

UNITED STATES OF AMERICA  
CENTERS FOR DISEASE CONTROL

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NATIONAL INSTITUTE FOR OCCUPATIONAL  
SAFETY AND HEALTH

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ADVISORY BOARD ON RADIATION AND  
WORKER HEALTH

+ + + + +

114th MEETING

+ + + + +

THURSDAY,  
DECEMBER 1, 2016

+ + + + +

The meeting convened at 8:30 a.m.  
Mountain Time in the Hilton Santa Fe Historic  
Plaza, 100 Sandoval Street, Santa Fe, New Mexico,  
James M. Melius, Chair, presiding.

PRESENT:

JAMES M. MELIUS, Chair  
HENRY ANDERSON, Member  
JOSIE BEACH, Member  
BRADLEY P. CLAWSON, Member  
R. WILLIAM FIELD, Member  
DAVID KOTELCHUCK, Member  
JAMES E. LOCKEY, Member\*  
WANDA I. MUNN, Member  
JOHN W. POSTON, SR., Member\*

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PHILLIP SCHOFIELD, Member  
LORETTA R. VALERIO, Member  
PAUL L. ZIEMER, Member\*  
TED KATZ, Designated Federal Official

\* Via telephone

REGISTERED AND/OR PUBLIC COMMENT PARTICIPANTS:

ADAMS, NANCY, NIOSH Contractor  
BARRIE, TERRIE  
BLAZE, D'LANIE  
BURGOS, ZAIDA, NIOSH  
DOMINA, KIRK  
EVASKOVICH, ANDREW  
FITZGERALD, JOE, SC&A  
GRIFFON, MARK  
HAND, DONNA  
HINNEFELD, STU, DCAS  
HUGHES, LARA, DCAS  
JACQUEZ-ORTIZ, MICHELE  
JERISON, DEB  
KINMAN, JOSH, DCAS  
LEWIS, GREG, DOE  
LIN, JENNY, HHS  
MCFEE, MATT, ORAU Team  
RUTHERFORD, LAVON, DCAS  
STEPHENS, HUGH  
STIVER, JOHN, SC&A  
WHITTEN, DIANE

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

2 (8:26 a.m.)

3 CHAIR MELIUS: Okay, if Board Members  
4 can get seated, we're getting started.

5 This is our second day of Meeting 114,  
6 and let me turn it over to Ted to do the preliminary.

7 MR. KATZ: All right, thanks, Jim.  
8 Welcome, everyone in the room and on the line.

9 For folks on the line, today, we have  
10 a fairly short session. We're dealing with Area  
11 IV of Santa Susana, that's it, an SEC.

12 The materials for that, the  
13 presentation for that and I think the petition  
14 evaluation, too, for NIOSH should be posted on the  
15 website. You can find that under the NIOSH website  
16 under Meetings, schedule of meetings, today's  
17 date.

18 And you can also follow along the  
19 agenda, which is also posted there. It has a Live  
20 Meeting address. You can go to the Live Meeting  
21 address and follow along in real-time with -- as  
22 the slides are presented to the Board.

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1                   Okay, that takes care of that. I'm  
2 going to do roll call. For roll call, there are  
3 no conflicts among Board Members related to this  
4 site, so, there's nothing to be concerned about  
5 there.

6                   And I'll just run through the roll call  
7 alphabetically. We have some people in the room  
8 and people on the line.

9                   **Roll Call**

10                   MR. KATZ: Okay, let's just wait a  
11 couple minutes, at least give them a couple  
12 minutes. We often don't start right at the snap  
13 of 8:30, so maybe that they expect that. Oh, they  
14 actually have a minute, they do. It's not even  
15 10:30 yet.

16                   Yes, so, folks on the phone who are  
17 listening in, please mute your phone except for the  
18 Board Members, who we don't have on the phone right  
19 now. But press \*6 to mute your phone, if you don't  
20 have a mute button on your phone, for people  
21 listening in, and that will improve the audio for  
22 you so you can hear better what goes on here.

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1                   Do we have anybody on the line just to  
2                   let me know that you can hear me well?

