few percent, you know. But if all of a
6 sudden you underestimate the dose to an organ
7 by the back of his head, because it could've
8 happened, you know, what do we do about that?

9 I mean, quite frankly, we're both
10 in the same boat, you know, trying to say,
11 what am I going to do about this guy, you
12 know, this time period for people who might've
13 worked on this material? And that's how we
14 look at it.

15 Any information you could give us
16 or put on the record that will help us
17 understand the rationale and the weaknesses
18 and the strengths to the approach you're
19 taking, and why maybe, when you look at the
20 whole picture, what you've done is reasonable
21 and bounding for just about everyone. I mean,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 you have to understand, we're not doing
2 anything different in your --

3 MR. GLECKLER: Yes, and hopefully
4 the revised internal TBD, it's like, we'll,
5 you know, answer all those questions. But
6 that's one of the key things that I tried to
7 do when I put together that basis is document
8 all the assumptions, or as many as I possibly
9 could that were, you know, that I thought
10 were, you know, everything that was important,
11 and hopefully that's been done.

12 One of the things that I would
13 recommend when you do look at that part of the
14 TBD and review that part, also look at the
15 references. Because we've had, I've put some
16 references like my spreadsheets that I used to
17 simplify the actinide list and that are out in
18 the SRDB now, and those are key parts of, you
19 know, the basis behind that approach.

20 DR. MAURO: It sounds like this is
21 one of those places where we're probably going

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 to be on the phone a little bit to understand²³³
2 your spreadsheet, the assumptions you made and
3 make sure we understand what you did.

4 Because the hardest part we
5 encounter very often is understanding what you
6 did and your rationale from the documentation.

7 You know, we spend 90 percent of our time
8 doing that and if there's anything we can do
9 to shorten that, so that we could put the, oh
10 okay, I see where they did it and why they did
11 it.

12 Then, amongst ourselves, it becomes
13 self-evident, wow, there is a problem here and
14 here's what it is. And we'll tell you that so
15 you know here's why, and then you can come
16 back and say, well, this is why we don't think
17 it's a problem.

18 Unfortunately, we spend too much
19 time trying to figure out what in fact you did
20 and why you did it because it's not always
21 well-documented. It's hard to pull the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 information out of it. 234

2 MR. GLECKLER: Well, there's always
3 the possibility of there is an exposure, you
4 know, some sort of a scenario out there that
5 wasn't, you know, thought of or planned for.

6 DR. MAURO: Yes, and there's no
7 doubt that's true. But then I think
8 reasonable people come to the point, well,
9 that scenario is just too obscure. And here's
10 where the Board comes in.

11 I mean, we get to a point where
12 there's a scenario that wasn't modeled, can't
13 be modeled, what do you do about it? And, you
14 know, then it becomes a judgment call. Is
15 that a showstopper, you know, and that's where
16 the Working Group has to get your best story,
17 and decide for themselves.

18 So we've got this as an action
19 item.

20 CHAIRMAN SCHOFIELD: Do you have a
21 good feel about when they were doing these

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 experimental fuel pin loadings using the EBR?
235

2 Like I said, I can't remember right now if
3 it's 1 or 2, and as far as the breeder reactor
4 program.

5 MR. GLECKLER: You asking me that,
6 or --

7 CHAIRMAN SCHOFIELD: Yes.

8 MR. GLECKLER: Okay.

9 CHAIRMAN SCHOFIELD: Do you have a
10 handle on that?

11 MR. GLECKLER: No, I can't --

12 CHAIRMAN SCHOFIELD: Because it
13 seems like that would change the amount of
14 plutonium in the mix.

15 MR. GLECKLER: Yes, I mean that's
16 something we could look into in more detail as
17 far as exactly when that was. And I know
18 there's not a whole lot of information out
19 there or at least I haven't, but I haven't
20 gone specifically searching the SRDB documents
21 for that sort of thing.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. MAURO: Phil, it sounds like
2 you have a lot of knowledge on these different
3 fuels most of the time and you're likely to
4 help us make sure that there's no holes there.

5 Because it's too easy to say, sounds like you
6 know about what went on to a level of
7 resolution that could identify scenarios that
8 might be important that haven't been
9 explicitly addressed, so we have one, you
10 know, help us out if you can.

11 CHAIRMAN SCHOFIELD: Okay. Anybody
12 got anything else on 15? Any comments, Jodi?

13 MS. JENKINS: No.

14 DR. MAURO: Is that 14?

15 CHAIRMAN SCHOFIELD: Yes, that's
16 14.

17 DR. MAURO: It's 14, okay.

18 CHAIRMAN SCHOFIELD: Okay, we're on
19 to number 15 now. This is dealing with the
20 SL-1 incident, potential from this, and
21 internal and external doses.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER ROESSLER: So has NIOSH -237
2 just read both of these, now has updated
3 information to come up with this conclusion
4 that they have significant dosimetry history,
5 or was there a misunderstanding by SC&A in the
6 first place there?

7 Sounds like NIOSH is saying yes, we
8 can do that because we do have the records,
9 and --

10 MR. DARNELL: Look at the list of
11 all personnel that were involved, the
12 dosimetry that was used, the whole gamut of
13 information on the accident.

14 MEMBER ROESSLER: Then how come
15 SC&A said that you don't have --

16 MR. DARNELL: I don't remember what
17 that revision said about it.

18 DR. MAURO: Steve, do you recall in
19 the original Site Profile that we reviewed,
20 where this comment emerged regarding concern
21 about adequacy and completeness of the SL-1

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 accident and the 1,000 rescue and clean^{up}₂₃₈
2 workers? I don't know, have you had a chance
3 to look at, when you said you did look at our
4 original review?

5 DR. OSTROW: John, I think the
6 original TBD we looked at covers SL-1, but we
7 thought it was sort of scanty. Possibly the
8 current TBD may have a lot more information on
9 it. I didn't compare the old TBD to the new
10 one.

11 But I think, I see what NIOSH is
12 saying in that we would have to take a good
13 look at the current, the data that was
14 covered.

15 DR. MAURO: Did you folks add a lot
16 of material in the new TBD on SL-1 or is it
17 basically the same as it originally was?

18 MR. GLECKLER: In regards to the
19 SL-1, it's pretty much unchanged.

20 DR. MAURO: Unchanged, okay.

21 MR. GLECKLER: Pretty much either

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the individuals were monitored for external²³⁹
2 dose or the site estimated the individual's
3 external dose based on one of the other
4 coworkers that was present and had a
5 dosimeter.

6 And typically bioassays were
7 performed on those for the initial responders.

8 It's like for the ones that, you know, the
9 post-accident type activities, it's like they
10 went in with respiratory protection and stuff
11 like that so they may not have performed
12 bioassays, but then they would've been
13 monitored for external.

14 You know, so we assume appropriate
15 monitoring was performed for the ones at post-
16 accident type activities that took place.

17 But if it's the initial responders
18 where there's only the potential for that type
19 of concern, and from what we can tell the site
20 estimated external doses for those
21 individuals, and we do --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 MS. JENKINS: If you have the data²⁴⁰
2 we just do it just like a regular dose
3 reconstruction.

4 DR. TAULBEE: And these doses are
5 high.

6 DR. MAURO: I mean, fair enough.
7 What you're saying is, you do not agree with
8 our comment.

9 Nothing's really changed. You
10 believe that you do have the data and we have
11 the statement here that says well, we think
12 the data may be deficient. And that's fine,
13 and the suggestion will be made that we should
14 take another look.

15 MEMBER BEACH: Take another look.

16 DR. MAURO: Take another look.
17 Shouldn't take too long to see whether, you
18 know, why did we say this in the first place.
19 Maybe we were wrong.

20 MEMBER MELIUS: Certainly we should
21 take a look at the metric used to estimate the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 coworker doses. 241

2 CHAIRMAN SCHOFIELD: Got a question
3 there on the --

4 MR. GLECKLER: Yes, but that's what
5 the site did. The coworker dose that we used
6 was the site's coworkers.

7 CHAIRMAN SCHOFIELD: Particularly
8 on the first responders in those first hours
9 and days, are there any documentation to show
10 there weren't many people present that weren't
11 monitored, at least externally?

12 MR. HINNEFELD: In the
13 documentation of the accident, if I recall,
14 there's a pretty clear write-up of the
15 accident, the night of the accident itself,
16 and who responded that night. That seems to
17 be pretty well -- that was reconstructed at
18 the time by the site.

19 And it was during that process,
20 during that investigation, I believe, that
21 this site estimated some of those responder

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 doses from the people who received the dose²⁴²
2 from the vantage of the people responded with
3 them. Isn't that how that happened?

4 CHAIRMAN SCHOFIELD: Okay, so the
5 later workers who came in later for the
6 deconstruction themselves to do clean-up and
7 stuff, were they all badged?

8 DR. TAULBEE: Yes.

9 MR. GLECKLER: Yes. There's no
10 reason why they wouldn't have been badged like
11 any other routine effort. You know, they're
12 doing a somewhat routine --

13 MR. HINNEFELD: Now in terms of, I
14 mean, this thing I think went on for months,
15 right?

16 MR. GLECKLER: Or longer.

17 MR. HINNEFELD: Now as far as I
18 know, we don't have a roster of all the people
19 who worked on it during the month or is that -
20 -

21 MR. DARNELL: We've got the roster

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 of who responded. 243

2 MR. GLECKLER: The initial
3 responders.

4 MR. DARNELL: But all of the
5 remaining activities, no, we don't have a
6 roster of all of those people.

7 MR. HINNEFELD: And so, you know,
8 the thought being that those people, you know,
9 at that point you have a known radiologic
10 situation. You are doing known radiologic
11 work and you're treating your people with
12 radiologic work. So, you know, there's badge,
13 then I don't know what the bioassay situation
14 is, but --

15 MR. GLECKLER: So you're dealing
16 with a planned activity for the post-accident
17 stuff versus the initial responders that was
18 an unplanned event, right?

19 CHAIRMAN SCHOFIELD: Okay, because
20 there has been at least one person make the
21 comment that their family member was one of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 those who responded in that initial group²⁴⁴
2 that they weren't badged.

3 MR. HINNEFELD: That I believe is
4 true. I believe that is true and that's why
5 they used the people that responded with the
6 badges for those people in order to
7 reconstruct the dose. The site did that at
8 the time of their investigation.

9 MR. GLECKLER: And their documents
10 do identify the names of the individuals that
11 were present.

12 DR. TAULBEE: And we've redone that
13 dose reconstruction for that particular -- I
14 think it's the one particular case that you
15 might be talking about.

