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

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67th MEETING

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WEDNESDAY, FEBRUARY 10, 2010

The meeting convened at 9:00 a.m., Pacific Standard Time, in the Marriott Manhattan Beach, 1400 Parkview Avenue, Manhattan Beach, California, James Malcolm Melius, Chairman, presiding.

PRESENT:

JAMES M. MELIUS, Chairman
HENRY ANDERSON, Member
JOSIE BEACH, Member
BRADLEY P. CLAWSON, Member
R. WILLIAM FIELD, Member
MICHAEL H. GIBSON, Member*
MARK GRIFFON, Member
RICHARD LEMEN, Member
JAMES E. LOCKEY, Member
WANDA I. MUNN, Member
JOHN W. POSTON, SR., Member
ROBERT W. PRESLEY, Member
DAVID B. RICHARDSON, Member*
GENEVIEVE S. ROESSLER, Member

PRESENT:(Cont'd)

PHILLIP SCHOFIELD, Member
PAUL L. ZIEMER, Member
TED KATZ, Designated Federal Official

REGISTERED AND/OR PUBLIC COMMENT PARTICIPANTS:

ADAMS, NANCY, NIOSH Contractor
AL-NABULSI, ISAF, DOE
ARMIJO, ROBERTO, Hangar 481 Petitioner*
BADGER, SABRINA, Senator Reid's Office*
BARRIE, TERRIE, ANWAG*
BRADFORD, SHANNON, OCAS
BROCK, DENISE, OCAS*
BURGOS, ZAIDA, NIOSH Contractor
CANO, REGINA, DOE
CELESTINE, FRANK, Texas City Petitioner*
CLAYTON, DOROTHY, NTS Petitioner*
CHRISTIANSEN, KATHY, NTS Petitioner*
DARNELL, PETE, OCAS
DOLL, LOU, Public
EATON, CLARISSA, United Nuclear Petitioner*
FUNK, JOHN, Nevada Test Site Petitioner*
GLENN, RAILI, NTS Petitioner*
GLOVER, SAM, OCAS
HOWELL, EMILY, HHS
HINNEFELD, STU, OCAS
HUGHES, LARA, OCAS
FITZGERALD, JOE, SC&A
KOTSCH, JEFF, DOL
LIN, JENNY, HHS
MAKHIJANI, ARJUN, SC&A
MAURO, JOHN, SC&A
NETON, JIM, OCAS
PRESLEY, LOUISE
ROBERTSON-DEMERS, KATHYRN, SC&A
ROZNER, KATHY, Senator Reid's Office*
RUTHERFORD, LaVon, OCAS
SALAZAR, BENITO, Hangar 481 Petitioner*
STEDNICK, PAUL, NTS Petitioner*
TURNER, LEROY, OCAS
ZEITOUN, ABE, SC&A
*Participating via telephone

C O N T E N T S

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

(9:07 a.m.)

MR. KATZ: Good morning and welcome, everybody. Let me just check on the phone lines first. If someone on the phone lines could just let me know that you can hear us clearly?

PARTICIPANT: We can hear you.

MR. KATZ: Great, thank you. So just a couple other notes for the phone line. Please, everyone on the phone line, mute your phone. If you don't have a mute button use the * and 6 buttons and that will mute your phones. Use them again when you want to come off of mute, and also please do not put your phone on hold. Call back in if you need to leave the call for a while because the hold will actually disturb the entire audio system. Thank you. And I'll just roll call. All of the Board Members who are here with us in California are present to note for the record. And let me just check on Dr. Richardson,

whether he's with us?

(No response.)

MR. KATZ: And Mr. Gibson, how about Mr. Gibson?

MEMBER GIBSON: Yes, I'm here, Ted.

MR. KATZ: Great. Let me try again. Dr. Richardson? Dave? David, are you with us?

MEMBER RICHARDSON: Hello? Can you hear me?

MR. KATZ: Oh yes, now we can. Great. Glad you could make it.

MEMBER RICHARDSON: Yes.

CHAIRMAN MELIUS: Okay. Again, welcome this morning and we will start. Lara again.

DR. HUGHES: Last time, I promise. All right, does this work? Okay.

MR. KATZ: Yes, so we're -- that's correct. We're discussing Lawrence Berkeley National Laboratory, and just for the record,

Dr. Field is recusing himself. He's leaving the table. And we will come retrieve you at the end of the session. Okay, we're all set. Thank you, Lara.

DR. HUGHES: Okay, thank you. Good morning, everybody. This is the NIOSH evaluation of an SEC petition for Lawrence Berkeley Laboratory that I'm presenting. Again, this is a petition that was submitted to NIOSH under Paragraph 83.14 by a petitioner for whom NIOSH has determined that a dose could not be reconstructed. And this evaluation also considered a Class of worker similar to the petitioner under the law. For this petitioner NIOSH was unable to obtain sufficient amount of information to complete a dose reconstruction for the claim of the petitioner. And on December 8 of last year a claimant was notified -- or the claimant was notified that the dose reconstruction could not be completed and the petitioner was provided with a Special Exposure Cohort

Petition Form A. The petition was submitted to NIOSH on December 18 of 2009.

Again, this is a two-prong test. The evaluation part that looks at feasibility of dose reconstruction as well as -- or followed by the health-endangerment determination. A little bit to the history of the site. Lawrence Berkeley Laboratory has a long -- goes fairly far back in history. It was founded in 1931 on the University of California, Berkeley campus. It wasn't called LBNL back then but that's what I call it for this presentation. In 1941, Lawrence started a defense contract with what was the National Defense Research Committee and August 13, 1942 marks the beginning of the Manhattan Engineer District and also to begin with the covered period for LBNL which is this program, basically the earliest covered date that there is.

By 1945 the -- what is now LBNL has started to expand in their research and

started to migrate off the University of Berkeley campus where it was initially located to the hill area east of the Berkeley campus. And currently there are numerous buildings on the hill as well as on campus that are involved in the research that -- actually, sorry, the buildings on campus and on the hill were involved in the MED/Atomic Energy Commission historically, sponsored research activities and of course, LBNL is still an operating site today. Here's a photograph that was taken about 1968. I don't have a pointer, but you can see the grassy, hilly area is what is today the laboratory -- what today is LBNL. The bottom right corner of this picture shows the University of California, Berkeley campus where the initial startup of these operations were.

As for site operations, a large part of the operations consisted of particle accelerator development for radioisotope generation. Various sizes of cyclotrons were

developed at the site ranging from 4-inch to 184-inch, 300 MeV Synchrotron, a Van de Graaf generator, what's called the Bevatron, it's also a Synchrotron, and the Heavy Ion Linear Accelerator. In addition to that, they did a very large amount of radiochemistry experiments and isolation of new elements, among them plutonium and many more. In addition to that they engaged in a study of fundamental particles and what's actually quite important for the -- historically, was the uranium enrichment research. That research eventually resulted in the application of the technology and the development of the Calutron that were used at Y-12 to enrich the uranium for the first nuclear weapon.

Radiation operations took place in all of the laboratories and buildings that were affiliated with LBNL as far as research shows. The information that is available for dose reconstruction, again, the NIOSH existing

technical information bulletins and Site Profile information. We looked at case files in the NIOSH database. The NIOSH site research database has records that were collected during site visits to Lawrence Berkeley Laboratory and consist of on-site records that were available as well as special collection library records that we looked at. Additionally there were records located at the Federal Records Center in San Bruno. The National Archives at various sites in the country had records. We contacted the California Radiologic Health Branch, the state agency that is responsible for licensing. We also checked records at Argonne, Los Alamos, Lawrence Livermore and Hanford, and of course checked electronic databases that are available from NRC and DOE. In addition, we looked at documentation affidavits provided by the petitioner, interviewed former LBNL employees and looked at scientific and historical publications. The data that is

available for dose reconstruction: internal monitoring started at this site in the form of blood counts in the 1940s and 50s which looked at the actual blood samples of workers. This information is not useful to reconstruct doses. Prior to 1964 we have retrieved only 230 individual bioassay samples. These analyses were not done on the site, but they were done -- the samples were sent off to other facilities such as Argonne, Los Alamos and Lawrence Livermore to do analyses for transuranics, polonium, radium, just about anything that they felt needed sampling, uranium and thorium. This sampling of workers was not routine and was very limited in scope. They were done when a worker was suspected of an intake, or if there was a particular experiment that was felt that it needed monitoring. Not until 1960 the site started an in-house bioassay program and by 1962 the program had become a routine program and was comprehensive in scope. Prior to 1964 NIOSH

has determined that the internal data is insufficient to bound internal doses at Lawrence Berkeley National Laboratory.

External monitoring data initially consisted of mainly area survey, using area survey instrumentation. Film badges were started -- they started using film badges around 1944 for select workers who worked in select locations. NIOSH has not received any individual worker film badge data associated with claims before 1948 and no individual worker film badge data was located prior to 1948. Therefore, pre- 1948 external data is also insufficient to bound external doses. Workplace survey data is also available in a limited scope such as gamma and neutron surveys that were done around cyclotrons. Contamination surveys were done in laboratories on occasion here and there, and air sampling was also done but in a limited scope for some buildings. In addition, the source-term data is somewhat sporadic and this

site obviously had a very large variety of radionuclides in various buildings, and there's data that is available, it's just too limited to determine what was located where. So source-term data is not -- workplace and source-term data are not sufficient to bound the dose. And this would apply to all locations and job titles because this was a fairly large research facility where a lot of people were going in and out. As far as we have determined there were no access controls of any kind and seem to have been somewhat of a less strict environment for research.