3                   MEMBER ZIEMER: This is Ziemer. I can  
4                   hear you well.

5                   MR. KATZ: Oh, Paul, great. So that's  
6                   super. So, Paul, you are there.

7                   Okay, I think we can go ahead.

8                   **Santa Susanna Field Laboratory SEC Petition**

9                   **(1965-1988, Ventura County, CA)**

10                  CHAIR MELIUS: Okay, so, we'll start  
11                  the first and actually only item on the agenda today  
12                  is the Petition 234, Santa Susana Field Laboratory.  
13                  And we'll start with Dr. Lara Hughes.

14                  Welcome.

15                  DR. HUGHES: Thank you, Dr. Melius.

16                  Good morning, everybody. This is the  
17                  NIOSH evaluation, SEC Petition Evaluation for Area  
18                  IV of the Santa Susana Field Laboratory.

19                  A little bit to the petition history,  
20                  this is the third petition that NIOSH has  
21                  evaluated. This is Petition Number 234.

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1                   This was done this year. We identified  
2 a claimant for whom dose reconstruction could not  
3 be completed in July. We received a petition in  
4 August and issued the Petition Evaluation Report  
5 in October.

6                   As you well remember, there are two  
7 prior petitions, SEC 93 which was done in 2008,  
8 initially added a Class to the SEC from 1955 to 1958  
9 at a site which was based on an entire lack of  
10 internal monitoring data pre-1959.

11                   This was followed by SEC 156 that was  
12 issued in 2010. A Class was added to the SEC for  
13 the years '59 through '64 based on incomplete  
14 bioassay air and process monitoring pre-1965.

15                   The site history, the Santa Susana  
16 Field Laboratory encompasses about 2,850 acres in  
17 total. It's located 30 miles northwest of Los  
18 Angeles in the Simi Hills, Ventura County.

19                   The site was established in the late  
20 1940s. At that time, it was a remote area; it is  
21 not at this day. It's quite densely populated  
22 around it.

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1           It consists of four administrative and  
2           operational areas. They are named Area I through  
3           IV. Area IV is highlighted in blue and is the only  
4           covered area under this program. It's around 290  
5           acres and is also referred to as ETEC.

6           This area was established in 1953. In  
7           1955, the nuclear part of the operations going on  
8           at the site became Atomics International. And  
9           there was also rocket and explosives testing going  
10          on that became Rocketdyne.

11          These two entities merged in 1984,  
12          again, and became Rockwell International. It's  
13          been owned by Boeing since 1996. And, again, the  
14          part that was covered under DOE operations was also  
15          referred to as ETEC, or Energy Technology  
16          Engineering Center, which makes the corporate  
17          history quite complicated and it's very confusing  
18          to a lot of people.

19          The site operations, it was a test area  
20          for nuclear reactor programs to test different  
21          configurations of small nuclear reactors.

22          Overall, there were ten nuclear

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1 reactors tested. They were fairly low-energy,  
2 with the highest, the one with the highest power  
3 level was the SRE reactor.

4 There was also operation of criticality  
5 test facilities and nuclear support operations to  
6 support reactor programs were going on from 1956  
7 to present.

8 Those consisted of reactor fuel  
9 manufacturing, the disassembly of fused reactors  
10 and fuels, production of radioactive sources,  
11 research on fuel reprocessing, not actual  
12 large-scale reprocessing, but they researched  
13 different methods.

14 And, of course, in the preparation of  
15 the used fuel for waste -- for disposal, there's  
16 also a part that the non-nuclear programs between  
17 '66 and '98 that investigated in liquid metal  
18 technologies.

19 So, the rationale for adding an  
20 additional class, ever since the initial  
21 Evaluation Report was presented and NIOSH did some  
22 more investigation into the available data, it was

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1 determined that a coworker model would be necessary  
2 at the site because there was only a fraction of  
3 the workers at the site were monitored for internal  
4 exposures.

5 So, there was -- it was a several-year  
6 process where we collected the data from the site,  
7 scanned it and reduced it down to the coworker  
8 model. However, in so doing, we determined that  
9 there was an exposure potential for americium and  
10 thorium that was not really addressed by the  
11 coworker model and it was not addressed by the  
12 available data.

13 The americium and thorium were not  
14 detected by available internal monitoring methods.  
15 They could analyze for it but it wasn't generally  
16 done.

17 The internal coworker model is limited  
18 in scope in that it addresses uranium, plutonium  
19 and mixed fission products. It does not address  
20 the thorium and progeny and it does not address  
21 americium.