16 CHAIRMAN SCHOFIELD: How did your
17 numbers come up against theirs?

18 DR. TAULBEE: Ours were much higher.

19 MR. HINNEFELD: Ours were much
20 higher than the site's.

21 MR. GLECKLER: And something to be

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 aware of too, just as a note. You know²⁴³
2 there's a lot of individuals that claim to be
3 initial responders. The DOE person that
4 provides us the dosimetry data for INL workers
5 says, last time I talked to them, they said,
6 yes, they're up to about 20 different
7 ambulance drivers so far.

8 MR. HINNEFELD: For the one
9 ambulance.

10 MR. GLECKLER: For the one
11 ambulance. I don't know how they could fit
12 all the drivers into the car, but -- so
13 there's quite a few people that kind of --

14 I think, you know, it probably
15 comes from claimants, you know, survivor-type
16 claimants, to where it's like, where the
17 original energy employee bragged up, you know,
18 their personal involvement some years ago, so
19 that's how they understood that, oh yes, they
20 were probably initial responder and stuff and
21 so it gets blown out of proportion.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 MR. HINNEFELD: There's a certain²⁴⁶
2 amount of lore about the history of that
3 specific ambulance, too.

4 DR. TAULBEE: To answer your
5 question about how we did that dose
6 reconstruction for that, based upon that
7 coworker data. It wasn't documented in the
8 TBD, it was documented in the individual dose
9 reconstruction because it only affects, I
10 believe there were seven people for which we
11 did not have data on, and so for those people
12 we do an individual dose reconstruction.

13 DR. MAURO: Okay. Was that
14 triggered by the CATI? What triggered it, you
15 said that --

16 DR. TAULBEE: Well, we have the
17 name of the people who went back into the
18 building.

19 DR. MAURO: Oh, I see.

20 (Simultaneous speakers.)

21 MR. GLECKLER: So it usually shows

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 up, I mean, just shows up. Usually anyone²⁴⁷
2 employed in 1961, the dose reconstructor is
3 going to look, you know, for SL-1 exposures
4 because that's a very good chance that, you
5 know, not a very good chance but a reasonable
6 chance that you can maybe work that as an easy
7 comp claim on that and make it go comp,
8 because you're going to get a decent amount of
9 external dose for that time frame.

10 In some instances, that's where
11 virtually all of their professional dose came
12 from is from that incident.

13 CHAIRMAN SCHOFIELD: Okay. Any
14 questions on that one? Okay, number 16.

15 MR. KATZ: So wait, for 15, just
16 to clarify, SC&A's going to take another look
17 at the --

18 MR. HINNEFELD: Yes, clarify the
19 basis for their comment. If they're getting
20 caught cold here like everybody else, you
21 know, we're kind of all refreshing our

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 memories.

248

2 MR. KATZ: Yes. No, I just wanted
3 to make it clear in my head. That's fine.

4 CHAIRMAN SCHOFIELD: Okay, this is
5 in relation to the beta-gamma dosimetry of
6 record-keeping program.

7 We'll go back to the DNFSB and the
8 Tiger Team reports. So I guess really it's
9 your chance to response to what NIOSH said.
10 John?

11 DR. MAURO: Yes, I mean, I guess I
12 don't have anything to add. I mean you
13 disagree with the position that -- well,
14 apparently, Steve, it looks like that we got
15 some feedback from some people that said that
16 there were the data adequacy and completeness
17 is in question on the bioassay samples. I
18 guess this has to do with, I believe, the
19 gross beta-gamma.

20 DR. TAULBEE: Actually, this would
21 be beta dosimetry.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. MAURO: Oh, this is beta-gamma²⁴⁹

2 I'm trying to read it quickly.

3 MS. JENKINS: External dose.

4 DR. MAURO: This is, oh, this is --
5 we're going into external dose.

6 DR. TAULBEE: Missed external dose.

7 DR. MAURO: Missed external dose.

8 MEMBER BEACH: So is this something
9 that was updated in the TBD also, or not at
10 all?

11 MS. JENKINS: Well, it kind of, my
12 interpretation was it kind of boils down to
13 the fact of test facilities' dosimetry
14 badging practices.

15 I went through, and like I said, I
16 reviewed their reports and everything and they
17 were, you know, the DOE was running the lab
18 and everything.

19 And their internal audits and
20 program assessments and everything didn't have
21 a problem with their badging process. And you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 know, like I said, it was the radiation²⁵⁰
2 safety, this is all coming out of the
3 radiation and safety labs.

4 MR. HINNEFELD: Yes, I don't know
5 if this is particularly relevant or if this is
6 even related to the topic, but in my lifetime
7 I also interviewed INL. And I can remember
8 being told during that, it must have been that
9 visit, that there was a period of time at
10 Champlain, and I don't know if this was for
11 the entire site, but there was an issue with
12 the badge construction.

13 Because they had had a combination
14 security and dosimetry badge, and there was a
15 security requirement to redesign the badge
16 every so number of years.

17 And so security redesigned a new
18 security badge without worrying about
19 including any dosimetry window. And by the
20 time the dosimetry people figured this out
21 they were kind of stuck with this situation.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 What are we going to do, they
2 didn't want to separate, they didn't want any
3 people to wear separate dosimetry badge and
4 separate security badge, they wanted them to
5 be combined.

6 And so they hung the dosimetry chip
7 behind the security badge. The security badge
8 had already been designed and they wouldn't go
9 back. They did acquiesce in drilling a hole
10 in it.

11 And so the idea is you hang your
12 TLD behind there so that your open window TLD
13 pokes out through the hole in your security
14 badge. Now there was some misgivings on the
15 part of the radiation staff about are you
16 really developing reproducible geometry by
17 having this, because it wasn't fastened to the
18 security badge, it hung behind it on the clip.

19 So there was some discomfort about
20 that, on the part of the radiation safety
21 people. And I don't know what, I can tell you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 about when I interviewed out there but I don't²⁵²
2 know what year this badge was -- I don't know
3 if any of this is related to that at all. But
4 I hate to sit here quiet and have that in the
5 back of my mind.

6 DR. TAULBEE: With the Tiger Team
7 report what was the -- you know I'm coming
8 into this a little bit cold here as well.
9 What was the actual issue with the
10 completeness and quality? Steve, could you
11 elaborate some on that?

12 DR. OSTROW: I can elaborate a
13 little bit. I don't have the Tiger Team
14 report in front of me, but in our original
15 2006 Site Profile Review, on page 96, we just
16 list, I think six different things summarized
17 in the Tiger Team report.

18 They say the overall gamma neutron
19 response was within plus or minus 40 percent,
20 which did not satisfy the 25 percent
21 requirement specified in DOE 5480.11, for one

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 thing. Absence of centralized, integrated²⁵³
2 dosimetry program. Absence of calibration
3 sources for the dosimetry program.

4 DR. TAULBEE: Did they elaborate on
5 absence of calibration sources?

6 DR. OSTROW: The absence of any
7 calibration sources for daily functioning of
8 dosimetry processing and developing element
9 collection factors and quality control. This
10 is like a summary from the Tiger Team report.

11 DR. TAULBEE: Okay, so that's on
12 the reading of the dosimeters, not daily
13 checks on the TLD readers, okay?

14 DR. OSTROW: Well, anyway, there's
15 a couple of, I'd have to go back to the
16 original Tiger Team Reports, it's hard to tell
17 from these summaries what it is you're talking
18 about.

19 But what they say the conclusion
20 was, during these -- they interviewed five
21 experts and past and current workers, and they

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 came up with they think there's potential²⁵⁴
2 missed dose scenarios and deficiencies in
3 personnel protection programs and dosimetry
4 record-keeping overall. I'd have to go back
5 and see what the actual details are for that.

6 DR. MAURO: What I'm hearing is
7 that, well, one of the things that's becoming
8 clear during this conversation is that there
9 are categories of comments that we make, where
10 in our original review, that NIOSH feels, you
11 know the original TBD that we review is okay.

12 And there are other comments where
13 we note that NIOSH has done a lot of work in
14 this area and it's probably a good idea for
15 SC&A to take a look at the new TBD.

16 So it's really two things, either
17 the action is going to be on SC&A to go back
18 and revisit the original comment we made,
19 maybe we were overzealous. Or maybe, no,
20 NIOSH has developed a lot more material and
21 so, you know, and therefore we should go look

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 at the new TBD and to see if that new ^{TBD}₂₅₅
2 answers the questions.

3 Now that being the overall
4 framework, we look at this one. Now this one
5 looks to me that NIOSH's position is no, our
6 original TBD, it was okay. And this concern
7 that's being expressed by the Tiger Team, et
8 cetera, et cetera, is really not a real
9 problem.

10 But NIOSH is saying, please provide
11 us with a little bit more information. So
12 maybe there is more to the story that we
13 better look into.

14 Steve just said that, well, there
15 is a lot more to the story, and it's all laid
16 out in Tiger Team Report and the citations and
17 so forth.

18 So I walk away from this saying,
19 clearly Steve has just read some material that
20 goes to some very specificity about problems
21 that might have existed at the time that were

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 uncovered by the Tiger Team and NIOSH's²⁵⁶
2 reaction is one to dismiss that.

3 Now I would argue that really maybe
4 this is a case where perhaps NIOSH may want to
5 go back, and take a look at the Tiger Team
6 Report, concerns in the record, follow the
7 record and whether or not you feel that
8 everything is in fact fine, notwithstanding
9 what the Tiger Team said.

10 Because I think we did give you
11 everything we need. Steve, is there any other
12 things that we need to provide them, for them
13 to see whether or not our position has legs or
14 not?

15 DR. OSTROW: This is a little bit -
16 - I agree with you, this is a little bit of a
17 philosophical question. We did, we had a
18 number of our comments that we developed
19 originally, based on our reading of the Tiger
20 Team report and the DNFSB report.

21 And NIOSH is saying, I think sort

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 of in general that the, well, even if these²⁵⁷
2 reports are true they're not directly
3 applicable to the NIOSH dose reconstructions,
4 because they were done for the purpose of
5 these reports. And NIOSH isn't really relying
6 on the same information that the Tiger Team
7 was, that the Tiger Teams looked at.

8 And so it's a little bit of a
9 philosophical question whether the Tiger Team
10 report apply or not.

11 DR. TAULBEE: I think, I agree with
12 you, John, that at least in my opinion, Stu,
13 correct me if I'm wrong here, but it seems
14 like where there's things like this that the
15 Tiger Teams have identified, we should go
16 through what their findings are and the ones
17 that, you know, in the absence of a
18 centralized system, well, do you really need
19 one if you've got, each facility has their own
20 and it's working fine.

21 It doesn't matter. The 40 percent,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 burden's back on SC&A in this new review, to
2 come back, yes.