In conclusion, as for feasibility, NIOSH lacks sufficient monitoring process or source term information for the various nuclear research operations at this site to estimate internal/external radiation doses to Lawrence Berkeley National Laboratory employees for the period of August 13, 1942 to December 31, 1961. NIOSH will use any individual personal monitoring data that is

available for partial dose reconstructions as appropriate. As for health endangerment, NIOSH has determined that it is not feasible to estimate internal radiation doses with sufficient accuracy and that the health of the covered employees may have been endangered. The evidence indicates that workers in the Class may have accumulated intakes of uranium, transuranic elements and numerous other radioactive materials during the period from August 13, 1942 to December 31, 1961.

This is the summary slide. Internal dose reconstruction is not feasible for the years 1942 through 1961. Internal dose reconstruction is feasible for 1962 to the present. As for external data, starting in 1942 through 1947, dose reconstruction is not feasible. However, starting in 1948 through the present, dose reconstruction is feasible and occupational medical X-ray dose reconstruction is feasible for all years of the covered period. So the NIOSH-proposed

Class Definition is all employees of the Department of Energy, its predecessor agencies, their contractors and subcontractors who worked at the Lawrence Berkeley National Laboratory in Berkeley, California from August 13, 1942 to December 31, 1961 for a number of work days aggregating at least 250 work days occurring either solely under this employment or in combination with work days within the parameters established for one or more other Classes of employees included in the Special Exposure Cohort. And the recommendation is, again, the recommended Class period August 13, 42 through December 31, 1961 and the feasibility conclusion is no and health endangerment, yes. And that concludes my presentation.

CHAIRMAN MELIUS: Thank you, Dr. Hughes. That's a musical background there. Any questions from the Board Members? Yes, Bob.

MEMBER PRESLEY: When you get

ready, I need to make the motion.

CHAIRMAN MELIUS: Okay, well, first I'll see if we have any questions from anybody here? Jim?

MEMBER LOCKEY: Just one question. I just don't know, was there limited access to Berkeley National Laboratories, or between the main campus and this campus, or how was that handled?

DR. HUGHES: Not that I know of. It started on-campus and there were quite a number of graduate students going in and out, as far as we could tell, especially in the early years. There might have been access control -- not any student could run in, but everybody that would have been employed by what was called the Radiation Laboratory, it had various names at the site, or who would work on the project certainly had access to the buildings.

CHAIRMAN MELIUS: Dr. Ziemer.

MEMBER ZIEMER: Well, certainly

there could have been graduate students who were not employed or under contract, but I assume they wouldn't be covered in any event since they are not by definition -- or are they? Would they be covered? They're not Energy employees under the definition of the law, I guess.

MEMBER ANDERSON: Unpaid contractors?

MEMBER ZIEMER: Well, no. Certainly, if you have graduate research going on, many graduate students are covered under contracts but I think most places have graduate students who are also there on their own dollar. But they wouldn't be eligible anyway, would they? If they're not an Energy employee as defined in the law. Because this -- their presence there wouldn't be covered here the way this is defined, I don't think.

MR. RUTHERFORD: This is LaVon Rutherford. Based on my understanding, our understanding is they would not be covered and

Jeff Kotsch with the Department of Labor shook his head in agreement with me on that so I believe we're correct.

MS. CANO: Hi, I'm Gina Cano with the Department of Energy. I just wanted to touch base. If they were actually paid by the Department of Energy and there's the link then they would be covered obviously if the university is paying them. But it's all about DOE going through and if they establish employment then obviously they would be covered. In some cases they were paid by Department of Energy, so.

CHAIRMAN MELIUS: Then -- well, what about the corollary. What happens if it's somebody that -- a security guard or maintenance person or whoever who's covered by the University of California but not directly paid through the DOE contract? It would be sort of in the overhead for that, but yet they could have a person that could work full-time in that building possibly.

MS. CANO: We'll have to go back and check, but I -- my inclination is no, but we'll have to check. We can clarify that.

CHAIRMAN MELIUS: Okay. Jeff, do you have anything to add?

MR. KOTSCH: No, not really. As in all of these reviews, they're done on a case-by-case basis, so we would determine, you know, attempt to determine their employment link to DOE.

CHAIRMAN MELIUS: Okay. Henry?

MEMBER ANDERSON: Just a question. I mean, a lot of the work there would be done as grants or contracts with DOE, and if -- would a student who is working for a professor who had a grant -- do grants count as being DOE?

MS. CANO: I just want to clarify something. If there's a contract, some of the universities had a contract with Department of Energy for maintenance services, so the custodians -- when the maintenance folks would

go in and clean up the facility. So in essence, if there's a contractual relationship to perform those services, then yes.

MR. KOTSCH: Jeff Kotsch. And I was going to say the University of California was the contractor so you would have the link there.

CHAIRMAN MELIUS: Jim Lockey, I thought you had --

MEMBER LOCKEY: That was the same question I was going to ask.

CHAIRMAN MELIUS: Okay. Then Josie?

MEMBER BEACH: I was just wondering, could you tell me the dates of the petitioners -- when they filed, what their dates were?

DR. HUGHES: When the petition was filed?

MEMBER BEACH: No, it was filed on the 18th, but what dates was the petitioner asking for.

DR. HUGHES: No, this was a petition that was solicited by NIOSH.

MEMBER BEACH: Oh, it was solicited by NIOSH. Okay. Well, I understand that, I just was wondering if there was dates because you did mention it went to the present if there was other -- so, I understand, thanks.

CHAIRMAN MELIUS: Is your question the cutoff or the --

MEMBER BEACH: Well, I was just wondering if we're going to look into further dates past 61. I guess I wasn't asking it very well.

CHAIRMAN MELIUS: Do you want to say anything about the cutoff?

DR. HUGHES: The cutoff was determined with the site establishing a bioassay program starting in 1960 and as is the case with many bioassay programs, they hit a few bumps at the beginning so it wasn't very comprehensive until they had their methods

established. That's the impression I get. And we actually know -- NIOSH was able to collect all the internal data at the site and the reason we know this, they started numbering their bioassay results starting at number one and we have all the information. It just -- the internal dosimetry team has determined that the cutoff should be 1962 to be conservative because the initial startup, it wasn't as comprehensive in scope as it should have been, maybe.

CHAIRMAN MELIUS: Okay, thanks. Mark?

MEMBER GRIFFON: I was just -- I was actually looking for the slide and I don't see it in what we have on our memory stick. But the slide you showed with the internal versus external versus what you can construct and can't construct. Oh, okay.

DR. HUGHES: This one?

MEMBER GRIFFON: Okay, so you -- you do say you can reconstruct external dose

after 48.

DR. HUGHES: That's correct.

MEMBER GRIFFON: And 42 through 47, there was just no badging at all, or?

DR. HUGHES: Very limited.

MEMBER GRIFFON: Very limited?

DR. HUGHES: Essentially, if we received a claim with that early employment it would be hard for DOE to retrieve this data, to obtain the data with the claim. In a comprehensive research document all the records are there. There is some film badge data here and there, but it's just not -- not sufficient.

MEMBER GRIFFON: And from 48 on, after 48 did they -- do you have any description of the external dose program? I mean, did they badge anyone who -- I guess what I'm getting at is, did they badge any worker who was likely to get into areas where they would have been exposed.

DR. HUGHES: Yes.

MEMBER GRIFFON: Because I think you're talking about -- so they did badge --

DR. HUGHES: Yes, they did.

MEMBER GRIFFON: -- all workers?

DR. HUGHES: I wouldn't say all.

MEMBER GRIFFON: Because then I would question why you had expanded the definition to include all workers at LBNL instead of just, you know.

DR. HUGHES: Yes.

MEMBER GRIFFON: The question that we've dealt with many times, you know. Exposed or likely to be exposed, you know.

Didn't have sufficient information to narrow it down, that Class Definition? That's what I'm getting at, I guess.

DR. HUGHES: It would be very hard to narrow it down I imagine because the building -- this was a very spread-out site with many buildings involved.

MR. RUTHERFORD: This is LaVon Rutherford. I would remind you; not only is

it an external issue, it's internal. The internal actually is what expands the Class Definition to the end of the covered period at the end of 1961. So whether we could do external after 1947 or not, the internal is driving the Class period out through 1961.

MEMBER GRIFFON: And you're saying, because of limited access controls, people even without badging could have got into areas where they could have internal exposures?

MR. RUTHERFORD: That's correct. I think that the problem is we don't have enough knowledge of how much access control was there, nor do we have enough data. If we had indication that there was access controls, then we still need to have data that would actually support that access controls were adequate to prevent the people outside of those areas from getting exposed as well. And we don't have that information.

