

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

CENTERS FOR DISEASE CONTROL

+ + + + +

NATIONAL INSTITUTE FOR OCCUPATIONAL
SAFETY AND HEALTH

+ + + + +

ADVISORY BOARD ON RADIATION
AND WORKER HEALTH

+ + + + +

GRAND JUNCTION FACILITIES WORK GROUP

+ + + + +

MONDAY
AUGUST 7, 2017

+ + + + +

The Work Group convened via teleconference at 1:00 p.m., R. William Field, Chair, presiding.

PRESENT:

R. WILLIAM FIELD, Chair
JAMES E. LOCKEY, Member
GENEVIEVE S. ROESSLER, Member
LORETTA R. VALERIO, Member

NEAL R. GROSS

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

ALSO PRESENT:

TED KATZ, Designated Federal Official

NANCY ADAMS, NIOSH Contractor

BOB BARTON, SC&A

HANS BEHLING, SC&A

DOUG FARVER, SC&A

JIM NETON, DCAS

MICHAEL RAFKY, HHS

JOHN STIVER, SC&A

TOM TOMES, DCAS

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

Contents

Welcome and Roll Call..... 4
NIOSH Response to SC&A SEC Review Concern..... 5
Post 1990 monitoring (July 27, 2017 DCAS Memo).... 5
Petitioner Comments..... 16
WG SEC Recommendation for August Board..... 17
Meeting (1986-2010) and/or Path forward..... 17
PER 47: SC&A June 22 Memo on Finding 3..... 21
Adjourn..... 33

NEAL R. GROSS

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

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

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

1:00 p.m.

Welcome and Roll Call

MR. KATZ: Welcome to everyone on the line. This is the Advisory Board on Radiation and Worker Health. We are the Grand Junction Work Group today.

The agenda and materials that we are going to be discussing today are all posted on the NIOSH website, under the Meetings page of this program, Schedule of Meetings, today's date, and if you go there, you can open up all those documents that are going to be talked about today, including the agenda. So, you're welcome to that.

Then, the other thing just to mention up-front, except when you're speaking, please mute your phones. And if you don't have a mute button, press *6, * and then 6, and that will mute your phone for this call and help everybody else out with being able to hear what's being said.

So, roll call. We're speaking about

1 a specific site, so please just conflict of
2 interest.

3 (Roll call.)

4 MR. KATZ: Bill, it's your meeting, you
5 can take it from here.

6 **NIOSH Response to SC&A SEC Review Concern**

7 **Post 1990 monitoring (July 27, 2017 DCAS Memo)**

8 CHAIR FIELD: Thanks, guys. Since we
9 met last in October of 2016 and at that time, had
10 one finding that was regarding workplace air
11 monitoring and data supporting the assumption
12 that unmonitored radiation workers when they
13 exceed 200 DAC-hours and non-radiation workers
14 when they exceeded 40 DAC-hours in a year.

15 When we met, that was -- we were
16 unable to resolve that issue and it was suggested
17 that additional interviews be performed with
18 employees familiar with the practices to obtain
19 additional information about air sampling and
20 bioassay programs.

21 In response to that, Tom and his group
22 did some additional interviews with one employee,
23 it looks like the employee was -- at two different

NEAL R. GROSS

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

1 times. And Tom presented a real nice summary of
2 that interview. But, Tom, I was wondering if you
3 could just discuss your memo and how that
4 interview went and what findings you had for that
5 review?

6 MR. TOMES: Sure. We interviewed a
7 health physicist who worked at Grand Junction
8 from 1991 through 2000, I believe it was. The
9 period of time in question on this finding is
10 starting in 1991. And so, we wanted to get some
11 information to verify the program that existed.

12 And our approach to the bounding
13 intake for unmonitored workers, that is workers
14 who had no bioassay data, was that they would not
15 be exposed to an average concentration greater
16 than ten percent of the DAC.

17 And our position on that was based on
18 the fact that they had a monitoring program that
19 would identify all those workers. And the
20 comments were that there was not --- we did not
21 have sufficient background information and
22 references to support those assumptions.

23 So, we interviewed the health

NEAL R. GROSS

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

1 physicist. His job there was internal dose
2 assessments and so, he was directly involved with
3 assessing those people who were exposed.