22 There were sources of americium and

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1 thorium obviously on the side, the routine reactor  
2 operations, shutdowns, modification, refueling,  
3 fuel manufacturing, all would result in  
4 accumulation of transuranic elements.

5 The SRE had two cores that were used.  
6 The initial core had some experimental fuel  
7 elements that contained thorium and the second core  
8 that was used had -- consisted of uranium-thorium  
9 alloy core that was used from '60 to '64.

10 Now, it's not so much the use of this  
11 core than what they did when they were done with  
12 it. They disassembled the core and they stored the  
13 fuel inside and eventually, it was prepared for  
14 disposal; it was de-clad, cut up and shipped  
15 offsite.

16 So, there was also the advanced  
17 epithermal thorium reactor that operated from 1960  
18 to 1974 that used a thorium fuel core. The  
19 radioactive material disposal facility was used  
20 for storage of the used reactor fuel.

21 The hot lab was used to disassemble the  
22 SRE fuel in 1974 and to 1976.

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1                   There was research on fuel reprocessing  
2                   in the Engineering Test Building and there were  
3                   fuel decladding operations.

4                   There was also research involving  
5                   special isotopes.

6                   The nuclear operations of concern ended  
7                   in 1980 and the nuclear support operations ended  
8                   in 1988. So, for this evaluation, this is kind of  
9                   how we arrived at the end date.

10                  Sources of available information for  
11                  the evaluation are the Site Profile and Technical  
12                  Information Bulletins and Procedures, the NIOSH  
13                  Site Research Database which has somewhere over --  
14                  it has 2,834 documents related to the Santa Susana  
15                  sites.

16                  We looked at existing claimant files.  
17                  There were 315, I believe, electronic databases.  
18                  There were numerous interviews that were done over  
19                  the years with former Area IV Santa Susana field  
20                  laboratory employees. Those were done by NIOSH  
21                  and some were done by DOE.

22                  We looked at scientific publications.

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1 The data that is available for dose reconstruction  
2 are the internal monitoring data. We have gross  
3 alpha and beta, uranium, plutonium and mixed  
4 fission products.

5 There was limited data available for  
6 americium and thorium. It's really not much and  
7 it's not enough to come up with a usable model for  
8 coworker exposures.

9 The internal monitoring was limited to  
10 radiation workers handling unencapsulated  
11 material. That boils down, over the course of  
12 operations, to about 2,200 workers.

13 The coworker model has been completed  
14 but it is limited in scope.

15 External monitoring data is available  
16 for all years of operation at Area IV. The  
17 external monitoring was assigned based on job,  
18 exposure potential of the worker.

19 There's beta/gamma monitoring by using  
20 pocket or pencil dosimeters, film dosimeters and,  
21 later, TLDs. Neutrons were monitored with NTA  
22 film. NIOSH was able to develop an N/P ratio model

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1 and that's currently used for dose reconstruction.

2 There were 4,665 individuals involved  
3 in the external dosimetry program between 1955 and  
4 1999. And NIOSH has also developed an external  
5 coworker model using this data.

6 The feasibility conclusion, NIOSH  
7 lacks sufficient monitoring process for source  
8 information to estimate potential internal doses  
9 from thorium or americium from 1965 through 1988,  
10 which is the end of the covered operational period  
11 of the site.

12 NIOSH believes that it has sufficient  
13 data to reconstruct external doses to all workers  
14 at the site and NIOSH will use any individual  
15 personal monitoring data or applicable coworker  
16 data for partial dose reconstructions as  
17 appropriate.

18 The Class Definition, it's all workers  
19 in any area at Area IV that worked from January 1st,  
20 1965 through December 31st, 1988 for at least 250  
21 work days.

22 And the feasibility findings are listed

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1 in this table. The current infeasibility is  
2 americium and thorium between 1965 and 1988.

3 There are some previously determined  
4 infeasibilities for uranium, plutonium, and mixed  
5 fission products up to 1965. And external  
6 beta/gamma, neutron, and occupational medical  
7 X-rays is feasible.