3 DR. MAURO: And that's fine, that's
4 what I was really looking for is who's got the
5 ball right now?

6 MEMBER MELIUS: Right, yes.

7 DR. MAURO: And what I'm hearing
8 though is a consensus that maybe we better go
9 back and provide some, if there is, you know,
10 do the best we can to give you everything we
11 have and why we --

12 MEMBER MELIUS: Yes, and if you go
13 back, because like Steve said he hasn't looked
14 at the Tiger Team, so go back and look at it
15 again.

16 If you think you've provided
17 everything you should have then, you know,
18 like maybe it's something for some sort of a
19 technical call or something that we're having
20 trouble understanding the issue.

21 I think we can avoid, if we just

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 start in the right place, we avoid going back²⁶⁰
2 and forth ten times.

3 DR. MAURO: So we'll take it, we
4 got to the -- we'll take another look at it,
5 make sure that we've collected all the
6 information, make sure our position is still
7 as it is, and if any information or rationale
8 for where we come out that you don't have,
9 we'll give it to you.

10 And then we'll have one of these
11 conference calls and we'll see where it goes.

12 So we got the action.

13 MR. GLECKLER: Has anyone looked at
14 the site's responses to those Tiger Team
15 findings, to see if, you know, did the site
16 make any major changes in what they, in the
17 practices that would change the doses, because
18 if it affected the doses, you would think that
19 they would have to go back and recalculate the
20 doses.

21 DR. TAULBEE: Not necessarily.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. GLECKLER: No. 261

2 MR. HINNEFELD: They wouldn't
3 necessarily go back retrospectively.

4 MEMBER BEACH: It would just go
5 forward from there, from what I've seen.

6 MR. GLECKLER: That would be a clue
7 that we might need an adjustment.

8 MR. HINNEFELD: Yes.

9 DR. OSTROW: My understanding of
10 what happens is that Tiger Team generally only
11 deals with the complex, going-forward type of
12 exercise. That the different sites improve
13 their monitoring program going forward but I
14 don't think they generally recalculate
15 anything in the past.

16 MR. HINNEFELD: That's not my
17 recollection, either, that they would.

18 CHAIRMAN SCHOFIELD: I've never
19 seen them do anything like that.

20 MR. HINNEFELD: This really doesn't
21 matter to our discussion but I just want to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 point out that 40 percent, you know, which²⁶² is
2 higher than 20 percent, is specifically in
3 regards to the nuclear accident dosimeters.

4 So that would only matter if we
5 actually reconstructed a dose using nuclear
6 accident dosimeters. It's not their first but
7 it's not their normal personal dosimeters.

8 DR. TAULBEE: That was quick.

9 DR. MAURO: We got them, the
10 actions are on us.

11 MR. HINNEFELD: Well, we have an
12 action too, though, we won't sit around, we're
13 going to go check out the Tiger Team report.

14 I think that they were lobbying for
15 additional funding for the dosimetry in order
16 to pass DOELAP. Because these are right out
17 of DOELAP requirements.

18 MR. DARNELL: I worked for DOE and
19 it was part of stuff like this, and you would
20 not believe the low levels they would stoop to
21 to use these Tiger Team's reports and reviews

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 for what they wanted to get done. 263

2 (Simultaneous speakers.)

3 MR. HINNEFELD: Believe me, we do
4 not have a lower opinion of you.

5 MR. DARNELL: Yes, I know that
6 about you.

7 MR. KATZ: Do you hear that, Greg?

8 (Laughter.)

9 DR. MAURO: Thank you, but I'm
10 going to have to leave, sorry. It's great to
11 see everybody. Steve, carry on.

12 MR. HINNEFELD: It's good to see
13 you, John.

14 CHAIRMAN SCHOFIELD: By the way,
15 those who leave first get dumped on. Okay,
16 Number 17, the penetrating, non-penetrating
17 dose. NIOSH should re-evaluate the missed
18 gamma dose due to deficiencies in procedures
19 and calibration.

20 That one, I don't know enough about
21 that to make a informed decision.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. OSTROW: Well, I want to
2 apologize a little bit, you know, the official
3 summary, this was actually in the original
4 Site Profile AWE did its like a page and a
5 half of material, that I think I orally
6 summarized in one sentence here. It's a
7 little bit hard to see issue, just by reading
8 this little summary we have in the matrix.

9 I think that the basic issue, and
10 NIOSH addresses it under seven pages here, is
11 the categorization of gamma and beta doses,
12 penetrating versus non-penetrating dose and
13 the methodology for handling it.

14 NIOSH responded here with a
15 methodology that -- I think maybe NIOSH could,
16 it would be good if you summarize a little
17 bit, how you handled this issue.

18 DR. TAULBEE: I guess, just for my
19 own benefit, I'm not clear what the issue is
20 here.

21 MEMBER MELIUS: It makes it

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 difficult to summarize. 265

2 DR. OSTROW: If you take a look at
3 the NIOSH response to the matrix, it goes on
4 for a couple pages.

5 DR. TAULBEE: Right, well, I've
6 read that, what the NIOSH response was, I'm
7 just not sure what the original SC&A issue
8 was. Maybe somebody here who's more familiar
9 with that, can give more detail the paragraph
10 that's here listed.

11 MR. HINNEFELD: Well, part of the
12 issue is that in the early days the film badge
13 service underestimated Hp(10), because low-
14 energy photons were considered beta radiation.
15 I guess this would be a low-energy photon
16 that would register on the open window but not
17 under the shield.

18 DR. TAULBEE: Okay.

19 MR. HINNEFELD: And they were
20 registered as beta radiation, that's one
21 thing.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. TAULBEE: So it's ²⁶⁶
2 underestimating the shallow dose? Well, it
3 wouldn't underestimate these, you use the open
4 window the photons would over respond. Low-
5 energy photons would cause an over response,
6 so you guys should be overestimating that
7 dose.

8 Low energy photons in a shielded
9 window doesn't have the penetration power for
10 Hp(10).

11 CHAIRMAN SCHOFIELD: Then you need
12 to help us out here.

13 MR. GLECKLER: The key individual
14 that helped provide the response to this is
15 Jack Fix, who was on the call but was
16 conflicted.

17 DR. TAULBEE: Matt, are you on the
18 phone? Matt Smith?

19 MR. SMITH: Yes, I am. When I
20 think about Idaho and correction factors I'm
21 visualizing the table, I don't it have right

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 in front of me, but Brian knows what I'm
2 talking about.

3 There are correction factors in
4 there for the open window, to deal with beta
5 dose or electron dose. To my knowledge we
6 don't do any adjustment downward, in other
7 words, we're not taking anything away for an
8 over response to low energy protons.

9 Although, again, there's some
10 language in OTIB-17 that, you know, if you're
11 aware of the correction made by the site you
12 can take that into account.

13 DR. TAULBEE: This is where I'm
14 guess I'm confused with the, I'm surprised at
15 what the SC&A issue is here with the
16 penetrating, non-penetrating, missed dose due
17 to deficiencies in the procedures and
18 algorithms for the over response, under
19 response, the badge.

20 MEMBER BEACH: This may be another
21 one when SC&A needs to come back with -- maybe

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 relook at that issue. Shallow dose ^{is} ~~268~~
2 captured later on, I don't think it's that.

3 MR. GLECKLER: They kind of
4 summarize things a little bit with INL, I
5 guess the key thing is where are the plausible
6 scenarios where there's a significant low
7 energy, as in less than 30 keV photon
8 exposure. For the site there really are very
9 few of those, I won't say there aren't any
10 because it's such a large site.

11 There are so many exposure
12 scenarios, but the vast majority of the
13 exposure scenarios do not have a significant
14 less than 30 keV photon component to it.

15 But if there was, the way that we
16 currently do our dose reconstructions, those
17 dosimeters would have over responded to the
18 less than 30 keV photons and we would have
19 assigned them as electron dose. Based on our
20 current --

21 CHAIRMAN SCHOFIELD: That's what I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 was going to ask, is that actually -- because²⁶⁹
2 an over response actually helps the claimants?

3 MR. GLECKLER: Yes, and then we
4 also, on top of that over response, we apply
5 typically a fairly large electron dosimeter
6 correction factor. They range, depending on
7 the year, they range from one, the later years
8 are just one, but for the early years from
9 about two to 4.8.

10 MS. JENKINS: 4.8 in 1974 and 1975,
11 and we have a 3.3, a 3, a 2.8. In the '50s it
12 was 2 to 2.8 and in the '60s it was 2.8.

13 MR. GLECKLER: So it shouldn't
14 really be an issue of underestimating the dose
15 versus underestimating the PoC because of it
16 being assigned to the electron dose versus the
17 less than 30 keV proton dose. If that's, if
18 there is an issue there.

19 MS. JENKINS: Prior to 1986, a
20 correction factor of a minimum of two is
21 assigned and it could go as high as 4.8.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 After 1986 then that's when they're using the ²⁷⁰
2 Panasonic TLDs, and it's a correction factor
3 of one. Prior to that, it would be a minimum
4 of 2, a maximum of 4.8, depending on the
5 background.

6 CHAIRMAN SCHOFIELD: Sorry, you
7 health physicists want to kind of help me out
8 on this one, man, I'm lost.

9 MEMBER BEACH: Steve, are you still
10 there?

11 DR. OSTROW: I'm busy reading. I'm
12 not an expert in this either to tell you the
13 truth. Too bad John left at just the right
14 the moment.

15 MR. DARNELL: I think John needs to
16 go back and re-review this.

17 MEMBER BEACH: I think so too.

18 MR. HINNEFELD: It seems to me that
19 none of the arguments in the Site Profile is
20 that, there are low energy photons which will
21 contribute to Hp(10), which will not be read

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 under the filter of the two-element badge. 271

2 Now I'm not saying that's true or
3 not, that's the nut of the conversation, they
4 even talk about, well, it gets into Compton
5 scatter and mean free path of photons for low
6 energies and effective dose for photons at 60
7 keV, greater than 1.2 NEV, I think is missing
8 something.

9 But that seems to be the nut of the
10 argument, is that the filter over the deep
11 element, the filtered element of the two-
12 element badge, will filter photons that
13 contribute to Hp(10), or will sit there
14 completely, essentially completely filtered,
15 they don't make any contribution to this heat
16 -stamped badge reading.

17 MS. JENKINS: They would be
18 assigned as a electron dose in that case.

19 MR. HINNEFELD: And they would go
20 into electron, yes, to the extent that they
21 contribute to Hp(10) then, the question is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 though, if those photons, if a), that they're
2 present, because like you said, they seem to
3 be kind of a high-energy photon facility.