4 As a matter of fact, his initial job
5 there was January of 1991, the period where we're
6 speaking of, and at that time, the program was in
7 an interim bioassay program state, which was
8 basically written in the late 1980s and 1990, and
9 they were collecting a large number of bioassay
10 samples from workers.

11 They were simply rotating workers
12 through submitting samples. It was not a trigger
13 level-based program, it was just a monitoring of
14 -- randomly monitoring workers. And they had a
15 large number of samples they were collecting and
16 developed quite a backlog. And his particular
17 task was --

18 (Whereupon, the above-entitled matter
19 went off the record at 1:07 p.m. and resumed at
20 1:09 p.m.)

21 MR. KATZ: So, Tom, you got cut off
22 about a minute, probably, before you realized it.
23 But you can start again.

NEAL R. GROSS

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

1 MR. TOMES: All right. The health
2 physicist we interviewed, he went to work there
3 in 1991 and his job was to, his initial job was
4 to sort out all the large number, hundreds of
5 bioassay samples that were being collected and
6 the backlog of those.

7 And what they did at that time, they
8 were also in the process of changing the program,
9 which -- so, there's some documentation of what
10 the program changed to. Which we provide
11 references for that in the memo and we verified
12 that by looking through some other documents in
13 our database as well.

14 But the program changed in 1991 to
15 reduce the number of samples, because they
16 thought it was unnecessary to collect so many
17 samples from unmonitored workers, because a large
18 percentage of the work going on at Grand Junction
19 did not have an airborne hazard associated with
20 it.

21 There was a limited amount of airborne
22 areas. It was basically just D&D operations at
23 that time caused some elevated, and it was only

NEAL R. GROSS

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

1 a temporary situation. They also had some
2 occasional radon airborne airs when the chamber
3 was in use, but that was adequately addressed by
4 posting and monitoring.

5 So, the program in 1991 changed to
6 requiring a program of assigning airborne areas.
7 If a worker entered an airborne area, he was
8 required to be on a bioassay program, submit a
9 baseline sample, and they had sheets to sign-in
10 and they were submitted to the internal dosimetry
11 people, who would also monitor their records on
12 submitting samples. And we verified that by
13 looking at some claim data and some other records
14 that showed that they were tracking people.

15 And I've seen a couple situations in
16 the records where they actually would require
17 people to submit samples and, in some cases, they
18 also took them off the list of bioassay, because
19 they were no longer entering airborne areas.

20 And we actually found a couple claims
21 where people had to sign saying they had not
22 entered an airborne area in the past year and
23 then they were taken off the requirements.

NEAL R. GROSS

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

1 So, there seems to be quite a bit of
2 information to support that the program was
3 implemented. It does take quite a digging to
4 find that, because, as I said, a lot of the
5 activities did not generate airborne hazards.

6 So, they have much more claims than
7 they do people who were exposed, but if you dig
8 through our database sufficiently, you do find a
9 few incidents where people were monitored. The
10 program in 1991 extended on out through the 10
11 CFR 835 period, which I did not specifically
12 evaluate.

13 But I focused instead on the 1991
14 through 1993 period. And there seemed to be very
15 few activities that generated airborne. So, I
16 went through the records and identified the D&D
17 projects that were ongoing at that time.

18 They -- the Grand Junction Project
19 Office Remedial Action Project kicked off in
20 approximately 1986 with the investigations that
21 were going on. And then, they started some
22 limited excavations of tailing and contaminated
23 soils in 1989. And that was prior to a Record of

NEAL R. GROSS

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

1 Decision for a remediation project.

2 So, they did some interim excavations
3 onsite. And we had records of air sampling for
4 that period. I looked at the buildings they may
5 have demolished at that time and there were only
6 four buildings that were demolished in the early
7 1990s.

8 And two of those were the former Pilot
9 Plants that operated in the 1950s. One of them
10 was the Small Pilot Plant, which was a relatively
11 small building. And the other one was the Large
12 Pilot Plant, which was about 10,000 square foot
13 building. Those two buildings and the other two
14 associated small buildings were demolished in
15 April of 1992.

16 And what I did not find, I did not
17 find any air sample data in our records for that
18 activity. So, we submitted a request from Grand
19 Junction to do a search for data on the
20 remediation project, looking for air samples and
21 monitoring data.