MEMBER GRIFFON: Okay. Because

I'm thinking back to -- and I know you're going to give us a summary maybe later on today or whenever, but I'm thinking back to situations like Y-12 when we had laboratory workers. And we also discussed the cyclotron issues and the question of whether people could have had access to those and therefore should be included in the Class, so. But I'll accept that explanation now, thanks.

CHAIRMAN MELIUS: John, do you?

MEMBER POSTON: I think it's a good point.

CHAIRMAN MELIUS: Okay. David Richardson or Mike Gibson, do you have questions?

MEMBER RICHARDSON: Yes, this is David Richardson. Can you hear me?

CHAIRMAN MELIUS: Hold it a second. We need to turn the volume up so we can hear you. Okay.

MEMBER RICHARDSON: I just wanted to follow up again on the external dosimetry

issue because the contention is that, from January 1948 you were able to reliably estimate external doses for these workers. I mean, that was how I read the summary findings, and the consequence of that assertion is that it's the internal dosimetry which is driving the Class Definition and starting in 1962, there's adequate internal dosimetry information that you can stop the Class there. I'm still hung up on the external dosimetry and could you explain to me a little bit more how it is that the external dosimetry starting in 1948 was adequate for characterizing these doses?

DR. HUGHES: Starting in 1948 the site had a film badge program in place and from the data we were able to obtain -- this is the claimant data as well as other data that was obtained during data capture. The film badge data would be available by a name, worker-name basis in form of summary sheets of individual film badge results.

MEMBER RICHARDSON: Yes, I mean I understand that there were dosimeters. You feel that the technology of a dosimeter in 1948 to characterize external exposures to let's say - - I mean there's going to be neutrons I'm assuming of relatively high energy that's all -- I would imagine it's a really complicated dosimetry problem here when you're working with cyclotrons and bombarding targets with extremely high-energy particles. Am I wrong about that?

MR. RUTHERFORD: This is LaVon Rutherford. I just wanted to clarify one thing before we answer that question, and I don't think that - - I think Dr. Richardson has a very good point. I want to point out the fact that, whether we could reconstruct the external dose in 48 on is not going to change the Class Definition and our ability to do that external dose from 48 to 1962 is only going to help the non-presumptive cancers during that period. It will allow us a

recourse for those partial dose reconstructions to give them some dose, and I just wanted to point that out.

MEMBER RICHARDSON: No, and I appreciated that, and that's how I initially read this was that the determination was sufficient without further consideration of the difficulties of the external dosimetry, and so I was willing to stop there, but then I was thinking about your logic for why starting in 1962. Because now we were able to deal with the internal dose problems because you feel like there's adequate bioassay. The implication has to also be, by that point, the external dosimetry program is adequate for you also to figure out the doses. Is that the case? So was a film badge dosimeter in 1962 -- were they using NTA films at this time at this site, or are you simply relying on the workplace monitoring, in which case you have to have sort of time and dose rate information?

DR. HUGHES: No. By 1962 I believe they used NTA film, although I would have to go back and check what the report says.

MEMBER RICHARDSON: Yes, I mean the description of the dosimetry that was in this document led me to think it was mostly film badge dosimetry.

DR. HUGHES: It would have been beta/gamma, yes.

CHAIRMAN MELIUS: John Mauro has a comment.

DR. MAURO: Yes, this is John Mauro. I'd just like to point out to the Board that we were asked to perform a Site Profile review of Lawrence Berkeley. We've completed that review. It was sent to DOE for their clearance. I think we got it back. Within a week or so, you will be getting our review. The only reason I bring this is up is there's a lot of discussion of the very issue you're talking about: the effectiveness of

external dosimetry in complex fields, issues related to internal dosimetry, so if we have a Site Profile Review I think that will enrich the discussion. Very shortly it will be showing up on your desk.

CHAIRMAN MELIUS: And I would just add to that, I was going to ask you about that but also bring up that we do not have a Work Group on Lawrence Berkeley set up so it's one of the things to be considered on Thursday. And then in regards to your comments, David, when we approve an SEC we are silent on the issue of what NIOSH says it can do. We cannot review it. It's part of the review of the Special Exposure Cohort Petitions, we don't -- and if we haven't already sort of delved into it and approved it we just don't -- we're not commenting on whether or not it's feasible to do other types of exposures. So it's a good point, but just so you know that we're not basically stating anything one way or the other about the Board's views on that

particular claim or statement from NIOSH. Any other questions David?

MEMBER RICHARDSON: No, that's it.

MEMBER ZIEMER: And, David, this is Paul Ziemer. And it doesn't preclude extending the Class later if evidence shows that the monitoring was not adequate to reconstruct dose.

CHAIRMAN MELIUS: Okay. Any other questions? If not, I think it's Bob's turn.

MEMBER PRESLEY: Well, I'd like to make a motion that we accept this petition and the reason that I would like to do this, as you all know, that I worked at Y-12. I have been a historian for many, many years and have gone through a lot of the old papers and things about what was done at Lawrence Berkeley in the early days, and let me tell you what, this was the most classified operation in the United States at that time. If you weren't on this project you didn't get in to see what was going on. So I want you to

remember that, but also back in the early days, we didn't have any -- this was all brand new science going on. They were trying to build the bomb, get uranium as fast as they could and it was a time of literal production experiment going on. So I would like to speak in support of this motion for the early years.

CHAIRMAN MELIUS: Thank you, Bob. Do we have a second to his motion?

MEMBER MUNN: Second.

CHAIRMAN MELIUS: Wanda seconds the motion. Any further discussion? Okay.

MR. KATZ: Okay, no discussion so roll call. So Ms. Beach?

MEMBER BEACH: Yes.

MR. KATZ: Mr. Gibson? Mike?

MEMBER GIBSON: Yes, Ted.

MR. KATZ: Dr. Lemen?

MEMBER LEMEN: Yes.

MR. KATZ: Dr. Melius?

CHAIRMAN MELIUS: Yes.

MR. KATZ: Dr. Poston?

MEMBER POSTON: Yes.
MR. KATZ: Dr. Richardson?
MEMBER RICHARDSON: Yes.
MR. KATZ: Mr. Schofield?
MEMBER SCHOFIELD: Yes.
MR. KATZ: Dr. Ziemer?
MEMBER ZIEMER: Yes.
MR. KATZ: Dr. Roessler?
MEMBER ROESSLER: Yes.
MR. KATZ: Mr. Presley?
MEMBER PRESLEY: Yes.
MR. KATZ: Ms. Munn?
MEMBER MUNN: Aye.
MR. KATZ: Dr. Lockey?
MEMBER LOCKEY: Yes.
MR. KATZ: Mr. Griffon?
MEMBER GRIFFON: Yes.
MR. KATZ: Mr. Clawson?
MEMBER CLAWSON: Yes.
MR. KATZ: Dr. Anderson?
MEMBER ANDERSON: Yes.
MR. KATZ: It's unanimous, 15

votes in favor, one recusal: Dr. Field.

CHAIRMAN MELIUS: Bill's in the back there. You can rejoin us.

MEMBER LEMEN: Did you say that on Thursday we'll discuss setting up the Special Working Group on this?

CHAIRMAN MELIUS: Yes. Normally on the last day of our meetings, we have more work time. I don't know if it's listed on the agenda today, but we usually then need to review both assignments to our contractor as well as the new Work Groups. And that is one of the ones that I think we need to consider.

MEMBER LEMEN: Thank you.

CHAIRMAN MELIUS: Yes. Okay, we'll now turn to General Electric Evendale and Pete Darnell.

MR. DARNELL: Good morning. My name is Peter Darnell. Appreciate the opportunity to come and speak to you about this Special Exposure Cohort Petition Evaluation for the General Electric Company,

Evendale, Ohio. NIOSH received the petition December 28, 2009. The initial proposed Class Definition was all employees of the Department of Energy and its predecessor agencies and their contractors and subcontractors who worked at GE Evendale from January 1, 1961 through June 30, 1970. Petition qualified for evaluation on the 29th of December and the evaluation report was issued January 20, 2010.

A little bit of the history of the GE Ohio Site. The Atomic Energy Commission contract work began in 1961, ended June 30, 1970. We don't have a -- the actual start date, so we're assuming January 1, 1961. Contract work was scheduled for Buildings C and D, and certain smaller auxiliary structures. We don't have a complete list of all of those structures. Work was performed under a use permit through the U.S. Air Force. Custody of the facilities was returned to the Air Force on June 30, 1970 and that's the assumed end date of the AEC contract work.

Operations at the site included testing fuel element materials and high-temperature reactor materials, testing effects of radiation on refractory metals and alloys, examining radiation effects of beryllium oxide, examining fission product transport processes in reactor fuels, testing effects on clad uranium-oxide fuels in meltdown environments, developing process for intensification of thoria and calcination of thorium oxide in high-temperature furnaces. In other words, a lot of very dose-instructive processes.