4 If you have fields where you have a
5 significant contribution of low-energy
6 photons, and in fact they are completely
7 shielded by the filter over the filtered
8 element, but they are energetic enough to
9 contribute to Hp(10), or to the organ dose
10 that you're interested in, then you've missed
11 that information by using the deep element of
12 a two-element badge. That seems to be the
13 argument from the Site Profile.

14 DR. OSTROW: Okay, this is Steve.
15 I suggest that they may take a look at the
16 NIOSH's response, and then see if our concerns
17 are answered or not. We'll have to evaluate
18 it.

19 MR. KATZ: Okay, thanks, Steve.

20 CHAIRMAN SCHOFIELD: Now number 18
21 here. Correction for beta dose and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 uncertainties. 273

2 MR. DARNELL: I think this is just
3 a continuation of the same type of stuff and
4 may be something that SC&A needs to review.

5 Not that I'm trying to cut off any
6 discussion, but it's really kind of pointless
7 to go over it right now.

8 CHAIRMAN SCHOFIELD: The trouble
9 is, you guys quit speaking English after a
10 while.

11 DR. TAULBEE: We tend to do that.

12 MEMBER ROESSLER: Well, when the
13 question is specific they have to get into
14 specific information.

15 CHAIRMAN SCHOFIELD: You guys could
16 be totally BS'ing us and we wouldn't know.

17 MEMBER ROESSLER: We'll try.

18 MR. DARNELL: We could always do
19 that.

20 CHAIRMAN SCHOFIELD: Thanks, that
21 gives me a lot of confidence.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. HINNEFELD: Reminds me of ^{an}~~274~~
2 old joke, how do you tell if a health
3 physicist is BS'ing you?

4 MR. DARNELL: His lips are moving.
5 (Laughter.)

6 CHAIRMAN SCHOFIELD: Okay, we're on
7 19 now. The angular dependence correction
8 factor for gamma dose, seems like this comes
9 up at every facility, correction, what the
10 correction factors are, if they're correct.

11 DR. TAULBEE: This is something --
12 in our response, just to correct it a little
13 bit here for you all. The TIB-10 is actually
14 a geometry correction factor, not an angular
15 correction factor. Technical information, so
16 we will revise this and respond back to you
17 all.

18 CHAIRMAN SCHOFIELD: Okay.

19 MEMBER ROESSLER: So, in other
20 words, you've done it but need to revise your
21 answer, or what?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. TAULBEE: Many of the sites²⁷⁵
2 there is angular responses, and this morning
3 when we were discussing this in more detail,
4 there was some misunderstandings.

5 MR. HINNEFELD: Tim, you need to
6 make sure you speak up, so you're captured on
7 the microphone so that the recorder can record
8 your comments.

9 COURT REPORTER: Thank you.

10 DR. TAULBEE: I'm sorry. We are
11 looking at this from the actual question of
12 angular response and not geometry correction
13 factor, which is what the TIP-10 is, is just a
14 geometry, it's a glove box factor, that
15 particular response. So it was a
16 misunderstanding on our part, we will correct
17 that.

18 MEMBER MELIUS: See, if she doesn't
19 pick up your voice then she'll just say
20 "Health physicist is moving his lips."

21 (Laughter.)

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. TAULBEE: I understand now²⁷⁶
2 okay. I'll try to speak up some, sorry.

3 CHAIRMAN SCHOFIELD: Number 20.
4 Restate beta dose as gamma dose, this is not
5 claimant-favorable to state the entire dose
6 measured in open window is due to the beta
7 dose.

8 MS. JENKINS: Doesn't this go back
9 to 17.

10 DR. OSTROW: It goes back to Number
11 18, I believe, looking at it. Is it 17?

12 DR. TAULBEE: Seventeen.

13 MR. DARNELL: Comment 21.

14 CHAIRMAN SCHOFIELD: Steve, you got
15 any comments on this?

16 DR. OSTROW: Number 21 we're on?

17 CHAIRMAN SCHOFIELD: Number 20.

18 MEMBER ROESSLER: He said it's
19 covered.

20 MR. HINNEFELD: Covered.

21 (Simultaneous speakers.)

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIRMAN SCHOFIELD: Okay, we ~~are~~
2 now on Number 21. The photon spread and
3 split. You got any comments there, Steve, on
4 their reply?

5 MEMBER BEACH: Well, they're asking
6 for a basis for the 50/50.

7 CHAIRMAN SCHOFIELD: Yes, split.

8 MEMBER MELIUS: So I think SC&A
9 needs to clarify.

10 MEMBER BEACH: Yes.

11 DR. OSTROW: We wrote up something
12 in our original discussion, and at a quick
13 look at it, I think we have to provide you
14 more information on that, why we think 50/50
15 may be good or whether we're dropping that or
16 not.

17 MR. HINNEFELD: This is Stu, and
18 again I'm probably better off keeping my mouth
19 shut. Were we really calling a dose
20 reconstructor on each individual case to make
21 a judgment? Wouldn't there be some general

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 guidelines for areas? 278

2 MR. GLECKLER: For the energy
3 splits?

4 MR. HINNEFELD: Yes.

5 MR. GLECKLER: No, it's like
6 basically it's a 25/75 split for every
7 location on the site, except for the SMC. And
8 in that case it's like it's a 90 percent, 30
9 to 250, ten percent greater than 250.

10 MR. HINNEFELD: So there is -- is
11 that specifically written in the Site Profile?

12 MR. GLECKLER: Yes, it's embedded
13 in our tool for that site.

14 MR. HINNEFELD: Okay, then I don't
15 understand the comment.

16 MR. GLECKLER: Well, the comment
17 kind of implies that a 50/50 split's more
18 appropriate.

19 MR. DARNELL: In the write-up it
20 really doesn't explain why.

21 DR. TAULBEE: Which is why I think

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 SC&A is going to revisit it. What the basis²⁷⁹
2 - why they feel a 50/50 is better than a
3 25/75.

4 MR. HINNEFELD: So apparently their
5 scenario is described by SC&A, but at this
6 point, I should -- I just need to go back and
7 read it. I'll shut up.

8 MR. DARNELL: No, we like it when
9 you talk, Stu.

10 MR. GLECKLER: Gives us time to
11 read.

12 MR. DARNELL: Gives us time to
13 catch up.

14 (Simultaneous speakers.)

15 CHAIRMAN SCHOFIELD: It says the
16 margin dose reported on dosimeter due to semi-
17 infinite cloud radiation be approximately half
18 the actual dose received. NIOSH should
19 therefore consider a weighting factor of two
20 for immersion dose.

21 DR. OSTROW: This comment was

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 actually based on a teleconference we had with ²⁸⁰
2 NIOSH about five years ago.

3 DR. TAULBEE: Can you elaborate a
4 little on that?

5 DR. OSTROW: I think we're going to
6 drop this, it doesn't appear that TBD looked
7 at it afterwards. I looked at this yesterday
8 actually, the semi-infinite clouds that appear
9 to the TBD. This comment that we made wasn't
10 based on the TBD, it was based on a phone
11 conference that we had with NIOSH, 2005 or
12 2006. I think we'll withdraw this comment.

13 CHAIRMAN SCHOFIELD: Okay.

14 MR. STIVER: Hey, Steve, this is
15 John Stiver from SC&A. Was there a situation
16 or many instances where a semi-infinite cloud
17 may have been a significant source of
18 exposure?

19 I was just kind of wondering what
20 the basis was. I know it's digging way back
21 in the past here. Do you recall any of the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 details of that conversation and why it ever
2 even came up?

3 DR. OSTROW: I'm trying to recall
4 why it came up.

5 MR. STIVER: It would be applicable
6 if, you know, if that was a significant source
7 of exposure, then it may be something that,
8 you know, should be addressed.

9 DR. OSTROW: I think it had to do
10 possibly with the plume releases and then, you
11 know, exposure to something else.

12 MR. STIVER: Yes, I just wondered
13 if there are situations where that would have
14 been a significant source of a dosimeter
15 reading, as opposed to just, you know, more of
16 a background or environmental type dose that
17 was a pretty small component.

18 MR. GLECKLER: But the original
19 Review Document indicated it was in terms of
20 internal dose, is what the concern was about
21 and that's what had us confused.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. STIVER: Yes, that doesn't make
2 any sense, I mean, this would clearly be an
3 external exposure. I guess that's another one
4 we need to go back and revisit then.

5 DR. OSTROW: I think -- I'm doing
6 some reading, I don't think it actually
7 appears in the TBD that we're commenting on.
8 I think we're just going to go ahead and close
9 this issue.

10 MR. STIVER: We're just going to go
11 ahead and close it out?

12 DR. OSTROW: Yes.

13 MR. STIVER: Okay, like I say, I've
14 got practically no background on INL and just
15 been listening in on the conversation here.
16 Let's go ahead and close that one.

17 CHAIRMAN SCHOFIELD: We are now on
18 Number 23, high-risk jobs. Beta-gamma
19 exposures, site experts interviewed by SC&A
20 classified INL as an acute dose site with a
21 significant number of facilities, operations,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 experiments and occurrences providing
2 possibilities for personnel receiving
3 dangerous levels of radiation.

4 NIOSH did not evaluate
5 comprehensively facility and field data to
6 identify and separate the high risk or high
7 dose jobs for worker external exposures. This
8 information is essential for dose
9 reconstructors to fill the gap when dose
10 records in a claimant's file are not complete.

11 According to your guys'
12 documentation, there was 99 episodic events
13 which would definitely qualify there.

14 DR. TAULBEE: Well, from the
15 standpoint of monitoring for individuals for
16 external radiation, going into any of these
17 facilities, you had to pick up a badge. So I
18 guess my question is: what is the concern
19 here?

20 From an external dose standpoint
21 people are monitored, for these type of high

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 risk jobs, for these episodic releases. ^{In}~~284~~
2 these areas, people were monitored here, so
3 I'm asking, I guess.

4 MR. GLECKLER: SL-1 being the only
5 exception.

6 MR. STIVER: This is Stiver again.
7 Steve, was this was an issue related to missed
8 dose or unmonitored dose that we felt might
9 have been significant?

10 MR. DARNELL: Well, when you go
11 back to the original write-up that SC&A
12 provided, it talks about hot particles in
13 fission products, rather than acute dose in
14 high risk jobs. So I don't know.

15 MR. STIVER: Back to your earlier
16 comment on the hot particle deposition.

17 MR. DARNELL: Yes, there's
18 something wrong here because the write-up for
19 the issue appears different than what's in the
20 original write-up from your -- SC&A's report.
21 You guys might want to kind of figure out

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 which comment you're actually making. 285

2 DR. OSTROW: I'm looking at the
3 original report right now, because the
4 characterization, the original report focused
5 on what we talked before with the hot
6 particles are actually flakes that wouldn't be
7 necessarily monitored that landed on the
8 clothing or skin. I think actually the
9 original issue was the matrix summary doesn't
10 really reflect that correctly.