22 They supplied NIOSH with a very
23 lengthy list, I still have not read it all, but

NEAL R. GROSS

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

1 the one file is 200-something pages long. And
2 these consist of titles and descriptions of the
3 records that are available in the dozens and
4 dozens of boxes out there in Denver.

5 And I did find records of RWPs and
6 surveys and air monitoring for specific projects
7 that we thought should have air sampling data.
8 And we did not have that data, but there is data
9 available for the period. And that seemed, to
10 me, to settle the issue of whether or not they
11 had a monitoring program. Because the last
12 meeting we had, the question seemed to be that we
13 could not demonstrate that they actually
14 implemented the program.

15 So, based on the interview with the
16 health physicist and the fact that we identified
17 the activities that were ongoing at the time that
18 had potential for generating airborne
19 radioactivity and the subsequent list of records
20 that are available, we thought that that
21 demonstrated that they had a sufficient bioassay
22 program and an air monitoring program.

23 So, that is basically the quick

NEAL R. GROSS

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

1 version of what I supplied in the memo. The memo
2 does provide several dozen different files that
3 I have referenced, where this information comes
4 from.

5 I would like to mention one other
6 aspect of this. In addition to the worker
7 monitoring program, they submitted an ambient air
8 monitoring. And that program had select
9 locations onsite, like most sites have perimeter
10 monitoring, Grand Junction actually was onsite
11 monitoring.

12 They had some in both the north
13 section and the south section of the site. And
14 they were placed at locations that would be in
15 and around airborne generating activities. And
16 we have those results from all those years and
17 all those results are very low.

18 There was no high air concentrations,
19 they were all much less than one percent of DAC.
20 And so, we feel that the ambient air was low and
21 we feel that the localized D&D activities were
22 adequately monitored. And for those that -- when
23 they established an airborne area, we believe

NEAL R. GROSS

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

1 that they required samples to be submitted, until
2 such time as the person was no longer exposed.

3 And so, we do feel that the worker --
4 we have a claimant who was a D&D worker, we feel
5 that if he was exposed to ten percent of DAC, he
6 would have had a bioassay sample. And if he had
7 no bioassay samples, we believe that ten percent
8 of DAC would bound his intakes.

9 CHAIR FIELD: It seems like you sure
10 got a lot more information. So, it looks like it
11 was really a worthwhile effort to contact him and
12 get this information. Do Work Group Members have
13 any questions? No?

14 MEMBER ROESSLER: I have no questions,
15 this is Gen.

16 CHAIR FIELD: Okay.

17 MEMBER VALERIO: This is Loretta. I
18 have no questions.

19 CHAIR FIELD: Okay. Doug, did you --

20 MEMBER LOCKEY: This is --

21 CHAIR FIELD: Yes, go ahead.

22 MEMBER LOCKEY: -- I don't have any
23 questions.

NEAL R. GROSS

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

1 CHAIR FIELD: Okay. Doug, did you have
2 a chance to review this? Because I'd like to get
3 your opinion.

4 MR. FARVER: Yes. That's -- first of
5 all, it's a very good memorandum. It's very well
6 intended, very good job of describing what they
7 found. And there's even more information if you
8 go back and read the interview.

9 I found that to be a very good
10 interview. They had a lot of good information.
11 And I agree, I believe that ten percent of the
12 DAC should bound the dosage. Based on the
13 interview and the other documentation.

14 CHAIR FIELD: Okay. So, from what I'm
15 hearing, it sounds like this finding is resolved,
16 then, to everyone's satisfaction. Is that right?

17 MEMBER LOCKEY: Jim Lockey, I concur.

18 CHAIR FIELD: Okay.

19 MEMBER ROESSLER: This is Gen. I concur
20 and I think, too, Tom did a very good job on the
21 report. He gave some of the background, which
22 helps when you don't have a meeting for a while.

23 CHAIR FIELD: It sure does. That was

NEAL R. GROSS

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

1 excellent.

2 MEMBER VALERIO: This is Loretta. I
3 concur as well.

4 CHAIR FIELD: Good. So, at this point,
5 Ted, do we ask for the Petitioner? Is the
6 Petitioner online that would like to speak to the
7 group?