Buildings designated for the AEC contract like I said was Buildings C and D. This was an area called Air Force Plant 36. It's a 68- acre site within the GE Evendale Site. Approximately 3,000 employees had access to the area. Other buildings were used to support the work, no specific listing. There was a fenced area just north of Buildings C and D where radioactive materials were kept outside. It was a locked gate that

separated access. NIOSH has been -- a little bit on data evaluation. NIOSH has been unable to collect detailed data describing the processes or equipment associated with these operations we've discussed. As a matter of fact, the majority of the information that we have is actually on the Aircraft Nuclear Propulsion project which is not part of the covered period. NIOSH was unable to collect detailed source term information related to the DOE and the AEC operations. We do have data that indicates the existence of thorium and fission product doses and there was monitoring for elemental uranium, enriched uranium and thorium in a bioassay program in the 1960s. The problem is we have no linkage between the bioassay data and any of the individual workers. NIOSH has found no documentation associating job titles or job assignments with the specific radiologic operations. We did do interviews with the Health and Safety manager for the time period

of the AEC operations. He basically told us that personnel that were deemed at risk were monitored. But personnel had offices in the radiological areas and above the radiological areas that were not monitored. In other words, general office personnel were in the same areas intermixed with radiological operations personnel. Some were monitored, some were not. These permanent offices were in the mezzanines above the work areas of Buildings C and D. And the personnel were told to stay out of the radiological areas, but there was no physical access control.

Radioactive contamination was spread from -- the director of Health and Safety said that contamination was spread from time to time into the corridors. It was cleaned up as it was found, but again, no real controls there. The radiological waste was stored outdoors north of Building D controlled by a locked gate. We found no documentation that shows access to the radiological work

areas was limited to operations personnel.

Some of the information that was available through the ORAU Technical Information Bulletins case files within our NIOSH database and site research databases. We interviewed the Health and Safety manager of the General Electric facility, looked for information with the Ohio Department of Health and the Department of Energy, including the OpenNet repository in the Office of Scientific and Technical Information, or OSTI. And we did also look through the National Archive records. Only one of 127 GE Ohio claims contained individual internal monitoring data. DOE legacy management supplied uranium/thorium urinalysis results which I mentioned earlier for 1965 through 1968 and 1970 and the results are listed by a sample number. There's no work identifiers. We don't know to what work the bioassay belonged or to what worker the bioassay belonged. And the data we deem as insufficient for

development of coworker dose distribution.

We've been unable -- NIOSH has been unable to locate fission product bioassay monitoring data for individuals for the period being evaluated. We've also been unable to locate sufficient data to allow for the estimation of internal dose for monitored GE Ohio workers. Thirty-two are for the external dosimetry, 32 of 127 of the claims had external monitoring data. But again, we don't know what work it went to, what jobs were the highest exposure potential jobs and we cannot at this time use that data for estimating a monitored dose or bounding the external dose.

Radiological source term. Again, most of our information is about source term data for periods outside the AEC operations period. We do have some source term information for specific projects and experiments between January 61 and June 30, 62, but the data again does not identify operations with the highest exposure

potential. NIOSH has found insufficient source term information to allow us to sufficiently and accurately perform dose reconstruction. And we performed the two-pronged test: feasibility and health endangerment. Medical exposures we found using ORAU TIB-0006 that we could perform diagnostic X-ray dose reconstruction.

Internal exposures were evaluated and NIOSH has determined there was insufficient personnel workplace monitoring data to estimate potential magnitude of internal doses from exposure to uranium, thorium or fission products. There's also insufficient documentation to define the total quality -- quantity of the source term or to bound the internal dose from uranium, thorium and fission products. Whenever data that we do find in the existing claims or future claims we intend to use for non-presumptive dose reconstruction to the extent that the data fits current NIOSH procedures. For

external exposures we evaluate the available personnel and workplace monitoring data enough to know that the external dosimetry data is very scarce and there's insufficient data on the nature and extent of the radiological source term. And again, adequate documentation of the monitoring practices does not exist. And with the external data we -- NIOSH intends to use it to -- for individual claims to perform dose reconstruction for the non-presumptive cancers.

The proposed Class Definition: all employees of the Department of Energy, its predecessor agencies and their contractors and subcontractors who worked at the General Electric Company in Evendale, Ohio from January 1, 1961 through June 30, 1970 for a number of work days aggregating at least 250 work days occurring either solely under this employment or in combination with work days within the parameters established for one or more other Classes of employees included in

the Special Exposure Cohort. NIOSH has determined it's not feasible to complete dose reconstructions for sufficient accuracy for the General Electric Company of Ohio and that the health of the employees may have been endangered. In summary, dose reconstructions are not feasible for all periods of AEC operations with the exception of occupational medical X-ray. That concludes my presentation. Questions?

CHAIRMAN MELIUS: Thank you, Pete. Anybody have -- I'll start off then. I just want to try and understand the Class Definition. If I recall from living in Cincinnati this is quite a large facility.

MR. DARNELL: Yes, it is.

CHAIRMAN MELIUS: And so you're including everybody that worked in the entire facility would be eligible under this definition?

MR. DARNELL: That's correct.

CHAIRMAN MELIUS: Okay. That's

huge, yes.

MEMBER LOCKEY: That's huge. You're talking about thousands and thousands of people.

MR. DARNELL: We looked at the facility in trying to bound workers, you know, put people in the facility. We have from operations personnel or the Health and Safety director that they had unmonitored workers commingled with monitored workers. There was no access control in the building. Anybody could walk through and people did. Those buildings were multi-use facilities. NIOSH has found no way to bound the specific employees. We can't put somebody in the building unless they were monitored and we can't exclude somebody from the building if they were not monitored.

CHAIRMAN MELIUS: I think -- my own comment to that is when I read the report your presentation actually included much more detail than was in -- the report was pretty

sparse. Even piecing together how it was justifying the Class, I understand that part better. I guess I still -- I don't think what you just said is documented at all in the report and I guess I'm concerned when we're adding such a large Class in terms of numbers that have we done due diligence in terms of looking at that issue. Henry?

MEMBER ANDERSON: Yes, I was, again, being new or back on the Board here, having read through a whole bunch of these for this meeting. I'm just looking for consistency of approach, and I'm wondering here, again, given the large size and you say, well, you can't reconstruct for those who weren't badged or didn't have monitoring, but you do say you have quite a number of people who had biomonitoring, other data. I'm just curious as to -- it would seem to me clearly those who you don't have data on would fit the SEC type of approach that you don't know if they were in there and out there, but those

people who were monitored, it would seem you might be able to reconstruct their doses so that you would exclude -- potentially exclude them.

MR. DARNELL: As far as I know we have one claim with internal monitoring data that is linked to a person that received that exposure. We have other internal monitoring data. We don't know to what operation it belongs, nor to what personnel it belongs. We have some external monitoring data in 32 of the 127 claims. Obviously with those personnel non-presumptive cancers we would be able to do some type of external dose reconstruction, but we have nothing with which to bound an internal dose. There's -- we have operations, some, we have some source, we know there was fission products data -- fission products there, we know there was thorium there, we know there was uranium. We have no way of telling where it was, how to assign it to a person or how to bound the exposures to

personnel.

MR. RUTHERFORD: This is LaVon Rutherford. I do want -- as a person that drives by the GE facility every day on my way to work I do -- we do recognize how large the facility is, and that is one thing that we went back and said, can we limit this Class. And the problem was the interview from the Health and Safety manager, when the interview -- when he indicated that there were secretaries and others that were officed in the same building, in the same area that were not monitored and were told basically to stay out of that area, it made it very difficult, because now I have to determine, well, how do I determine which secretaries were in the building and which secretaries on the site were not in the building. And what other workers that worked there that went into that area, you know, went into that building and what other ones didn't. And when you come down to that, I mean we originally were going

to define the Class as only Buildings C and D. But in the end when you have to try to ensure that you can define that workforce and you can't, we had to expand it.

CHAIRMAN MELIUS: Explain again why you couldn't do C and D, though?

MR. RUTHERFORD: Well, we could -- like I said, we could identify it as the work building and Buildings C and D, but the other issues that are associated with that is that you have workers that worked in that building that were not monitored or you know, so we couldn't be for sure that they would be picked up in the Class by just defining it as C and D. The other issue with that is that there were radioactive materials stored outside of the facility as well that were not specifically in C and D. That presented another issue for us.

MR. DARNELL: There were also auxiliary buildings that were used for some of the operations and testing that are not even

listed in the information that we have. We know that auxiliary buildings were used, but not all of them.

CHAIRMAN MELIUS: But you only still talked to one person from the facility. I guess I'm having trouble figuring how you can reach a conclusion that you can't do something and you've only talked to one person at the facility.

MR. DARNELL: It was the Health and Safety director for the entire site. He was the one that told us about the contamination spreads that occurred and then were cleaned up after they were found, no other controls were done. He was the one that pointed out that there were unmonitored workers there as well as monitored workers.

MR. RUTHERFORD: You know -- this is LaVon. The other challenge you get into is, without data, without any data about stack monitoring releases or anything else from the facility. Remember, the whole site is covered

so if we define the Class as C and D, solely just C and D, that means we can't do dose reconstructions for workers outside of that building. Now in saying that, that means that we have to be able to do internal and external dose for those employees. We can make a decision, we can say well, we don't believe there was any exposure outside of that facility. What's our basis for that? We have no data. We can say okay, well I can -- I'm going to come up with an environmental model that I'm going to bound exposures for those workers outside of the facility, but what's the basis for that environmental model? You know, it's a tough situation when you're defining these Classes.