11 DR. TAULBEE: I believe that we
12 have that under Issue 9, correct?

13 MEMBER BEACH: Right.

14 MR. KATZ: Yes, that's been covered.

15 DR. TAULBEE: In which case both
16 SC&A and NIOSH have action items.

17 CHAIRMAN SCHOFIELD: Yes, that's
18 number 9.

19 MR. DARNELL: So 23 could be
20 closed?

21 MR. GLECKLER: Merge this one then

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 with 9?

286

2 MR. HINNEFELD: It's the same as
3 number 9, we'll just answer 9.

4 CHAIRMAN SCHOFIELD: Okay, Number
5 24 is extremity dose, they should evaluate the
6 potential for missed external dose, workers in
7 facilities or highly contaminated equipment,
8 piping --

9 MR. DARNELL: Excuse me, I'm sorry
10 to interrupt but, 9 is an observation, 23 is a
11 finding, so we should go the other way.

12 MR. HINNEFELD: Well, however we do
13 it, Andrea wants to know the answer both
14 places.

15 CHAIRMAN SCHOFIELD: I didn't see
16 anything in there about -- someone correct me
17 if I'm wrong, but I didn't see anything in any
18 documents that indicates that the use of
19 dosimetry rings, finger rings, sort of thing
20 was widely used?

21 MR. GLECKLER: They did use them,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 we do see those in the record, it's not^a₂₈₇
2 frequent thing, except for some individuals,
3 you do see it fairly frequent during different
4 eras.

5 MR. STIVER: This is Stiver again,
6 it looks like this is an example of potential
7 missed dose for a worker who might not have
8 been wearing those rings.

9 You guys have adjustment factors
10 that you'd apply, evidently, according to your
11 comment here, as needed. I guess the question
12 in my mind is then how do you determine that,
13 do you typically have enough information, the
14 granularity on a particular worker's tasks
15 that you can confidently assign those factors?
16 Or is it something that you just kind of use a
17 claimant-favorable assumption to provide?

18 MR. DARNELL: The worker or the
19 workers, send it, give the information in the
20 Computer-Assisted Telephone Interview. That's
21 where we would be told whether they worked in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 glove boxes or not or they did specific work²⁸⁸
2 that would trigger looking at extremity
3 dosimetry.

4 MR. STIVER: Okay, if it's in the
5 case file then you'd address it, otherwise
6 then it wouldn't be an issue?

7 MR. DARNELL: Yes, unless we saw
8 something in the worker's job title.

9 MR. STIVER: The job title or
10 something in the CATI or the correspondence
11 that would indicate maybe there was some
12 potential for that.

13 DR. TAULBEE: And in general we
14 would really only consider that when there was
15 a skin cancer or some cancer.

16 MR. STIVER: And it would have to
17 be related to a shallow --

18 (Simultaneous speakers.)

19 DR. TAULBEE: On the hands or
20 forearms, something.

21 MR. GLECKLER: On an extremity,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 which is very rare. 289

2 DR. TAULBEE: On a typical cancer
3 we wouldn't even --

4 CHAIRMAN SCHOFIELD: Typically
5 speaking, you didn't see these finger rings
6 issued to particularly construction workers or
7 something.

8 MR. STIVER: Yes, I think that,
9 this is what that would really get to is those
10 who weren't monitored who may have still had
11 that type of exposure potential.

12 MR. GLECKLER: I know we're
13 typically cautious about pipefitters a lot,
14 especially because when they have high doses,
15 because there's a good chance that they would
16 have had.

17 But in most instances, we're not
18 dealing with a cancer on the extremity. So we
19 don't need to do anything in that regards, and
20 so if there's actually, the instances of when
21 those two things come together, to where they

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 have a likelihood of having that exposure²⁹⁰
2 scenario, and then also having an extremity
3 cancer.

4 MR. STIVER: Yes, skin cancer on
5 the hands or forearms, something along those
6 lines?

7 MR. GLECKLER: Yes, it becomes very
8 limiting as far as, you know, the number of
9 claims that you'll encounter, and it's really
10 hard to think of any offhand.

11 MR. STIVER: My initial assumption
12 would be that we could probably close that one
13 out. Steve, do you have any objections to
14 that?

15 DR. OSTROW: No, that's fine, I
16 just wanted an explanation from NIOSH on how
17 to handle it, sounds like it's a good
18 explanation.

19 MR. STIVER: Now these factors are
20 affecting the TBD tables, those values, how
21 they're used?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. OSTROW: Yes, it's kind of^a_{29f}
2 combination of OTIB-17 for skin claims, and
3 then also potential glove box factors, there's
4 hand to wrist ratios.

5 CHAIRMAN SCHOFIELD: Wouldn't those
6 be based upon expected potential for dose? I
7 mean entire dose, particularly glove box
8 workers?

9 MR. HINNEFELD: Well, the wearing
10 of it is --

11 CHAIRMAN SCHOFIELD: There would be
12 some criteria, I assume, that separated those
13 who used and those who don't.

14 MR. STIVER: Well, it typically
15 would be glove box workers, but this would be
16 a category like pipefitters who wouldn't
17 necessarily be assigned ring dosimeters but
18 might still have additional exposure,
19 extremity exposure potential.

20 MR. GLECKLER: Yes, so to make sure
21 I'm clear on this, are we talking basically an

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 unmonitored extremity exposure versus missed²⁹²
2 dose, which means they were monitored but the
3 dose might not be fully accounted for by the
4 dosimeter's detection limit?

5 MR. STIVER: It seems to me if they
6 were issues of extremity dosimetry, it would
7 probably be for a well-defined type of work,
8 like glove box work. But in my mind it would
9 apply more to the unmonitored exposure.

10 MR. GLECKLER: I know some of the
11 early reactor workers would have ring
12 dosimeters at times.

13 MR. STIVER: Well, it could
14 potentially be in either situation. You might
15 have to have an adjustment factor to account
16 for that or, you know, for a person who may
17 have had dosimetry but may not have adequately
18 measured the dose, the potential dose, you
19 know, the upper bound dose, and you might also
20 have other categories of workers who had no
21 dosimetry at all that may have been exposed to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 these situations. 293

2 MS. JENKINS: Well, we put them in
3 the response on a case-by-case basis and, like
4 Brian was saying, the case where you've got
5 an unmonitored worker with the actual lack of
6 dosimetry data, is probably going to be rare.

7 In those cases we would evaluate it
8 and there are things that would tip us off,
9 like pipefitters, stuff like that, and the
10 type of job they're doing and that's something
11 that could be incorporated into the actual
12 dose reconstruction itself, as opposed to
13 doing it in the TBD. Because it's so
14 specific.

15 MR. STIVER: I guess is there the
16 machinery in place to do that, is there a
17 methodology that's been developed and a TIB
18 that addresses that or some portion of a TIB?

19 Or is this all based on the
20 adjustment of the dosimeter readings? Maybe
21 we should just keep this one open until we

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 have a chance to look at it. 294

2 MR. DARNELL: Isn't that TIB-10 or
3 17?

4 DR. TAULBEE: So TIB-17's a shallow
5 dose right, Matt?

6 MR. STIVER: Yes, a shallow dose,
7 17.

8 MR. SMITH: That's correct.

9 MR. DARNELL: I mean, there's
10 already procedures in place, if you guys want
11 to go look at them again.

12 MR. HINNEFELD: Well, I think we'll
13 -- I think we decided to take an action on
14 here to kind of consider how we're doing this.

15 One thing that gives me a little
16 discomfort is relying on the interview. To
17 say, okay, give me, if it's uncovered in the
18 interview that a particular thing is done,
19 then we'll assign --

20 MR. DARNELL: Well, there's only
21 done if --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. HINNEFELD: Well, that's what
2 I'm saying, let's have a more complete
3 discussion, let's put together a more complete
4 discussion, how we would deal with it.

5 And even, we could even go so far
6 as to look for extremity cancer cases and see
7 what, you know, how rare those are, just
8 because --

9 MR. STIVER: Yes, that might be a
10 good place to start and see how many cases
11 does this really affect?

12 MR. HINNEFELD: I don't think there
13 are going to be that many cases, possibly
14 affected by it because my perception is you
15 don't see extremity cancers that often.

16 CHAIRMAN SCHOFIELD: The limits are
17 very high anyhow, very high.

18 MR. HINNEFELD: Yes, the dose
19 limits are high but we don't even see the
20 cancers, so in this case we wouldn't be doing
21 a dose reconstruction.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. STIVER: I've only seen^a₂₉₆
2 couple of them myself.

3 MR. GLECKLER: The ones I do recall
4 from INL are typically truck drivers and it's
5 usually their left arm.

6 MR. HINNEFELD: Oh is that right?

7 MEMBER ROESSLER: Yes, hanging out
8 the window.

9 (Laughter.)

10 CHAIRMAN SCHOFIELD: On the site's
11 health physics program they had there, do you
12 run across any documents where they spell out,
13 when they're going to be using these?

14 Because typically speaking, even
15 for a person who's going to be doing a high-
16 level, very short-term job I wouldn't think
17 would, even then would be given, likely to be
18 given extremity finger rings.

19 DR. TAULBEE: Well, for the modern
20 era, you look at what the dose could
21 potentially be, so if it's short enough

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 duration, yes, you wouldn't. 297

2 If it's going to be less than, say,
3 ten percent of what the regulatory limit is
4 you might not assign extremity dosimetry. So
5 I guess that is something we could look at is
6 when they assigned extremity dosimetries,
7 follow up what Stu was saying.

8 MR. STIVER: That might also be
9 something where we have a historical change in
10 procedures where it may be more important in
11 earlier years than in later.

12 MEMBER BEACH: So it looks like
13 SC&A and NIOSH both have actions out of this.

14 MR. STIVER: Yes, I'd say that we
15 definitely need to take another look.

16 MEMBER BEACH: Okay.

17 CHAIRMAN SCHOFIELD: Okay, we're
18 now on Number 25, the discrepancy between PIC
19 and film readings. NIOSH should compare PIC
20 versus film badge, shallow and deep.

21 Here again we run into this problem

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 of the use of the PIC to begin with. 298

2 DR. TAULBEE: We don't really use
3 that.

4 CHAIRMAN SCHOFIELD: Yes, I know
5 most facilities will not use the PIC as
6 official data measurement.

7 MS. JENKINS: It's a go/no-go

8 CHAIRMAN SCHOFIELD: Yes it's
9 basically a go/no-go or, you got enough on
10 your PIC that we're going to pull the badge
11 immediately.