8 MR. KATZ: Yes. That's the thing to
9 check with first, before we go on.

10 CHAIR FIELD: Okay.

11 **Petitioner Comments**

12 MR. KATZ: So, if we have the
13 Petitioner on the line and you wish to make
14 comments, this is the opportunity. And you'll
15 also have the opportunity at the Board meeting
16 next -- on August 23, I believe. We didn't hear
17 from the Petitioner at the outset of the meeting
18 --

19 CHAIR FIELD: No.

20 MR. KATZ: -- so I don't believe she's
21 on.

22 CHAIR FIELD: Okay. So, I guess, at
23 this point, the SEC recommendation from the Work

NEAL R. GROSS

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

1 Group?

2 MR. KATZ: Exactly.

3 **WG SEC Recommendation for August Board**
4 **Meeting (1986-2010) and/or Path forward**

5 CHAIR FIELD: Okay. So, it seems to me
6 that there is very little information at this
7 point to support an SEC. I think it should be
8 denied, but that's my opinion. I'd like to hear
9 the other Work Group Members.

10 MEMBER ROESSLER: I agree with you,
11 Bill.

12 MEMBER LOCKEY: Bill, I agree. Based on
13 the report I read this morning, I agree with that.

14 CHAIR FIELD: All right. Loretta?

15 MEMBER VALERIO: This is Loretta. I
16 actually had the opportunity to go in and look at
17 all the information that was corrected, the
18 spreadsheet, so I agree. I agree.

19 CHAIR FIELD: Okay. Ted, so it seems
20 like we have a consensus among the Work Group
21 then.

22 MR. KATZ: Yes, Bill. So, Tom, can you
23 just help us out with a proper definition of the

NEAL R. GROSS

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

1 Class that's being, the additional Class that's
2 being denied?

3 MR. TOMES: Did you say, Tom, Ted?

4 MR. KATZ: Yes, Tom.

5 MR. TOMES: Okay.

6 MR. KATZ: So, just the actual, so we
7 have on the record what Class we're speaking of.

8 MR. TOMES: Okay. Well, the Petition
9 175 was to evaluate a Class from 1942 through
10 2010. And we initially recommended a Class
11 through January of 1971, I believe it was. And
12 then, we came back and reevaluated the data and
13 recommended extending it through 1985, which the
14 Board agreed to and was added.

15 And the current evaluation was tasked
16 to SC&A and the Work Group to review the 1986-
17 forward period. And the initial review from SC&A
18 was they concurred with our methods for
19 reconstructing bounding doses from 1986 through
20 1990. And then we're at this current period,
21 which is 1990-forward.

22 And so, the agreement that we can
23 bound doses starting in 1991-forward, the current

NEAL R. GROSS

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

1 recommendation would be that we would deny a
2 Class from January 1, 1986 through whatever date
3 in 2010 the petition covered. I don't have that
4 exact date in front of me, but I can look it up.

5 MR. KATZ: No, that's good enough, Tom,
6 I think.

7 MR. TOMES: Okay.

8 MR. KATZ: So, that's the motion on
9 the table and it sounds like the Board Members
10 concur. Okay. So, Bill, that takes care of --
11 so, I know we will need a presentation for the
12 Board meeting. And I don't know if we discussed
13 this before, but whether you want to prepare that
14 Bill or you want help from SC&A in drafting that?

15 CHAIR FIELD: No, it would be great to
16 get assistance for that.

17 MR. KATZ: So, John Stiver, can you --
18 do you think you can get that presentation
19 together and someone on your staff, maybe Doug?

20 MR. STIVER: Yes, we'll go ahead and
21 get that together.

22 CHAIR FIELD: Thanks so much.

23 MR. KATZ: Okay. And then, so, in

NEAL R. GROSS

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

1 terms of deadline for that, if you can get that
2 to Bill and the Work Group, ideally by the close
3 of business this Friday, that would be great.
4 And then, he can look at it and give a thumbs up
5 and we can get that posted before the Board
6 meeting happens. Because that takes now -- we
7 can't get those up overnight anymore. Does that
8 sound reasonable to you, Doug and John?

9 MR. TOMES: Okay. You're talking the
10 18th, then?

11 MR. KATZ: Yes, this Friday.

12 MR. TOMES: Oh, this Friday?

13 MR. KATZ: No, this Friday, next Friday
14 is too late.

15 MR. TOMES: Yes, okay. All right.
16 We'll get that pounded out then.

17 MR. KATZ: Okay. Thank you very much.
18 And, Bill, that takes us to the remaining, the
19 PER item. Do you want to have Hans present?