CHAIRMAN MELIUS: Dr. Lockey?

MEMBER LOCKEY: I guess I would say I think more time needs to be spent on the GE facility and going back in regard to reconstructing the history of the facility maybe when the plant sites were built, when

buildings were built. It's hard for me to fathom with that many employees at that facility that a significant number of these employees would be rotating through this building.

This is a very large company, it does a lot as you're well aware in Ohio and I think that better justification needs to be given as to - - due diligence has to be done to make sure that there's not a way to come up with job exposure matrices over time at this facility to see if it can be isolated, who had the potential of going in the building and who absolutely would never have gone into the building because their job task was as a turbine machinist at the other end of the facility. That's -- this is sort of opening the floodgates and I think it may be justified to do that, but we really have to have it well documented that due diligence was done.

MR. RUTHERFORD: I think -- I understand, I totally agree. Like I said, I

drive by the facility every day. The one thing the Board is going to have to recognize, in order to make that decision they're probably going to have to make a decision on a Class subjectively instead of solely based on quantitative data, and I just want to point that out.

CHAIRMAN MELIUS: I understand. Mark?

MEMBER GRIFFON: This goes back to the same kind of line of questioning, the due diligence that was done. You mentioned 32 of 170 claim files have external dose data?

MR. DARNELL: Thirty-two of 127, yes.

MEMBER GRIFFON: I was curious if you did any analysis on those files to look and see if there's any pattern, you know. Does it break out in any way by job title, by, you know --

MR. DARNELL: That was our problem. There's no way to tell where that

dose came from, what operations the dose came from.

MEMBER GRIFFON: No, but I mean who was monitored, what jobs --

MR. DARNELL: We know what personnel --

MEMBER GRIFFON: If you put a spreadsheet together with that data I'd love to see that if you did it.

MR. DARNELL: I do not have that with me.

MEMBER GRIFFON: But you've done it? You have done that?

MR. DARNELL: Actually, I'm assuming it was done. I just looked at the results of the evaluation.

MEMBER GRIFFON: I mean, that's another step that might -- in addition to possibly interviewing more people, but that might be another step to say, you know, look at this, we've got all sorts of job titles in here and we can't really make any rational

distinction between who, you know, was badged and wasn't badged. I think --

MR. DARNELL: Most of the job titles that I have seen related to this were related to plant operations in general rather than the specific operations that were done in the AEC work. So you would have a painter that came by and that had some dose. You would have a mechanic that had some dose. You have no idea where they came from, where the work was actually done that gave this person their external exposure, but it is listed.

MEMBER GRIFFON: I'm just trying to get a sense of who they put badges on, you know, and if there was any pattern.

MR. DARNELL: Personnel that were assigned to Buildings C and D worked there that had badges we can actually place in the building, but we have other personnel that were assigned to the building from what the Health and Safety manager has reported, that we cannot put a badge on because they were

unmonitored.

MEMBER GRIFFON: Yes, I understand. I just think that would be worth - if you have that, please post that on the drive.

CHAIRMAN MELIUS: Dr. Ziemer?

MEMBER ZIEMER: This question is either for Pete or LaVon, but if this Class Definition prevails, what's the approximate size of the added Class? Has anybody looked at how many?

MR. DARNELL: There were approximately 3,000 employees at the facilities at that time period.

MEMBER ZIEMER: So the Class size could easily be double that then because of -- yes, okay. Just wanted to get a feel for that, though. It's not trivial at all.

MR. DARNELL: No, it's not trivial.

MR. KATZ: Sorry to interrupt the dialogue, I just need to make a statement for

the record. To note that Dr. Lemen has recused himself. I think he just realized that there may be a connection that he has to be concerned about. So to be conservative about this, he's recused himself.

CHAIRMAN MELIUS: Mike Gibson or David Richardson, do you have questions?

MEMBER RICHARDSON: Yes, I had a question. This is David Richardson. Can you hear me?

CHAIRMAN MELIUS: Yes, we can, David.

MEMBER RICHARDSON: Okay. There's a lot of noise on this line again. But my question was, when I read this document I didn't even have a sense that the document established kind of a sense of the magnitudes of exposures or that exposures had occurred. It's pretty much written as, we can't relate anything to anybody and have no ability to even characterize what the exposures are. But I think there's a lot of information there

that would be useful if you are going to propose this Class. So if the -- while you're not able to link individuals to the bioassay results, it would be very useful if you could provide a description of, well, how many of them are above detection limit and what are -- is there a characterization of those.

For those people who have dosimetry badges, are they -- do they have detectable doses? And that would also, it seems to me, get to if you were to say the Class was people who worked in two buildings and you raised the issue of, well, we couldn't even put bounds on the doses from environmental exposures from outside, you know, around the buildings, material that's stored outside, would a plausible bound be the maximum dose per monitored worker who was working inside the process? I mean, it's kind of partly going to depend upon what the magnitudes of those doses are, but without any further information it's sort of hard for us

to make a judgment.

MR. DARNELL: You're absolutely correct. We could not link personnel to doses, doses to personnel, source term data to operations and where those personnel were exposed. But to take the environmental limit and basically make it the occupational limit and then say that was our environmental dose personnel, you're still bringing in everybody from the plant as a possibility of having health- endangered exposures. We'll get the other information for you that you asked for, of course, but at the current time I'd have to agree with you the document is written that we cannot put doses on people with specific operations.

CHAIRMAN MELIUS: Brad, then Wanda.

MR. KATZ: Brad, one sec. Let me just -- some people probably joined the call before the start and didn't get these instructions, but for everyone who's on the

phone line and is listening and we're glad you're there, would you please mute your phone, use the *6 button to mute your phone because as one of the Board Members noted who's on the phone as well, it's very difficult to hear on the phone line. So *6 will mute your phone if you don't have a mute button. Thank you.

MEMBER CLAWSON: Okay. I guess, and maybe this is -- I'm sitting here looking at Santa Susana that we went to yesterday. There's no boundaries, there's no nothing, but they can control them to one building and now I'm looking at this and I'm really having a hard time understanding the difference between these two. I really am. And we're proposing a 3,000-person Class. And boy, I think we'd better look at this a little bit more in detail. I'm trying to figure out the difference between Santa Susana and this, and I really can't see a difference myself.

CHAIRMAN MELIUS: LaVon, you want

to?

MR. RUTHERFORD: Yes, I just want a little response. I don't know that if Brad means Santa Susana or Canoga. Canoga -- and I agree if you look at Canoga, you know, we initially defined a Class as the Vanowen Building because we felt like we had access controls, we felt like we had environmental data, we felt like we had information to limit that Class to the Vanowen Building. The information we had at the Vanowen Building and at Canoga, completely different than what we got at GE. We have none of that information. And then, in just trying to limit that Class to the Vanowen Building at Canoga, we found the difficulty with the Department of Labor being able to administer that Class. So you know, I just wanted to point that back out.

MEMBER CLAWSON: Well, and I understand too because you're looking at this whole thing, and as we saw from the people saying yesterday, these people went absolutely

everywhere, and when you go up to Savannah River or anything else like -- or not Savannah River, up to the hill as they called it and -- but you can put everybody into that building. And here's the people that really were out there working into this and I just -- I just have a problem with it -- bottom line.

CHAIRMAN MELIUS: Wanda?

MEMBER MUNN: I'd like to focus our interest for just a moment on source term. I understand that you had a difficult time identifying precisely what all of the processes were inside the facility.

MR. DARNELL: That's correct.

MEMBER MUNN: But by the 1960s there was a fairly rigid process in place inside AEC and the other nuclear organizations with respect to tracking of nuclear materials. I don't believe that the jet propulsion -- that the Aircraft Nuclear Propulsion group at GE was making the fuel elements and cladding that they were testing.

They were doing an entirely different kind of thing there which means that there has to be records somewhere -- perhaps you couldn't find it -- but there has to be records somewhere of what was shipped in and what was shipped out. Now, who has those records and how one can identify them I don't know, but it would seem like the most reliable method of identifying what quantities were even available. Whether they were inside, outside, who had access to them becomes secondary as long as you know what the bounding numbers are with respect to quantities of material that was brought in and quantities of material that were left. So I guess the report itself was not clear from my perspective that it was absolutely impossible to track radioactive shipments in and out, and I'm wondering why not.

MR. DARNELL: We can go back and try to find some records, but the last couple of pages of the report lists documentation

that we -- where we went through where the records retrieval was done, what we tried to find, where we tried to find it, and we came up with very little information to answer your questions. Right now, the only thing that I think that we can do to make this information better for you is to go do more searches and I don't actually think those searches are going to be fruitful.

MEMBER MUNN: Well, you have a better sense of that than I do, certainly. It just is a concern to know that prior to the division of AEC that the records that you know instinctively they had somewhere.

MR. DARNELL: Yes.

MEMBER MUNN: They were careful about that. They knew they were dealing with serious materials. And the individuals that I've known from that period are adamant about their care in meticulously recording quantities.

MR. DARNELL: I don't disagree

with you at all.

MEMBER MUNN: So it makes you wonder, if you know that it's out there and you've tried to find it and you can't, where is it? I recognize if you've done all you can do, then you've done all you can do, but I don't understand where the clearinghouse is for AEC information, but somebody somewhere has to have better information on what went in, what went out, and that would resolve the entire issue in my mind. You then would be able to bound your highest possible exposures.