12 MR. STIVER: Yes, my experience of
13 those have been that they typically over
14 respond, they're just more, not really a
15 triage-type dosimeter, but something that
16 would trigger a more thorough review.

17 MEMBER BEACH: So does this one go
18 away?

19 MR. STIVER: Yes, I'd say we can
20 close that one.

21 CHAIRMAN SCHOFIELD: Yes, I think

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 so. 299

2 DR. OSTROW: Our original
3 suggestion, this was more of a suggestion than
4 anything else, that it might be possible to
5 use the PIC data indicated the film dosimetry
6 underestimated the Hp(10) dose. I'm not sure
7 what it would show, but you know, if the PIC
8 data was available, it might provide some
9 information.

10 CHAIRMAN SCHOFIELD: How much -- I
11 mean, how many records even show any data, PIC
12 in them, I mean, I'm kind of curious now, this
13 is more curiosity than anything else.

14 MR. GLECKLER: The records up to
15 1958, the particular format that they used
16 does have PIC data for a good chunk of the
17 weeks. They have the weekly PIC dosimeter
18 value there next to the, right after they have
19 the film dosimeter results for that week. And
20 it's like any others, they usually don't
21 correlate very well at all.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 It's not like there's a fixed³⁰⁰
2 ratio, you know, because you would think if
3 they were being exposed to the same photon
4 sources, you'd gradually start to notice, oh,
5 they vary by their certain PIC's value that
6 different by, but they're all over the board,
7 sometimes.

8 MR. STIVER: Yes, there's some kind
9 of a calibration factor or there may be some
10 bias, some offset.

11 MR. GLECKLER: Or if they just
12 knock it against the wall.

13 MR. STIVER: Yes, they're easily
14 damaged.

15 MR. GLECKLER: It doesn't take much
16 to cause them to go off scale. I mean, this
17 issue is brought up by a lot of claimants in
18 the CATIs, you know, that they were restricted
19 from a radiation area because they were
20 overexposed and they are over the limits.

21 And it's like we go look at their

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 dosimetry records, which for us is just ³⁰¹
2 looking at the dosimeter results, not the PIC
3 data, and it's like, well, wait, there's
4 nothing here that would have caused them to
5 have been restricted or whatever for that time
6 frame.

7 And yet, you look at the pencil
8 readings and okay, that's what they're going
9 by and so we, a lot of times it causes
10 difficulty for us because we have to kind of
11 explain this scenario to them in the DR
12 Report.

13 MR. STIVER: A lower tier in the
14 data quality hierarchy. Steve, was there a
15 significant number of those PIC data we looked
16 at back in our original review that triggered
17 this?

18 DR. OSTROW: Well, this is based
19 more on the talking to some of the claimants
20 that brought up that issue that was just
21 mentioned. That their PIC dosimeters would,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 you know, spike on the high end and they'd see
2 things so they were very suspicious.

3 We raised the question: did NIOSH
4 take a look to see if there's any sort of
5 correlation between the PIC and the film badge
6 result?

7 MR. STIVER: Yes, we had this issue
8 a lot for the Atomic Veterans, there was a
9 lot of them had pencil dosimeters and they
10 consistently read about a factor of one and a
11 half to two times higher than the film badges.

12 I can't recall offhand but I
13 believe there were some studies that were done
14 that compared the two under controlled
15 conditions that were able to determine that
16 there indeed was a bias to the high side on
17 the pencil readings.

18 I don't know if anything's been
19 done with that, you know, regarding this site
20 or the types of dosimeters that were used in
21 this program but it might be worth at least

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 putting something together, you know, that the
2 claimants would be able to look at and see,
3 you know, these are the reasons why, it's just
4 an over response issue.

5 MR. GLECKLER: Well, that's usually
6 what we explain and explain how it does over
7 respond, we've kind of got some generic --

8 MR. STIVER: Almost seems like
9 something for a fact sheet, really.

10 MR. GLECKLER: Yes, and we'll
11 usually describe that or address that in the
12 incident sections and not on the DR report.
13 Because, and we have informally kind of looked
14 at, you know, if there is a correlation
15 between the PIC data and, you know, the actual
16 dosimeter results, which back in the area
17 where, the time frame that we have that
18 information is in the film era, and myself and
19 one of the former experts for the INL sites
20 that's no longer, he's now retired.

21 And we weren't observing any, we

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 couldn't find any correlation, they're just
2 all over the board. Sometimes you'd have
3 high, sometimes I think the PIC data would
4 even be less than the film dosimeter results.

5 MR. STIVER: My inclination would to
6 be to close this one out, to tell you the
7 truth.

8 CHAIRMAN SCHOFIELD: The film
9 dosimetry was the one of official record, not
10 the PICs, correct?

11 DR. TAULBEE: That's correct.

12 MEMBER BEACH: Yes, I think we
13 should close it.

14 CHAIRMAN SCHOFIELD: Yes, I think
15 close it.

16 DR. OSTROW: Yes, SC&A agrees.

17 MR. KATZ: Okay, so we're closing
18 issue 24?

19 MEMBER BEACH: 25.

20 MEMBER ROESSLER: 25.

21 CHAIRMAN SCHOFIELD: We're now on

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 Issue 26. The minimum detection limit, NIOSH³⁰⁵
2 should reevaluate their approach in
3 determining MDL of the dosimetry system by
4 taking into account the system's
5 uncertainties.

6 DR. OSTROW: That would be, what you
7 just said was from our original report. In
8 2008 we did a extended look at other issues
9 and we expanded this issue where it said the
10 standard is wrong.

11 We questioned if the ten millirem
12 was collected for high energy gammas and we
13 think that's too low, even for the modern
14 dosimeters.

15 DR. TAULBEE: Why do you feel that?

16 DR. OSTROW: Oh, this was, the
17 person who did this, this was based on
18 knowledge of what the current dosimeters, you
19 know, film decimeters work.

20 MEMBER BEACH: So, Steve, did you
21 look at the responses for finding Number 327?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. OSTROW: Hang on. I see ~~we~~³⁰⁶
2 looked at it, but we didn't get a chance to
3 evaluate it for this region. What NIOSH wrote,
4 but we haven't had a chance to evaluate it
5 yet.

6 MEMBER BEACH: So it sounds like
7 SC&A needs to evaluate 26 and 27 and come back
8 to us?

9 DR. OSTROW: Exactly.

10 CHAIRMAN SCHOFIELD: 26, 27, 9 -- I
11 mean, that's an eight. Okay, we are now on
12 Number 28, minimum reporting level for
13 neutrons, here again this is a something I
14 know that's been, that has changed over time
15 with a different dosimeter.

16 DR. TAULBEE: Again, this is one
17 that I think NIOSH will take the action on, to
18 revisit our response on this, if we need to
19 dig a little deeper on how they were reading
20 the NTA films.

21 These detection limits are not

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 unreasonably low, they are lower than other³⁰⁷
2 sites', but it really depends upon how they
3 were, how the films were read, and the number
4 of fields that were investigated.

5 So it's not implausible that these
6 are this low, I just think it -- we need to
7 look at that a little closer and provide some
8 better documentation of why we feel that these
9 are reasonable.

10 CHAIRMAN SCHOFIELD: Now you have
11 taken INL since AEC/DOE and really doing the
12 health physics reading and calibration stuff.

13 I assume you do have access to all that
14 information?

15 DR. TAULBEE: We should.

16 CHAIRMAN SCHOFIELD: Okay.

17 DR. TAULBEE: I'm not -- like I
18 said, I'm not as familiar with this site yet,
19 but I know at other sites we certainly have
20 this information. So we should have access to
21 it here. Do you know if it's in the SRDB

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 already? 308

2 MR. GLECKLER: That I don't know,
3 but if I remember correctly from Jack Fix, it
4 sounds like we do have a lot of access to a
5 lot of detailed records that we might just
6 need to capture.

7 But they do, from what I gathered
8 from Jack, it's like they have a lot of
9 detailed records. Dosimetry data stuff and
10 calibration type stuff. He might have
11 captured that already from part of his other
12 efforts.

13 DR. TAULBEE: Matt Smith, do you
14 happen to know if that, if some of that
15 information had been captured?

16 MR. SMITH: Just from responses
17 here it sounds like there is quite a few
18 reports that detail how these MDLs were
19 computed --

20 DR. TAULBEE: Okay.

21 MR. SMITH: -- and that they're

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 going to be okay. 309
2 CHAIRMAN SCHOFIELD: That one's
3 for NIOSH.
4 MEMBER BEACH: So is it time for a
5 break or are we just going to roll through?
6 MR. KATZ: That sounds great.
7 MEMBER BEACH: Great.
8 MEMBER ROESSLER: What time is your
9 plane?
10 MEMBER BEACH: Not till seven.
11 MEMBER ROESSLER: Okay.
12 MEMBER BEACH: I have lots of time.
13 MEMBER ROESSLER: I need to leave
14 here about 3:30.
15 MEMBER BEACH: I have a feeling
16 we're going to be done by then.
17 MR. KATZ: What time is it now?
18 MEMBER BEACH: 2:41.
19 MR. KATZ: Five minute break?
20 MEMBER BEACH: Short break.
21 (Whereupon, the above-entitled

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 matter went off the record at 2:42 p.m. and
2 resumed at 2:49 p.m.)

3 MR. KATZ: Okay, we're restarting
4 after a short break, and, Steve, are you
5 there? Steve?

6 John, are you online?

7 MR. STIVER: Yes. John Stiver, I'm
8 on the line, Steve should be back here in a
9 minute I would think.

10 MR. KATZ: Okay, I'm going to --
11 it's sort of fair for him -- normally we're
12 never as quick as we promise. We're on time.
13 So I can understand Steve betting on averages
14 here. I'll keep checking, I think we should
15 wait for Steve, we need him to have any of
16 these conversations.

17 Steve, are you back with us?

18 DR. OSTROW: Yes.

19 MR. KATZ: Okay, Steve is back, so
20 continue on.

21 MR. STIVER: John is back too.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. KATZ: Okay, great, thanks,
2 John.