20 CHAIR FIELD: Yes, that would be very
21 --

22 MR. KATZ: Hans, are you still on the
23 line?

NEAL R. GROSS

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

1 DR. BEHLING: Yes, I am. I was just
2 on mute here.

3 MR. KATZ: Of, of course.

4 **PER 47: SC&A June 22 Memo on Finding 3**

5 DR. BEHLING: Okay. I'll be discussing
6 the memo that was issued back here in June of
7 2017, this past June, that deals with Finding 3
8 for the PER 47 for Grand Junction. And just to
9 give you a quick overview of the historical
10 issues, Finding 3 was identified in our first
11 review of PER 47 back in February of 2015.

12 And just as a brief overview, Finding
13 3 links to intakes of uranium, radium, and
14 thorium for the years of 1989 through 2006. And
15 those years correspond to the period of
16 decontamination/decommission at the Grand
17 Junction.

18 And the reason for the Finding is
19 quite simple. Whenever we view a pamphlet or a
20 TBD, we're always asked to review it to the level
21 where we can verify each and all the numbers that
22 will ultimately contribute to an assessment of
23 exposure, internal and external.

NEAL R. GROSS

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

1 And in this case, Finding 3 identified
2 an issue that relates to internal exposure from
3 inhalation and ingestion of those three
4 radionuclides I mentioned, uranium, radium, and
5 thorium, for the years 1989 through 2006.

6 And in the pamphlet, there was only a
7 very, very oblique reference to the use of 569
8 air samples that were the basis for the
9 identification of intake values for Table 6 of
10 the pamphlet.

11 And, of course, part of our assessment
12 is to verify those numbers. As I said, there was
13 no documented raw data that was included in the
14 pamphlet, nor were there even references cited.

15 And as a result, we identified the
16 Finding and the response to Finding 3, NIOSH --
17 and also in reviewing this issue in our
18 Subcommittee meeting, identified to SC&A and the
19 Subcommittee 15 references from the Site Research
20 Database, back in April of 2015.

21 And we were given those particular
22 references. And when, I reviewed those
23 references, I realized the incredible amount of

NEAL R. GROSS

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

1 information that was contained in extracting
2 those 569 data points.

3 And I contacted Ted Katz on this issue
4 and said, we're not in a position to support a
5 complete review of thousands of pages that were
6 part of those 15 SRDB references. And he agreed
7 to the fact that we would simply request NIOSH to
8 provide us with the statistical data that they
9 used in analyzing those data as part of our
10 verification.

11 And at that point, we received the
12 reference and, actually, I looked at some of the
13 data and I checked just for some of the things
14 and also then, I looked at the data that were
15 provided to us in summary fashion from NIOSH back
16 in February 21 of this past year, 2017.

17 And what I want to do is quickly just
18 go through this. I can jump ahead and tell you
19 that when we looked at it, we actually verified
20 these numbers. But let's go through some of the
21 numbers. And is John Stiver in a position to
22 provide me with Page 2 of the report, the draft
23 report I submitted? John?

NEAL R. GROSS

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

1 MR. STIVER: Yes, I can get it. Just
2 hang on a second and let me pull it up.

3 DR. BEHLING: There were like four
4 pages that I want to briefly make reference to in
5 discussing our review and our conclusions. I
6 think the first page is Page 2 of that draft
7 report.

8 MR. STIVER: And for some reason, every
9 time I try to do one of these during a meeting -
10 -

11 DR. BEHLING: If it's difficult, I
12 think if some -- if all the people have had access
13 to the report and maybe even have it available in
14 their person, I can just reference the page
15 number and briefly explain what that review
16 consisted of.

17 MR. STIVER: Yes, that actually might
18 be easier to do that.

19 DR. BEHLING: Okay. For those who have
20 the report in hard-copy form in front of you, I'm
21 on Page 2. And what it really amounts to is that
22 we received statistical data that involved two
23 particular figures.

NEAL R. GROSS

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

1 Figure 1 is the distribution of the
2 air sampling data. And initially, it was
3 identified there would be 569 air samples. But
4 as it turns out, only, of the 569 air samples,
5 only 519 samples showed air concentrations with
6 a positive value.