8 And that concludes the presentation.  
9 Any questions?

10 CHAIR MELIUS: Thank you.

11 Yes, Phil then Josie.

12 MEMBER SCHOFIELD: Yes, I have a  
13 question about residual contamination. I know the  
14 EPA had some sampling done that showed there was  
15 -- DOE had some -- there was various hot spots they  
16 found. Is there going to be coverage for residual  
17 cleanup?

18 DR. HUGHES: There is a residual  
19 period, yes, that's covered. It's from 1988,  
20 well, 1989 to present. It is covered, yes.

21 MEMBER SCHOFIELD: My understanding is  
22 some of those hot spots still existed after '88.

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1 I could be wrong in that, but that was my  
2 understanding.

3 MR. HINNEFELD: Phil, the answer is  
4 it's a covered facility up to the present. I mean,  
5 there's no need to have a residual contamination  
6 period because it's covered up to the present. You  
7 know, whether it's contamination at the site, I  
8 mean, we have to do dose reconstructions after 1988  
9 and we believe we can do that.

10 MEMBER SCHOFIELD: Alright. Is  
11 everybody being monitored for internal exposure to  
12 both americium and thorium besides what's --

13 MR. HINNEFELD: We believe we can do  
14 dose reconstruction after 1988, yes. And, we're  
15 aware that there's contamination on the facility.

16 MEMBER SCHOFIELD: Okay.

17 CHAIR MELIUS: Josie?

18 MEMBER BEACH: My question was exactly  
19 the same, how you were going to reconstruct dose  
20 for the americium and thorium after '88. So,  
21 that's where I was at, too.

22 MR. HINNEFELD: Well, I mean, the Board

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1 typically takes an action, they would add the SEC  
2 Class for what we proposed and withhold judgment  
3 on the remainder. And, you know, maybe task our  
4 subcontractor or contractor to evaluate our  
5 methods after '88.

6 CHAIR MELIUS: Yes, I mean, this is an  
7 83.14 and so it's focused on just this particular  
8 feature.

9 MEMBER BEACH: I was mostly looking at  
10 the end date and that answered that. Thank you.

11 CHAIR MELIUS: Yes, and it's still,  
12 yes, I mean, the Site Profile issues even during  
13 this time period, because, for those with non-SEC  
14 cancers and so forth.

15 Yes, Brad?

16 MEMBER CLAWSON: Lara, I just  
17 wondering, now everything is on just Area IV  
18 because, I'm understanding that, how are you  
19 determining, is it by badges or how are we  
20 determining Area IV people?

21 DR. HUGHES: Well, any claim that would  
22 arrive at NIOSH would be for Area IV and the

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1 determination is done by Department of Labor.

2 MEMBER CLAWSON: So, it sits with the  
3 Department of Labor of calling that out?

4 DR. HUGHES: Yes, that's correct.

5 CHAIR MELIUS: Yes, I think we've gone  
6 through this multiple times. I mean, I agree, it's  
7 frustrating and so forth, but we're sort of caught  
8 by what the -- what's a designated covered facility  
9 and what the covered time periods and then  
10 determinations made by DOL whether people fall  
11 within those.

12 Yes, Loretta?

13 MEMBER VALERIO: I'm wondering, on  
14 page nine where you address the research involving  
15 special isotopes, how long was that research  
16 conducted for? What was the time frame?

17 DR. HUGHES: I do not remember right  
18 now. It was a smaller program and, at some point,  
19 it was actually moved offsite. It is unclear how  
20 much was actually done on the site.

21 It had something to do with destroying  
22 transuranic elements in spent fuel. And I

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1 understand it was moved to the University of  
2 Missouri. It was a small-scale research program  
3 and the dates, I don't remember at the top -- from  
4 the top of my head.

5 Yes, it was done before 1988, that's  
6 correct.

7 CHAIR MELIUS: Okay, anybody else?  
8 Any Board Members on the phone with questions?

9 MR. KATZ: Oh, and let me just note, Dr.  
10 Poston joined us shortly after we began.

11 CHAIR MELIUS: Okay, any -- oh, I'm  
12 sorry.

13 MEMBER MUNN: That's alright.

14 CHAIR MELIUS: I tried.

15 MEMBER MUNN: Dr. Hughes, given the  
16 fact that we have such --

17 MR. KATZ: Wanda, you need to speak  
18 directly into your mic, please.

19 MEMBER MUNN: I was trying to speak to  
20 Dr. Hughes and the mic at the same time.

21 Given the fact that we have such a  
22 limited amount of information on internal

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1 exposures for americium and thorium, did you see  
2 any red flags at all in that small amount of data  
3 that we had?