MR. DARNELL: I will point out again that we do have a lot of information on the aircraft nuclear project. But again, that's not part of this covered period. There is information to back up what you're saying that there is data out there, we just have not been able to find it for the remainder of these operations.

MEMBER MUNN: That's a shame.

CHAIRMAN MELIUS: Josie, then

Henry?

MEMBER BEACH: That was like my observation.

CHAIRMAN MELIUS: Okay. Share it with us?

MEMBER BEACH: Actually, I was questioning the dates prior to 1961 and I realized the cutoff there.

CHAIRMAN MELIUS: Okay. Well, Henry?

MEMBER ANDERSON: I guess what would be -- what I don't see in the report and I maybe need to go through it again, but it really doesn't describe what was the program, what was the medical program at the time. I mean, you talk about some of the, you have 32 of 127 claims had external monitoring data, but you don't say at the facility what's the extent of the database. I mean, you have 32 of 127. There were 3,000 workers. Were there 120,000 badge monitoring results? And it says here there was some urinalysis but you can't

link them to a person, but we don't know how many were there during that time and what were the ranges of values. I mean, if all of those values were non-detect it could be the laboratory issue, but that would be valuable information in understanding the bounding issue. So I would have liked in this document to see more just to know what was, you know, like Wanda was saying. It was an important project but we don't -- and they must have had --

MR. DARNELL: If we knew --

MEMBER ANDERSON: -- people that were monitoring, but we don't know.

MR. DARNELL: If we knew what the program was we definitely would have given that to you. We do not know what the program was. The site is an aircraft engine plant. In general, that's what the entire site is. The whole site is set up to support that. They did some of these operations in two buildings, in some auxiliary buildings to

support it. We don't have information more than what we presented.

The 32 of 127, we have 127 claims in. Thirty-two of those claims happen to have external dosimetry data. That's all we know about it is that they happen to have the dosimetry data and we know what those results are. I don't know what they are off the top of my head so I'm not going to go into that. We have one claim out of 127 that included internal dosimetry data. That's all the information we have. There is no program, it's not linked to any job, it's not linked from job categories to operations. The normal information that we have with sites we do not have here. So all the information that you're asking for we don't have. We can go look some more, but we do not have it.

MEMBER ANDERSON: So how did the claimants get their results to file their claims?

MR. DARNELL: They did not. This

is 83.14. Oh, their claims?

MEMBER ANDERSON: The data is in the claim, but if you didn't find the data to put into the claim, did they --

MR. DARNELL: I don't know how to answer that question, sir. I'm sorry.

CHAIRMAN MELIUS: I don't know who was first, but Gen then Bill.

MEMBER ROESSLER: In your report on page 15 you talk about another Class of coworkers similar to this one that might be added in a separate SEC and that's really all you say about it. We're looking at the impact of this whole facility, I wonder if you could give a little more information on that, the time or you know, what is this second Class?

CHAIRMAN MELIUS: That's boilerplate that they put in every report. It's a hypothetical Class. It confused me. I think I asked the same question about two or three meetings ago because I was all confused.

MEMBER ROESSLER: Even within the

boilerplate, it's kind of hard. It's a strange wording.

CHAIRMAN MELIUS: It certainly is. Phil?

MEMBER SCHOFIELD: Given a lot of this material, as Wanda says, there should have been a billet sheet of at least material coming in. A lot of this obviously had post mortem analysis done on it. Once you do that, you open these things -- you drastically increase the risk for spills, excursion, incidents, you're generating more waste, and now you have these different incidents can happen in different rooms, different parts of the facility where you had a spill or a glove leak, you've had whatever -- how these excursions happen. I don't know how much documentation there is addressing that if there is any addressing that.

MR. RUTHERFORD: I'm sorry, Pete had to step out for a moment. Could you repeat the question?

MEMBER SCHOFIELD: Okay. My question is, you looked over the work they did, so obviously they brought in these materials and did post mortem analysis on it. That means you're going to cut these up, you're going to -- as soon as you start opening these items up you're going to have a difficult time. The containment now becomes a greater risk. You have greater risk of spills, glove leaks, windows, whatever possible mode there is for an excursion or incidents of people being exposed who are getting internal contamination. I don't know how well this facility documented incidents like that.

MR. RUTHERFORD: Well, we don't have a lot of documentation at all on spills, incidents at the facility that we could define that. So I can't really help you there.

I think from what I gather the biggest difficulty we're having here is obviously the Class Definition and the breadth

of that Class Definition. One of the things we can do is we can go back, set up -- since it's rather easy and close proximity we can set up some additional interviews, try to see if we can find out some additional workers that worked during that era. We did interview the petitioner who actually worked during that era and his father also worked during that era and gave us a lot of information. It's not clear in the report, I realize that, but we can do some additional interviews.

I do want to let you know that we -- one of the reasons why it's coming up now is we spent approximately, I'm just guessing, a year and a half trying to get data that was supposedly out there from General Electric and we were unable to get that data. Ultimately in the end that data, we never got it. So we can go back, we can do some additional interviews, we can also see if there are other sources we can try to get data from to try to limit the Class.

CHAIRMAN MELIUS: Can you clarify on why you didn't get it?

MR. RUTHERFORD: I think in the end --

CHAIRMAN MELIUS: Is General Electric refusing to turn it over?

MR. RUTHERFORD: No, not at all.

CHAIRMAN MELIUS: Oh, okay.

MR. RUTHERFORD: What had happened was it was one person was defined as the source of having that data, if I remember correctly. Stu might remember, too. But ultimately in the end that data never surfaced. And Stu may be able to --

CHAIRMAN MELIUS: Okay.

MR. HINNEFELD: This is Stu Hinnefeld. Again, this is from recollection. My recollection is that GE was helpful to a point, meaning that they said, yes, we will go look, we will get these records and then the next contact with them says well, we're having difficulty finding them. They're in large

repositories. I think some of them were even in England. So for some reason some records of these activities are in a division of GE that somehow is headquartered in England. I swear I remember it that way. And so --

CHAIRMAN MELIUS: That's where our next Board meeting is going to be, then.

(Laughter.)

MR. HINNEFELD: So they didn't say, go away, don't bother us. They said, yes, we'll help you out and then when we would they didn't call us back religiously. When they did they said, you know, this is harder to find than we thought, we thought it would be here and we can't find anything there, we're going to check here, because of course they have a lot of records. And then it just kind of stopped. I mean, they weren't responding to us after a while and I think they maybe gave up in frustration of being able to find what we were asking for. But I can go refresh and get maybe an update on

that. It's been a while since I've asked this question.

We'll provide -- certainly we owe the Board some additional work and research in trying to narrow this down and come up with better descriptions of the information we do know, and maybe we can learn some additional things in the meantime so that we can come back with maybe a more convincing story.

CHAIRMAN MELIUS: Bob?

MEMBER PRESLEY: Pete, let me bother you. This is Bob Presley. Back in the time frame that we're talking about, did you all look for any NMC&A, nuclear material control accountability records?

MR. DARNELL: I can't answer that off the top of my head.

MEMBER PRESLEY: Okay. The reason I ask that is back in that time frame, the complex had a tremendous nuclear material controls group for all the sites.

MR. DARNELL: Yes, sir.

MEMBER PRESLEY: Because at that time we were still keeping up with every gram of material that we had. That would be one way if you can find those records, number one, find out what was sent in, number two, where it came from, the amounts it was sent in and then if you can find their records inside GE, they will tell you what buildings that that material was dispersed into if you can find that. That would be one of my suggestions.

MR. DARNELL: We'll give it a shot.

CHAIRMAN MELIUS: Dr. Lockey?

MEMBER LOCKEY: I was just wondering, would it be possible when you talk to the former workers, that you probe them in relationship to additional workers who were in the building or did the job task, their supervisors, plant manager in charge of that project and really go out and try to expand the information that you're receiving so at least we have some kind of feeling about what

was going on and who might have been involved and who wasn't involved.

MR. RUTHERFORD: Yes, I think we can definitely do that.

CHAIRMAN MELIUS: Mark, then Brad.

MEMBER GRIFFON: Yes, along those same lines I was curious if you queried the CATI database for all the claimants because oftentimes, this has been one of my pet peeves over the years, but the question of people that mention others that they worked with that might be good to talk to as far as -- and if they were mentioned, then you know. Because I know you said you talked to the Health and Safety director. It might be very interesting to talk to some production people that know production history.

I've had instances where I've interviewed people at some sites and they've said, oh, I know where -- I've got a copy of those records and come to my garage, you know? And they actually saved some log books from

years back, going back to the 50s and 60s. So you know, those kinds of things may be out there. They may not complete the picture, but at least it's in the sort of due diligence.

MR. DARNELL: I don't remember the CATIs being listed as part of the document review that --

MEMBER GRIFFON: They weren't? Okay. I was assuming they were. That's good.

CHAIRMAN MELIUS: Brad?

MEMBER CLAWSON: Do we have a Site Profile for this one?

CHAIRMAN MELIUS: No.