7 And in the figure that was supplied to
8 us, it was the collective of all 519 air samples
9 that were identified and there was a graph that
10 identified the normal distribution of those 519
11 values.

12 And the first -- for those who have
13 access to the actual Figure 1 on Page 5, two
14 numbers were identified in the distribution. If
15 you look at the XY plot there, the first number
16 was the Y value of 1.97 E to the minus 13
17 microcuries per ml, which is the 50th percentile
18 value of that distribution.

19 And the second one is the value of X
20 of 1.64, which is the value at the 95th percentile
21 value, and that yielded a value of 2.66 E to the
22 minus 12 microcuries per ml. So, we have two
23 values, the 50th and the 95th percentile value.

NEAL R. GROSS

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

1 And from that value, we can also
2 assess how these numbers correlate to the actual
3 numbers that we were questions that were
4 identified in Table 1 of the report, which
5 identifies the inhalation and ingestion value for
6 each of the radionuclides, the uranium, radium,
7 and thorium, at the bottom of the page, for four
8 different categories of workers.

9 Also, in addition to the Figure 1, I
10 just want to briefly mention was another set of
11 data that were assessed in Figure 2 of the report,
12 which identified the actual or latent attempt to
13 segregate the 519 data points into data value or
14 distribution for each new year.

15 And as it turns out, and I'll just
16 briefly mention it, that because of gaps in the
17 information, there was only one data point in the
18 year 1989 and there were no data points, no air
19 sampling measurements available for 1991 through
20 1993.

21 As a result, it was concluded, NIOSH
22 concluded that, rather than try to segregate the
23 air sampling data by year over that period, 1989

NEAL R. GROSS

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

1 through 2006, they would simply assess the entire
2 population of air samples that were represented
3 by 519 samples into single distribution.

4 And that's really Figure 1, so we can
5 dispense with Figure 2. And, therefore, use the
6 95th percentile, that distribution, applied to
7 all years, all the way from 1989, all the way to
8 2006.

9 And the part of the verification
10 issue, then, was really looking at the first
11 figure, looking at the 95th percentile value for
12 the actual microcuries per ml for the 95th
13 percentile distribution.

14 And I will have to tell you, in going
15 through and preparing for this meeting, I
16 happened to look at my own report and realized
17 that there is an error on Page 3 of the report,
18 where I have the value of 0.87 E to the minus 4
19 microcuries per year, it should have actually
20 been 5.87.

21 There's a five that was substituted
22 with a zero in the report, and I didn't catch it
23 when we sent it in. But I will send up or submit

NEAL R. GROSS

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

1 an errata sheet to correct that.

2 But in doing this value then, we
3 looked at the 95th percentile value that was
4 taken from Figure 1 and then applied for the
5 uranium inhalation, as well as the radium and
6 thorium inhalation, as prescribed by the
7 pamphlet. And the annual inhalation is obviously
8 based on the standard 1.2 cubic meters per hour
9 and the 2,000 hours per year.

10 And when you take the 2.66 E to the
11 minus 12 microcuries per ml as a 95th percentile
12 value and apply it to the values that I just
13 mentioned, the breathing rate and the hours in
14 the year, and also the contribution, it was
15 concluded that uranium contributes 50.2 percent
16 of the alpha emission, and radium-226 and
17 thorium-230 each contribute 24.9 percent, to make
18 100 percent in terms of what the air samples
19 actually were disclosing.

20 And in my write-up on Page 3, I
21 verified the fact that the numbers that were
22 cited in Table 1 on Page 4 of my report, those
23 were identified on behalf of operators, because

NEAL R. GROSS

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

1 those are the highest category of workers. And
2 all the other workers are actually not
3 necessarily identified by calculation, but it's
4 strictly a scaling factor.

5 So, when I evaluated the actual
6 numbers that I derived independently using the
7 table and the data that was supplied to me from
8 NIOSH, I verified each of the numbers in Table 1
9 that identifies the operators, their internal
10 exposure on an annual basis, based on the 95th
11 percentile, and they absolutely concur with the
12 numbers that were cited in the pamphlet.

13 So, in the process, I was able to
14 verify all the numbers and I spot checked a few
15 other numbers, just to be sure that they were
16 properly also scaled to the operator, and they
17 all came to the exact number that are cited in
18 the number.