4 DR. HUGHES: Not specifically, no.

5 MEMBER MUNN: And, I'm assuming, based  
6 from what I have -- from what we've -- the  
7 information that's been available to us that we  
8 have a good handle, in any case, on the flow of SNM  
9 through the entire site.

10 It seems to me that we would have had  
11 a very good record of input and outgo of exposure  
12 potential for source throughout the entire period.

13 I made that assumption based on what I  
14 read in the Site Profile and the other documents  
15 we've seen since then.

16 DR. HUGHES: Yes, I believe that we do.  
17 The documentation from the site is in very good  
18 condition and the site has been very helpful in  
19 identifying relevant information that we need.

20 MEMBER MUNN: Thank you.

21 CHAIR MELIUS: Any more questions from  
22 Board Members?

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1                   And my understanding is that the Work  
2                   Group has not had a chance to meet since this report  
3                   came out and so, there's no recommendation from the  
4                   Work Group?

5                   Okay, I just want to make sure of that  
6                   I understood that.

7                   And, also, it's my understanding is  
8                   that the petitioners for this particular petition  
9                   are not -- do not wish to make any comments.

10                  Ted? So, I think we're ready to --

11                  MEMBER ZIEMER: One more question.

12                  CHAIR MELIUS: Sure, Paul.

13                  MEMBER ZIEMER: Yes, I recall that  
14                  there was some concern about people from the other  
15                  areas had access to Area IV and it's -- can you  
16                  clarify the extent to which people from the other  
17                  areas would be eligible for compensation if they  
18                  just came to Area IV or do they have to have an  
19                  official assignment there?

20                  MR. HINNEFELD: That would not be a  
21                  decision that we would make. That would be a  
22                  Department of Labor decision.

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1                   MEMBER ZIEMER:   Department of Labor  
2                   would make that?

3                   MR. HINNEFELD:   If they refer a case to  
4                   us with a year's worth of verified employment in  
5                   Area IV, whether the person visited off and on and  
6                   added up to a year or when it -- however they refer  
7                   the case to us, that would be the determining factor  
8                   on that.   So, we would not make that decision.

9                   MEMBER ZIEMER:   Yes, okay, thank you.

10                  CHAIR MELIUS:   Yes, that and I think  
11                  there's some issues on recordkeeping for when  
12                  people were in Area IV from other areas.   But that,  
13                  again, is not -- it's something up to the Department  
14                  of Labor.   It's an ongoing issue, but sort of  
15                  independent of the review of this SEC.

16                  MEMBER ZIEMER:   Right, thank you.

17                  CHAIR MELIUS:   Yes, thank you, Paul.

18                  Any other comments?   Questions?

19                  MEMBER BEACH:       Can I make a  
20                  recommendation to accept NIOSH's proposal?

21                  CHAIR MELIUS:   You're a Board Member,  
22                  you're allowed to.

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1                   MEMBER BEACH:       I'm making that  
2       recommendation.

3                   MEMBER CLAWSON:  I'll second it.

4                   CHAIR MELIUS:  Okay, good.

5                   The second, and for that, and let me  
6       just read into the record the Definition.

7                   So, it's all -- so, what we're voting  
8       on is to add to the SEC all employees of the  
9       Department of Energy, its predecessor agencies,  
10      and their contractors and subcontractors, who  
11      worked in any area at Area IV of the Santa Susana  
12      Field Laboratory in Ventura County, California,  
13      from January 1, 1965 through December 31st, 1988  
14      for a number of work days aggregating at least 250  
15      work days, occurring either solely under this  
16      employment or in combination with work days within  
17      the parameters established for one or more other  
18      Classes of employees included in the Special  
19      Cohort.

20                  That's the official Class Definition  
21      that we're voting on today.  So, go ahead, Ted.

22                  MR. KATZ:       Okay, I'll do this

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1           alphabetically.