MEMBER CLAWSON: No Site Profile?

CHAIRMAN MELIUS: No, sir.

MEMBER CLAWSON: I just want to express what I'm kind of feeling because I'm sitting here on Work Groups for Fernald, Mound, Savannah River, all these other ones that we have people continuously everywhere. I've always been amazed when you can tell me where a person was all through those years and

if not we're going to use this information. And now all of a sudden we come to this one and it's, boom, we can't do anything. And there has been questions numerous times of, well, how you can tell where this person was at, how can you tell. Now granted, each one of these sites has their own uniqueness to it, but it is surprising to me to all of a sudden just 3,000 people and people that have really worked in this industry deep down and dirty, and -- but you can. That's just my frustration. I think that we ought to do a little bit more work on this and continue on.

CHAIRMAN MELIUS: Dr. Lockey?

MEMBER LOCKEY: I wanted to ask about Air Force building. What does that mean? Does that mean the Air Force actually was in charge of the building, or is that just designated Air Force building?

MR. DARNELL: There were times before the designated period and after the designated period where the Air Force had

control, did the use permits and ran whatever operations were going on.

MEMBER LOCKEY: Would the Air Force have any records? Department of Defense? I mean, I'm just curious. Would the Air Force -- could they have retained any of those records?

MR. DARNELL: There was data that the Air Force gave on the Aircraft Nuclear Propulsion project. We have a lot of information about that, but it doesn't cover the AEC work. So I don't know if they have anything further on stuff that wasn't -- on work that was not theirs.

MEMBER LOCKEY: I guess my question is the building was turned over to the Air Force and then went back to the Air Force, so I'm wondering whether somehow they might have retained some of those records just by accident or by proxy or whatever.

MR. DARNELL: We can definitely go back and double-check.

MEMBER LOCKEY: That's all I would ask you.

MR. DARNELL: My guess would be no because we got the information for the period before from the Air Force already. But we can definitely go double-check.

CHAIRMAN MELIUS: Can we -- oh, Bill. Okay. You get the last comment.

MEMBER FIELD: Thanks. I assume this is the case, but it sounds like you got most of your information from one safety officer.

MR. DARNELL: For the interview.

MEMBER FIELD: For the interview. And I'm assuming this is a yes, but was it the safety officer for this period?

MR. DARNELL: Correct.

MEMBER FIELD: Okay. Were there other safety officers during that time?

MR. DARNELL: During that time period? None that I know of.

MEMBER FIELD: I'd raise the

points Jim made as far as linking job Class or job code with bioassay information. I think that would help at least give us an indication of what kind of activities people were involved with.

MR. DARNELL: Well, the bioassay data we have is number one, got this, number two, got that, and that's it.

MEMBER FIELD: Well, at least the external then.

CHAIRMAN MELIUS: I think we've sort of resolved this and I think we're deferring action on it, that NIOSH will go back and gather some additional information. We have - - the83.14’s, we traditionally refer to the SEC Evaluation Work Group and so that would be a way of sort of monitoring what's going on, tracking it and then sort of determining, you know, what the appropriate course of action is going forward. It could be -- I assume it will end up in a revised Evaluation Report.

MR. RUTHERFORD: Yes, that's correct. What we'll do is we'll go back, we'll do the additional interviews that we just discussed, do some additional research and then we'll update our Evaluation Report with that information. In the meantime we will try to also put together the existing data we have in some format to use for Mark or any other Board Members, Mr. Field, to look at as well.

CHAIRMAN MELIUS: Okay. Thank you. Does anybody, Board Members have -- is that satisfactory with everybody? Okay. Okay. Good. It's time for our break and we will reconvene at 11 o'clock.

(Whereupon, the above-entitled matter went off the record at 10:32 a.m. and resumed at 11:01 a.m.)

CHAIRMAN MELIUS: If everyone will get seated we'll get started. Okay, our lawyer is in the room, we can start again.

MR. KATZ: Let me check on the

lines. Dr. Richardson and Mr. Gibson, are you with us?

MEMBER RICHARDSON: Yes, I am.

MEMBER GIBSON: I am here, Ted.

MR. KATZ: Great, thank you.

MEMBER RICHARDSON: Could I make a request for one piece of information before we close up with GE Evendale?

CHAIRMAN MELIUS: Sure.

MEMBER RICHARDSON: I was wondering if NIOSH could also provide to the Board a basis for the projection that there would be 3,000 people added to -- in that Class if it was defined as they're saying.

CHAIRMAN MELIUS: I think they can provide further information on the employment there. Some of us who have lived in Cincinnati actually believe it's much higher than that.

MEMBER RICHARDSON: Yes, because I was looking. Ohio -- the listing of major employers has currently 6,000 workers there,

in 1980, 16,000 workers employed by GE in the Cincinnati area, and in the 1950s about 12,000 workers at the Evendale plant. So my expectation is that over the decade from 1960 to 1970 it's much larger than 3,000. I would just like some more bounds on that number.

CHAIRMAN MELIUS: That's a good point. We were -- good. Yes, we think -- we're guessing 10 to 15 so that sounds --

MEMBER RICHARDSON: Okay, thank you.

CHAIRMAN MELIUS: Thank you, David. And Department of Energy, Gina?

MEMBER GIBSON: Dr. Melius?

CHAIRMAN MELIUS: Yes.

MEMBER GIBSON: I just had one question also. Has there been any thought given to maybe NIOSH doing a worker outreach meeting around the GE plant to gather information?

CHAIRMAN MELIUS: The people involved from NIOSH are not here right now, so

Stu I don't know if you want to -- who were answering before, LaVon and Pete, but.

MR. HINNEFELD: No, we haven't specifically done an outreach meeting in that particular sense for GE. I think we did some interviews as part of the evaluation Report of Investigation, but we haven't specifically done an outreach meeting. I think we'd have to -- for the purposes of the discussion, you know, satisfying the questions that were raised in the discussion just before the break I think what we would like to do is seek out, you know, specific individuals or people who might be, you know, help us answer some of those questions.

So these could be people who worked during the era in question in the buildings in question. That's going to be the most helpful. And so outreach meetings as we normally structure them tend not to be that focused, although we could give it a shot in this case, we just have to maybe try a

different avenue in developing the target audience for the attendees for the work. You know, we just got the marching orders here before the break and so we haven't really formulated a plan, but that's certainly something that we would consider as a possibility.

CHAIRMAN MELIUS: Okay, thanks, Stu. Now Gina?

MS. CANO: Thank you, Dr. Melius. This is Gina Cano with the Department of Energy. I just want to go ahead and enter into official record that we presented all the Board Members with a commemorative pin that was provided to the workers in honor of the National Day of Remembrance which was October 30th. As many of you know, Congress passed a resolution honoring the thousands of women and men who worked to support the nuclear work efforts back in the Cold War, and activities took place across the complex on October the 30th. And the Office of Health, Safety and

Security, we basically developed these pins. It's a replica of a pin that was provided to all the workers in 1945 by the Secretary of War to approximately 132 Manhattan Project workers. And what I provided to the Board is a replica of that pin. But again, we want to thank everybody for your efforts and also for all the workers who supported the Cold War efforts. We think this is long past overdue in supporting them from Congress. Thank you.

CHAIRMAN MELIUS: Thank you, and thank you for the work in organizing the events around that also. Okay. Our agenda next issue is Blockson Chemical. And as I recall from the last meeting we wanted to set up a time here to discuss that and bring particularly the newer Board Members up to speed on where we were in our discussions, deliberations on Blockson which have a long and convoluted history. We thought to start off the discussion maybe some perspective on it would -- Wanda Munn, who chaired the Work

Group on Blockson, will give a brief presentation based on her presentation a year, year and a half ago at the Board where the Work Group reported back. Hopefully this will help set some context for this.

MEMBER MUNN: This is essentially going to be the same presentation that the Board as it was constituted in 2008 has already seen. If you're new here, it'll be new for you, but hopefully this will be of some help to our new members. I am going to go through this very quickly because most of the material that's covered in it you have in much more detail on your hard disk that you were given. Sorry, you were given a CD, weren't you? But I don't believe that this presentation is there. Hopefully, it will be a short wrap-up.

These are the people who were involved in the Work Group itself. I was the Chair, Mike Gibson, Dr. Melius, Dr. Roessler and Brad Clawson was there also. Originally,

we had two SEC petitions that were qualified in 2006. The Technical Basis Document which had been originally provided was found to have -- be short in a number of technical material issues with very specific nomenclature that needed to be revised. So after the Board had constituted this Working Group, we did not meet for a considerable amount of time while NIOSH completed the revision of the TBD and held several near-site meetings with the workers.

SC&A reviewed our Site Profile, our SEC petition and the Evaluation Report, and they had seven findings which were results of that. They involved the default of the upper bound of the inhalation rate for uranium, the thorium-232 enrichment ratio that was likely to be found in the process stream, the thorium-230 that had not been included in the exposure matrix, a possible thorium raffinate stream that was unaddressed and additional data that was requested to support

some additional radioactive values of one sort or another, only one of which was radon. Verified possible exposure from tailings and trace levels of radium-226 and progeny.