19 So, in summary, our assessment of the
20 air data that was provided to us in summary
21 fashion in Figures 1 and 2, I was able to verify
22 that the 95th percentile was in fact used and was
23 calculated or converted to the exact numbers that

NEAL R. GROSS

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

1 appear in Table 1, in terms of annual exposures
2 to the operators, as well as all the other three
3 categories of workers, that include general
4 labor, supervisors, and administrative
5 personnel.

6 And as a result, our conclusion was
7 that we verified the numbers as we were asked to
8 do and we support the notion of closing out
9 Finding 3.

10 CHAIR FIELD: That's excellent. And,
11 so, Ted, as far as you're concerned, is there
12 anything else we need to do on this?

13 MR. KATZ: No. There's nothing else we
14 need to do on this, no.

15 CHAIR FIELD: Good.

16 DR. BEHLING: And, Ted, do you -- I
17 only realize the mistake in preparation for this
18 meeting. And this mistake, this error I
19 identified, where a zero was substituted for a
20 five, occurred -- I even checked my own original
21 draft that I submitted for internal review and
22 finalization with the personnel that looks for
23 private -- compliance and all that stuff, it must

NEAL R. GROSS

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

1 have happened during that transition and I never
2 went back.

3 Do you want me to resubmit that draft
4 that I submitted earlier, that you probably have,
5 which has that error in it?

6 MR. KATZ: Yes, so the record --

7 DR. BEHLING: So that it's part of the
8 public record?

9 MR. KATZ: Yes, no, absolutely, Hans.
10 For the record, if you could do that, that would
11 be great --

12 DR. BEHLING: Okay.

13 MR. KATZ: -- just submit a corrected
14 version with a note just on the front-end about
15 what was corrected.

16 DR. BEHLING: Yes.

17 MR. KATZ: And that would be perfect
18 for that. And the other thing I'll just ask is
19 if either SC&A or Tom, whichever, if this is --
20 I assume this PER is in the BRS, the Board Review
21 System, and it just -- that needs to be updated
22 to show, then, assuming the Work Group's in
23 concurrence, it sounds like they are, that the

NEAL R. GROSS

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

1 PER review is concluded. And we'll --

2 DR. NETON: Ted, this is Jim. I
3 checked, it is in the BRS, so it can be updated.

4 MR. KATZ: Okay, very good. And then,
5 I'll send a brief note to Wanda, even though it
6 belongs to this Work Group, I'll send a note to
7 Wanda to let her know that this is closed out.
8 To the Procedures Subcommittee.

9 CHAIR FIELD: Great. Thank you.

10 MR. STIVER: Ted, this is John. I've
11 got a quick question for you. I was just looking
12 --

13 MR. KATZ: Yes?

14 MR. STIVER: -- at the agenda for the
15 meeting and there's no slot there for this
16 presentation. I was wondering about how long you
17 expect it to me and where it will --

18 MR. KATZ: Well, you have an old draft,
19 I think. Hold on --

20 MR. STIVER: Maybe I do, maybe that's
21 it.

22 MR. KATZ: Yes, no, that's fine.
23 Because this ended up replacing something else

NEAL R. GROSS

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

1 that we couldn't --- the Work Group meeting that
2 we're not ready for. So, it's happening on
3 Thursday and we have, actually we have an hour
4 and 15 minutes for it.

5 MR. STIVER: Okay.

6 MR. KATZ: So, that's -- and by the
7 way, John, while we're talking, this is off-
8 topic, but I'm stretching out the time for
9 Fernald a little bit, so you're not quite so
10 constrained.

11 MR. STIVER: Okay, that's good.

12 MR. KATZ: Okay. All right. So, that
13 takes care of that, I think. Bill, is there --

14 CHAIR FIELD: No, I think that takes
15 care of everything for today.

16 MR. KATZ: Super.

17 CHAIR FIELD: Thanks, everyone, for all
18 you've done. Excellent reports.

19 **Adjourn**

20 MR. KATZ: Yes, thank you, everybody.
21 And thanks for a very efficient meeting.

22 (Whereupon, the above-entitled matter
23 went of the record at 1:39 p.m.)

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
2
3
4
5
6
7
8
9
10
11
12
13
14

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

(202) 234-4433

www.nealrgross.com