2                   Dr. Anderson?

3                   MEMBER ANDERSON:  Yes.

4                   MR. KATZ:  Beach?

5                   MEMBER BEACH:  Yes.

6                   MR. KATZ:  Clawson?

7                   MEMBER CLAWSON:  Yes.

8                   MR. KATZ:  Field?

9                   MEMBER FIELD:  Yes.

10                  MR. KATZ:  Kotelchuck?

11                  MEMBER KOTELCHUCK:  Yes.

12                  MR. KATZ:  Dr. Lemon's absent, I'll

13           collect his vote after the meeting.

14                  Lockey?

15                  MEMBER LOCKEY:  Yes.

16                  MR. KATZ:  Melius?

17                  CHAIR MELIUS:  Yes.

18                  MR. KATZ:  Munn?

19                  MEMBER MUNN:  Yes.

20                  MR. KATZ:  Dr. Poston?

21                  MEMBER POSTON:  Yes.

22                  MR. KATZ:  Dr. Richardson, I'll

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1 collect his vote after the meeting.

2 Dr. Roessler, did you join us? I'll  
3 collect her vote after the meeting.

4 Schofield?

5 MEMBER SCHOFIELD: Yes.

6 MR. KATZ: Valerio?

7 MEMBER VALERIO: Yes.

8 MR. KATZ: And Ziemer?

9 MEMBER ZIEMER: Yes.

10 MR. KATZ: And the ayes have it and the  
11 motion passes.

12 CHAIR MELIUS: Okay.

13 (Applause.)

14 CHAIR MELIUS: And thank you, Lara, for  
15 a very good presentation and other people that  
16 worked on this hidden away at ORAU and other places.  
17 So, thank you.

18 You'll have to bear with me a second.  
19 I have just passed out the official letter and I  
20 need to read it into the record so you'll get to  
21 hear the Definition once more.

22 The Advisory Board on Radiation and

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1 Worker Health, the Board, has evaluated SEC  
2 Petition 00234 concerning workers at the Santa  
3 Susana Field Laboratory, Area IV, under the  
4 statutory requirements established by EEOICPA and  
5 incorporated into 42 CFR Section 83.13.

6 The Board respectfully recommends that  
7 SEC status be accorded to, quote, all employees of  
8 the Department of Energy, its predecessor  
9 agencies, and their contractors or subcontractors,  
10 who worked in any area of Area IV of the Santa Susana  
11 Field Laboratory in Ventura County, California,  
12 from January 1st, 1965 through December 31st, 1988,  
13 for a number of work days aggregating at least 250  
14 work days occurring either solely under this  
15 employment or in combination with work days within  
16 the parameters established for one or more other  
17 Classes of employees included in the Special  
18 Exposure Cohort, close quotes.

19 This recommendation is based on the  
20 following factors. Santa Susana Area IV facility  
21 was involved in development and testing of nuclear  
22 reactors and related research.

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1                   NIOSH found that there were  
2 insufficient biological monitoring data, air  
3 monitoring data, or process and radiological  
4 source information at this facility in order to  
5 complete individual dose reconstructions  
6 involving internal radiation exposures with  
7 sufficient accuracy for Area IV workers during the  
8 time period in question.

9                   The Board concurs with this conclusion.

10                  NIOSH determined that health may have  
11 been endangered for the workers exposed to  
12 radiation in Area IV during the time period in  
13 question.

14                  The Board also concurs with this  
15 determination.

16                  Based on these considerations and the  
17 discussions held at our November 30th to December  
18 1st, 2016 Advisory Board Meeting in Santa Fe, New  
19 Mexico, the Board recommends that this Class be  
20 added to the SEC. Enclosed is the documentation  
21 from the Board Meeting where this SEC Class was  
22 discussed. Documentation includes copies of the

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1 petition, the NIOSH review thereof, and related  
2 materials. If any of these items are unavailable  
3 at this time, they will follow shortly.

4 Any questions, comments,  
5 clarifications?

6 If not, that will be the body of our  
7 letter going to the Secretary.

8 And Ted's already packed here, so,  
9 packing up. I don't think we have any more  
10 business.

11 There will be, on Santa Susana, there's  
12 obviously follow-up to go on the Site Profile and  
13 other issues, so there'll be more work to do on  
14 that.

15 **Adjourn**

16 But, again, I think we're ready and,  
17 without objection, I think we can adjourn the  
18 meeting.

19 Thank you, everybody.

20 (Whereupon, the above-entitled matter  
21 went off the record at 8:54 a.m.)