3 CHAIRMAN SCHOFIELD: We're now on
4 Number 30, the neutron calibration.

5 MEMBER ROESSLER: Wait, what did we
6 do with 29?

7 MEMBER BEACH: I appreciate your
8 hurrying, but --

9 CHAIRMAN SCHOFIELD: Okay, my
10 mistake, I get in too big of a hurry here.
11 We're on Number 29, neutron exposures in Iowa
12 had --

13 MEMBER BEACH: The first page on
14 failure to properly address neutron exposures.

15 CHAIRMAN SCHOFIELD: Right, neutron
16 exposures. "INL had a total of 52 reactors,
17 most of which were experimental prototype in
18 design, which typically operate in high-power
19 density with minimum shielding and neutron
20 moderation. It is unjustified to presume there
21 are no missed neutron doses.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 In addition, there are deficiencies associated³¹²
2 with the neutron calibration. Due to use of
3 plutonium-beryllium sources for neutron
4 calibration, dosimeters would significantly
5 under measure neutron doses from source's
6 lower energy spectra. NIOSH should reevaluate
7 its entire approach in the TBD to account for
8 the potential missed neutron doses."

9 One thing I do know is that talking
10 to people, they used a number of different
11 types of shielding in this facility. The
12 reactors from some that are almost bare to
13 lead, water, polyethylene -- I mean, plastic
14 and --

15 MEMBER BEACH: Steve, I have a
16 question for you, this is Josie. You
17 expanded, you guys expanded on this one, is
18 that a new expand or --

19 DR. OSTROW: No, this is 2008.

20 MEMBER BEACH: Okay, so it goes
21 back to then, thanks.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. TAULBEE: Looks like we're
2 asking a question here that we're not clear of
3 what the concern is. Is that correct, Brian?

4 MR. GLECKLER: Yes, when it comes
5 to the under measurement of neutron doses, the
6 lower energy neutrons?

7 DR. TAULBEE: I mean, we know that
8 NTA under responds to lower energy neutrons
9 depending upon the calibration factor, or the
10 calibration source, compared to the work place
11 energy spectra.

12 So I guess I would like a little
13 more explanation from SC&A: is that the issue
14 that's concerned and that it's not addressed
15 in the TBD?

16 DR. OSTROW: If you look at the
17 NIOSH response, I think that's sort of -- I'm
18 sorry, the issue now is the new response.
19 Where you say here that you revised the TBD,
20 thought up the appropriate instructions to
21 discount the INL workers and this neutron dose

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 assessment eliminated for this neutron dose³¹⁴
2 section of the external dosimetry TBD, and
3 gone later, filled out the guidance provided
4 in Rev 3 of the external TBD. We haven't
5 reviewed the latest external TBD.

6 DR. TAULBEE: Okay, that sounds
7 like it would be an appropriate place to --

8 MR. DARNELL: Start.

9 DR. TAULBEE: Or just to continue
10 this one.

11 DR. OSTROW: Our comments on the
12 original TBD.

13 MR. STIVER: So would this just
14 roll in to our previous action item to review
15 the new TBDs then and just this other aspect
16 of it.

17 MR. KATZ: Well, we haven't
18 actually had a tasking on the external TBD
19 have we?

20 DR. TAULBEE: I don't think so, but
21 it seems appropriate that they would revise,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 look at the data. 315

2 MR. KATZ: I guess the question is

3 --

4 MR. STIVER: If anything's been
5 revised significantly since our last review.

6 MR. KATZ: My question is whether
7 the revisions in the TBD have dramatically
8 changed this component that you're addressing?

9 MR. HINNEFELD: This finding?

10 MR. KATZ: Yes.

11 MR. DARNELL: Actually if they're,
12 if SC&A is going to do a review it would
13 behoove them to look at the whole thing,
14 because we had two different Technical Basis
15 Documents combined, major changes in all the
16 documents. They haven't read what's current.

17 MR. KATZ: I understand that, but

18 --

19 MR. DARNELL: The original isn't
20 even close to what's current now.

21 MR. KATZ: Right, I understand

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 that, it's just that we've been going sort₃of₁₆
2 focused, we did say review the whole internal,
3 and up to this point we haven't needed to say
4 that to the external and so far we just have
5 this issue. It seems like jumping the gun to
6 say review the whole external on this basis or
7 this one element.

8 DR. OSTROW: I agree with Ted, I
9 don't want to do the entire external one if I
10 can help it. I think, at least so far it's
11 focused. I would want to review it on this
12 particular issue.

13 MR. STIVER: Weren't there also
14 some issues related to the external dosimetry
15 photon and the shallow dose that we needed to
16 look into?

17 MEMBER BEACH: Yes.

18 MR. KATZ: Right, I mean, these are
19 sort of focused questions and that's all I'm
20 saying here is if it gets to the point where
21 it looks like the whole TBD comes into play

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 then, sure, review the whole thing ~~but~~
2 otherwise we don't need to. 317

3 MR. STIVER: So at this point we're
4 looking at a focused review?

5 MR. KATZ: Right.

6 CHAIRMAN SCHOFIELD: Okay,
7 basically, after reviewing that external --

8 DR. TAULBEE: Yes.

9 CHAIRMAN SCHOFIELD: That's what I
10 was just thinking, just there was some major
11 rewriting in there.

12 MR. KATZ: This is 30.

13 CHAIRMAN SCHOFIELD: Okay, Number
14 30, neutron calibration deficiencies due to
15 the use of plutonium-beryllium source for
16 neutron calibration. Dosimeters would
17 significantly under measure neutron doses from
18 sources of low energy spectra, NIOSH should
19 reevaluate the approach in the TBD to account
20 for potential neutron doses.

21 MR. KATZ: Is that also addressed

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 in the new TBD? 318

2 DR. TAULBEE: I would think so.

3 (Simultaneous speakers.)

4 DR. OSTROW: I think the action
5 item here, because we agreed that SC&A should
6 check out NIOSH's statement.

7 MR. KATZ: Right.

8 DR. OSTROW: We'd have to address
9 this.

10 MR. KATZ: Right, and you have the
11 new TBD, you're looking at this part of the
12 TBD anyway.

13 DR. OSTROW: Yes.

14 MR. KATZ: Yes.

15 CHAIRMAN SCHOFIELD: Okay, Number
16 31, complete disquality of Idaho National Lab
17 neutron dosimetry and recordkeeping programs.
18 Identification and determination of neutron
19 dose from workers are heavily influenced by
20 the assumption of confidence -- by this
21 assumption of confidence.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 But SC&A found this premise to be
2 unsupported after examining several critical
3 DOE Headquarters, Tiger Team and DNFSB Site
4 Audit Reports.

5 DR. TAULBEE: I think this is
6 another one where we can go through the Tiger
7 Team issues and identify them. The ones that
8 are addressing the neutrons here and go
9 through and address them like we are for the
10 beta-gamma dosimetry ones.

11 MR. HINNEFELD: Yes.

12 MR. STIVER: I agree.

13 MR. KATZ: That sounds good.

14 CHAIRMAN SCHOFIELD: Okay, we might
15 get to go home tonight after all. Number 32,
16 on certain re-estimation for neutron doses,
17 NIOSH should explain how the FNCFs were
18 obtained and provide instruction to dose
19 reconstructors how to apply them.

20 DR. OSTROW: Here again, NIOSH
21 responded that the latest provision of TBD

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 appears to adequately explain the FNCF. 320

2 MEMBER ROESSLER: Is that fast
3 neutron correction factor, is that what that
4 stands for?

5 MR. DARNELL: Facility.

6 MEMBER ROESSLER: Facility neutron
7 --

8 DR. TAULBEE: Yes, each facility
9 had a different correction factor.

10 MEMBER ROESSLER: These acronyms
11 can sometimes get you.

12 MR. GLECKLER: That's the site's
13 acronym, yes.

14 MR. KATZ: Okay, so SC&A will cover
15 that because that's part of this neutron
16 revisitation -- well, not revisitation, but
17 visitation of the new TBD.

18 MEMBER BEACH: Sounds like 33 and
19 34 are -- maybe 33 for sure, are the same
20 thing.

21 MR. KATZ: Is that true?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. OSTROW: 33 is also, SC&A has ³²¹
2 to check it out.

3 MR. STIVER: Yes, 33 would be
4 applicable too.

5 CHAIRMAN SCHOFIELD: Okay, Number
6 34, let's see.

7 MEMBER ROESSLER: I know, late in
8 the day it goes faster.

9 MR. HINNEFELD: Well, John left.

10 MR. KATZ: Multiple factors but
11 that's right.

12 CHAIRMAN SCHOFIELD: High risk
13 neutron exposure: NIOSH did not evaluate
14 comprehensively the facility and field data to
15 identify and separate out the high risk or
16 high dose jobs from worker neutron exposures.

17 This information is essential for
18 dose reconstructors to fill in the gap when
19 dose records in the claimant's file is not
20 complete.

21 DR. TAULBEE: This is very similar

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 to the language in the other comments on high³²²
2 risk jobs. And the last one on beta-gamma
3 actually was related to hot particles, and so
4 that was being revised for that. So I guess
5 my question for clarification is: what is the
6 concern with regard to neutrons from this
7 standpoint? Steve or John, can one of you
8 guys?

9 MR. STIVER: Steve, want to take
10 this one?

11 DR. OSTROW: Okay, I think here
12 this is specifically for neutron --

13 MR. KATZ: Steve, can you speak
14 closer to the speaker phone? It's hard to
15 hear you.

16 DR. OSTROW: -- specifically for
17 neutron exposure and we didn't see where NIOSH
18 provided a list of what was considered to be
19 at the high risk for neutron exposure, I mean
20 what sort of job.

21 MR. GLECKLER: The external TBD

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 identifies the specific facilities where
2 neutron exposures were possible. It doesn't
3 specifically identify any as high risk neutron
4 exposures, typically, I think, about the
5 highest total neutron dose that I've seen for
6 a worker is about 500 millirem for a career
7 dose.

8 There might be a couple that were a
9 little bit higher, but those are very rare
10 that you see anything in that magnitude, most
11 of them are lots of zeroes. So to me there's
12 no real indication that there's any real high
13 risk neutron jobs -- exposure jobs at INL,
14 other than an accident.

15 MR. HINNEFELD: I have a question
16 here and I want to make sure that we're
17 complete on our investigation in this issue.
18 I believe all of these findings by site
19 experts as being, hey, you know, we had really
20 high doses here. And there's a chance for
21 really high dosage, and I would believe that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 those are summarized and the site expert³²⁴
2 interviews are summarized in SC&A's documents
3 in their report. Would that be true, Steve?

4 DR. OSTROW: Some of it, yes. In
5 our report we had some site interviews.

6 MR. HINNEFELD: Okay.

7 DR. OSTROW: And they identified
8 what at least they thought was high exposure
9 risk.

10 MR. HINNEFELD: Yes, now we
11 certainly agree that there are places in INL
12 where you get really high dose rates; we
13 certainly agree with that.

14 Now the question remains: are
15 people exposed to those dose rates while
16 they're not monitored, in which case, that's
17 the only time this would be an issue,
18 otherwise you're wearing a monitor that would
19 measure those high dose rates.

20 So I think for completeness we
21 should go back look at, specifically at the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 interview portion of the report -- of the ³²⁵
2 review. Just to satisfy ourselves that they
3 are not describing a situation that we don't
4 know about, in terms of people encountering
5 these dose rates without being monitored.
6 Does that sound acceptable?

7 CHAIRMAN SCHOFIELD: That pretty
8 well sums it up.

9 MR. STIVER: Yes, that sums it up
10 pretty well in my mind.

11 DR. TAULBEE: Okay, so your
12 information as to that there were certain high
13 risk jobs, so forth, came from those
14 interviews?

15 MR. HINNEFELD: I think all these
16 findings ascribed that finding to site experts
17 who were interviewed for this. I think each
18 one does.

19 DR. TAULBEE: Okay.

20 MR. STIVER: Yes, so you see, if
21 there's some description of a facility or job

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 type that would not have been covered in the ³²⁶
2 assignment of unmonitored dose in another
3 situation.

4 MR. KATZ: Okay, and if you don't
5 find that their interviews are substantiated,
6 then we're done.

7 MR. HINNEFELD: Well, one way or
8 another we've got to provide something back on
9 what we found out.

10 MR. KATZ: Yes, right.

11 MR. HINNEFELD: Report back what we
12 found out.

13 MR. KATZ: Right, right.

14 MR. DARNELL: So we're reviewing
15 the interviews to see if an unmonitored worker
16 could have excess --

17 DR. TAULBEE: To see if there's any
18 areas of neutron exposure.

19 MR. HINNEFELD: To see if there are
20 any gaps in the --

21 DR. TAULBEE: Is there something

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 that we didn't know about, that we feel that
2 we've got an approach that works, but this may
3 even describe a situation that we didn't know
4 about, you know, things like that. You know,
5 is there something to this comment?

6 MEMBER BEACH: Is this something
7 that SC&A can cite different interviews that
8 brought this comment on?

9 MR. HINNEFELD: Well, if they could
10 --

11 MEMBER BEACH: I mean, that might
12 be helpful.

13 MR. HINNEFELD: If there's a
14 specific person or a way to identify the
15 specific interview.

16 MR. STIVER: We certainly might be
17 able to narrow it down that way.

18 MR. HINNEFELD: Yes, that way that
19 would save us some time.

20 MEMBER BEACH: That would save you
21 a lot of time.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MR. HINNEFELD: Yes. 328

2 DR. OSTROW: Then SC&A would have
3 to go through the interviews that --

4 MR. HINNEFELD: Yes, if they don't
5 know any better than us, I mean --

6 DR. OSTROW: It could work either
7 way.

8 MEMBER BEACH: But they're the
9 one's that brought the issue up, SC&A did.

10 MR. STIVER: But I think we might
11 be able to better identify where we felt that
12 might have been a problem.

13 MR. KATZ: Don't you normally
14 reference these in your reports, when you have
15 a finding?

16 MEMBER BEACH: Yes, I believe we
17 do.

18 MR. DARNELL: There's a summary in
19 Attachment 3.

20 MR. STIVER: They usually include a
21 summary attachment.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DARNELL: It's not ^{the}₃₂₉
2 interview that came from this, it's just a
3 summary of this situation.

4 MR. HINNEFELD: What I'm reading
5 from is Rev 1 of the Site Profile Review and
6 in this they is, I found no other explanation
7 than site experts interviewed by SC&A
8 classified INL as an acute dose site.

9 CHAIRMAN SCHOFIELD: Okay, Number
10 35, multiplying factors for missed neutron
11 dose. NIOSH provided data support, two
12 multiplying factors, 1.25 and 2, the fixed
13 missed neutron dose, default value of 50
14 millirem.

15 MEMBER BEACH: That takes us back
16 to 29.

17 DR. TAULBEE: Yes. We're going to
18 revisit -- or revise that TBD.

19 MR. DARNELL: Or SC&A's going to go
20 back.

21 CHAIRMAN SCHOFIELD: Anybody else

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 have any other comments on that? 330

2 MR. STIVER: Part of the Rev 3
3 neutron component review.

4 MEMBER BEACH: For 36 and it looks
5 like 35 -- I mean 35 and it looks like 36 is
6 going to be the same. Is that correct?

7 CHAIRMAN SCHOFIELD: Looks like it.
8 No, this is a 36, 37 issue.

9 DR. TAULBEE: This is a different
10 issue from the --

11 MR. STIVER: Yes, this is the beta
12 dose.

13 DR. TAULBEE: This would be beta
14 dose, this would be another focused part of
15 that TBD.

16 MEMBER BEACH: Which is, there's a
17 current revision to the TBD. Yes.

18 DR. TAULBEE: Yes.

19 MR. STIVER: Yes.

20 DR. OSTROW: So SC&A will look at
21 the section that covers this.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. KATZ: Okay. 331

2 CHAIRMAN SCHOFIELD: Okay, we're on
3 Number 36, 35, SC&A is going to go back and
4 review that.

5 MR. DARNELL: Same for 36.

6 MEMBER BEACH: Same for 36.

7 CHAIRMAN SCHOFIELD: Okay, SC&A
8 review.

9 MEMBER BEACH: Sounds like 37 is
10 done.

11 CHAIRMAN SCHOFIELD: Okay, we're
12 now down to 38, the shallow dose. NIOSH
13 should consider making use of OTIB-17,
14 Technical Information Bulletin, the
15 interpretation of dosimeter data for
16 assignment of shallow dose where appropriate.

17 Additionally, contrary to the
18 OTIB's claim, on page 15, the assumption of
19 undergarment pant thickness, two millimeter
20 each, is claimant-favorable. SC&A believes
21 the measured thickness are about half that and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 hence the OTIB assumptions are not claimant³³²
2 favorable.

3 MR. DARNELL: I think that's an old
4 one.

5 DR. TAULBEE: This is OTIB-17, it's
6 been reviewed from the Procedures?

7 MR. SMITH: Yes, it has, this isn't
8 that. We've dealt with that issue in the
9 Procedures Work Group.

10 DR. TAULBEE: Okay, so can we close
11 this one out then?

12 MR. STIVER: Okay, we can close
13 this one out.

14 MR. GLECKLER: Excellent.

15 MEMBER BEACH: So who gets the
16 action of revising the matrix at the end of
17 all this?

18 MR. DARNELL: SC&A people.

19 (Laughter.)

20 MEMBER BEACH: It is SC&A people?

21 MR. STIVER: Steve, you want to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 take that one? 333

2 DR. OSTROW: Just by referencing
3 the Linde review, as Gen Roessler notes, we
4 ended up with, I don't know, about ten columns
5 of --

6 MEMBER ROESSLER: Say that again
7 Steve, I couldn't hear you very well.

8 DR. OSTROW: What I'm saying is,
9 well, you know, where we ended up with Linde
10 we ended up with about ten columns in our
11 matrix review before we finally closed
12 everything out, we kept on adding columns to
13 it.

14 MEMBER ROESSLER: Yes, as long as
15 it fits on the paper it's okay.

16 MR. STIVER: You have to use the
17 17-inch paper for that.

18 MEMBER ROESSLER: Or small print.

19 MR. STIVER: Yes, really really
20 small print.

21 DR. OSTROW: I don't think we have

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 to revise anything right now, because we have³³⁴
2 all these action items, but I'm suggesting,
3 I've been taking very good notes, I think, and
4 what I'd like to do probably today, before I
5 lose everything in my mind, just summarize the
6 38 issues very quickly, what's closed and what
7 the action items are. Send out a draft to Ted
8 and to the Board and to NIOSH.

9 And if everybody agrees that will
10 be our action item. We could have like a
11 checklist and make sure we cover everything.
12 Does that sound like a good idea?

13 MR. KATZ: That sounds good. Are
14 you covering the NIOSH actions too?

15 DR. OSTROW: Yes, I worked on
16 everything.

17 MEMBER ROESSLER: You're so
18 organized.

19 MR. KATZ: Yes, I got them too so
20 if you have questions, I took good notes too,
21 I think.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. OSTROW: I'm just going to ^{do}₃₃₅
2 sort of a draft and send it out and, you know,
3 people can finalize it and, Ted, maybe you can
4 put out the final one after everybody agrees
5 on the action.

6 MR. KATZ: Absolutely, that's, I
7 think, always a good way to go, and doing it
8 soon like you're saying, is, I think, helpful
9 for everyone since we want to move these
10 things along.

11 DR. OSTROW: Yes, I'm going to work
12 on that actually right now.

13 MR. KATZ: Great, thank you, Steve.

14 CHAIRMAN SCHOFIELD: Anybody got
15 anything else?

16 MR. KATZ: Anything else for the
17 good of the order?

18 MEMBER BEACH: How about
19 deliverables and meeting plans?

20 MR. KATZ: I think, so we know the
21 deliverables, we got those captured pretty

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 well and clearly, I think. And meeting plans;
2 it seems like we need, folks need to go back
3 after they have their action list and do some
4 figuring before we can schedule the next
5 meeting.

6 CHAIRMAN SCHOFIELD: Yes, before we
7 schedule --

8 MR. KATZ: And it sounds like
9 they'll be some technical calls before we have
10 a meeting too, so I think we can put that off
11 for a bit.

12 MR. HINNEFELD: I think the idea is
13 that, you know, we have 38 issues, we got rid
14 of a few today and the idea is to get it down
15 to manageable number, just identify a few
16 issues that are important issues, you know,
17 and try to get rid of the lesser, the ones of
18 lesser importance, you know, get them out of
19 the way.

20 MR. KATZ: Yes, and there are a lot
21 of overlapping issues that will get conquered

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 with one effort, so --

337

2 MR. HINNEFELD: Yes. I don't think
3 we're in a situation to schedule anything
4 today.

5 MR. KATZ: Yes, no, absolutely.

6 MR. HINNEFELD: That'd be a
7 resource of time.

8 MEMBER BEACH: Right, I understand.

9 MR. KATZ: So, thank you everybody,
10 on the phone and in the room, and have a good
11 rest of your day. It's starting to pour and
12 looking really ugly here.

13 (Whereupon, the above-entitled
14 matter was concluded at 3:14 p.m.)

15

16

17

18

19

20

21

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

This transcript of the Advisory Board on Radiation and Worker Health, Idaho National Laboratory (INL) Work Group, has been reviewed for concerns under the Privacy Act (5 U.S.C. § 552a) and personally identifiable information has been redacted as necessary. The transcript, however, has not been reviewed and certified by the Chair of the INL Work Group for accuracy at this time. The reader should be cautioned that this transcript is for information only and is subject to change.

1

338

2

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com