We discussed each of those in considerable length and ultimately we had White Papers for the permanent record on not all of those topics, but most of them. Each one of those seven findings had been resolved to the satisfaction of both NIOSH and the technical contractor. I'd like to reemphasize that. It's a point which I think the new members need to be particularly aware of. NIOSH and the technical contractor resolved all of the original findings that were there.

We had additional detailed questions that were addressed and, on January of 2008 we brought this to the Board unsuccessfully. We had two additional actions that we were directed to look at by the members of the Board in January of 2008. So we went back to the drawing board, we

revisited those indicated concerns, we met again in St. Louis at the full Board meeting for the final resolution in June and we were unsuccessful in achieving agreement.

The Work Group itself was divided on this issue. The Chair had asked three questions with four of the five Work Group members present at the time. I asked about the SC&A review, about the NIOSH SEC report and about the Site Profile. When I asked this question, SC&A had identified seven findings of significance in their review of the site. Following detailed technical investigation and interaction with experts and workers, they report all issues resolved. Do you accept its report? All four of the members present said yes, they accepted the SC&A report.

Second question: NIOSH has sought information in-depth for all activities on this site and has reported they have adequate data to reconstruct or bound radiation dose for Blockson workers. Do you accept this

report? Two of the members said yes, two of the members said no.

The third question was, the Site Profile has been completely rewritten, reviewed and revised at length. Do you accept the current Site Profile? Two members answered yes, two members answered no. As Chair, I then brought this recommendation to accept the NIOSH position that adequate data exists to reasonably bound with sufficient accuracy any radiation exposure which could have resulted from employment at Blockson Chemical Company during its contract period as an Atomic Weapons Employer. That was placed before the Board.

The Board requested additional information on radon. They requested pertinent supporting documents that were distributed and reviewed by all of the Board Members. The issue was tabled, which means no vote was taken on it until further discussion could be undertaken. In August of 2008 the

radon White Paper was produced by SC&A and was distributed to the full Board. We were provided previously issued contractor reports that closed all seven findings formally and other salient internal working documents, and multiple transcripts were released for the meetings that had transpired, all released simultaneously.

The conclusion at that time was the Work Group had nothing further to offer. The question was then turned over to the Board in its entirety to resolve the unanswered question of where we were going with the Blockson Chemical Company and that is where we stand to this day.

We have discussed it on one additional occasion and it's been requested by myself that this be taken from the table and a final vote on two different occasions; that has not occurred. So the status at this point as I understand it is the motion has been made to accept the NIOSH report. That has not --

that's on the table. It has not been voted on. At our last meeting my recollection is we were asked to wait until the four new members were aboard so that they could cast their votes as they see fit. I have nothing else. I suspect that Dr. Melius has material that he wants to bring to you or at least open the discussion to the Board at this time. I don't think I can answer any further questions since you've seen essentially what we've done in the Working Group. If there are any questions, I would attempt to do that.

CHAIRMAN MELIUS: Any specific questions for Wanda before we open it more generally? I guess, also I don't know if Jim Neton or anybody from NIOSH want to speak to this? Okay. Yes, Bill.

MEMBER FIELD: Yes, Wanda, it would really be helpful -- there was a lot of documents to go through, a lot of the Working Group reports and this may be asking a lot, but is there any way to succinctly describe

what the areas of disagreement were within the Working Group?

MEMBER MUNN: The primary areas of disagreement as I would characterize them, and I'm sure Mark will be willing to expand on this if that's not accurate. The primary concern was radon and how radon was going to be handled as the doses were reconstructed, whether it could, in fact, be bounded. There was a great deal of discussion within this group with regard to whether stratification would occur within that particular facility such that one set of employees was more likely to be highly exposed to radon than another. Other than that, Mark, would you like to address any additional concerns?

MEMBER GRIFFON: No, actually that was my remaining concern. I should point out I wasn't really a member of the Work Group. I was asked as a guest at one of the Work Group meetings, but I wasn't on the Work Group. So other Work Group members may have -- but that

was one that I was concerned about.

CHAIRMAN MELIUS: The only thing I'll add that may help or may not is the original approach for modeling radon was based on surrogate data from studies of the Florida phosphate facility. The -- both, I believe, SC&A and the Work Group members had concerns about that, whether that was appropriate given that those were essentially open-air sited facilities as opposed to this which was a closed facility, whether that would be appropriate. I think NIOSH agreed with that also. And then it moved on, well, could another model be constructed to bound and used for those reconstructions for radon. And then, I think, the issue came down to basically can that model be validated, and validated I think sort of broadly defined. What information we have would support that model. I think we talked about various other sources of data, whether other industrial facilities, maybe not even involving radon but

some material with similar properties there might be some data on from NIOSH or other investigations where there was other radon there. And then the last meeting where we discussed -- I believe there was some data from a Polish study that NIOSH briefly presented. I believe that's been shared with the Board. I thought that NIOSH was going to do some follow-up on that, but basically I think the issue has come down to, you know, do we have enough supporting data or is there other sources of supporting data that would help us to believe that that's a valid model that could be used both for Blockson and also I believe NIOSH intends to use it at a number of other facilities. So there are implications here. Not only can we reconstruct doses at Blockson, while that's the focus of this discussion, so to speak, but I think also recognizing that this model is going to be used -- could be used at other facilities; that NIOSH has not moved forward

using it at other facilities -- waiting for the Board to reach some conclusion on this. And I just think, just sort of for background, the Board has voted on, I believe, the original motion to accept the report several times and -- I shouldn't say several -- a few times and it basically had been deadlocked on it. So if that helps sort of set the scene for it.

MEMBER FIELD: Can I follow up then quickly?

CHAIRMAN MELIUS: Sure.

MEMBER FIELD: So the thinking was that you can bound the air exchange rates in the building. Obviously you have no air exchange rate, you have a higher value for air exchange, and you can bound the emanation in some form from zero emanation up to 100 percent, you know, worst-case emanation. Is there any information to show how much ore or how many tons were placed through the digestion in a given amount of time?

MEMBER MUNN: Yes, that was fully covered. We know what came in, we know what went out, we know what period was covered. This operation -- well, both stations --

CHAIRMAN MELIUS: Wanda, can you just get closer to the mic because it's hard to hear?

MEMBER MUNN: All right. There was a phosphate operation and this was a secondary process which occurred for just a little over 10 years and the production records are very well in hand. It's known what went in, it's known what went out.

MEMBER FIELD: Okay. And I guess my final question would be there's a lot of information with air exchange rates, with emanation. It seems like the remaining factor is really the spatial variation within the facility of radon. Is there any consideration to methods that could be used to bound that or document it that have the scientific backing to support it?

DR. NETON: Yes, this is Jim Neton. I might elaborate a little bit on what Wanda said, which was all correct. But the model that was developed was a probabilistic model so we took -- actually SC&A -- in conjunction with SC&A, it's sort of a long story, but we've ended up with this probabilistic model that used the distributions of the various parameters that are relevant to the contribution of the variation of the concentration in the building. The key parameters as you indicated were the ventilation rate of the building, the volume of the building, the input term of the ore itself and the release rate into the atmosphere. The model allows for those -- they have set distributions put them out then. It allows for them to vary independently and we've selected the 95th percentile of the end result of the Monte Carlo calculation. So allowing all those parameters to vary independently, you pick to the highest value,

I think we ended up with something on the order of 17 picocuries per liter.

The issue of the variation, the spatial variability within the building itself was the issue, the very issue that Mark has posed for a while now. And it's at least my opinion that the variation is in some ways handled by the allowance of those parameters in the probabilistic model to vary independently. So in other words you would have a variation in locations where maybe the ventilation rate would be lower than another location, that sort of thing. So -- and the emanation fraction as well. So allowing those to vary independently I think somehow addresses that.

This Polish study that we had unfortunately was not contemporaneous with the 50s. The issue we have is, as far as I can tell, there is virtually no radon monitoring data in phosphate plants from the 50s and even the 60s. The earliest data we have or the

best data we have come from around the 1970s. But this Polish study I think in -- I forget which time frame. It was fairly recent. But they did -- they put long-term track edge cups throughout a building I think in the wintertime when it was fairly locked up and looked at the variability and we didn't see that huge of variation throughout the building itself. It was kind of a similar facility, similar production rates, that sort of thing. So it ends up sort of being a weight-of-the-evidence argument. There is no good way that we could think of to model this sort of spatial variability in itself, and we feel picking the 95th percentile helps to account for some of the uncertainty that we observe. We ended up with a 95th percentile, I think it's around 17 picocuries per liter for a source term that comes into the building at about 30 picocuries per gram radon.

CHAIRMAN MELIUS: Anybody else? Mark, you look like --

MEMBER GRIFFON: Yes, just -- I was actually going to ask, Jim, it's -- we've been around this block before I know, but the question on the production data. I know that we had some -- I think I'm getting a little deja vu here, but I think there were some memo reports that were the basis for the production rates? I know I've asked this question before but I really forget the answer, but it wasn't a 24- hour operation was it?

DR. NETON: Yes, it was.

MEMBER GRIFFON: It was a 24-hour, we've confirmed that?

DR. NETON: Twenty-four hours a day, seven days a week.

MEMBER GRIFFON: All right.

DR. NETON: We're pretty confident about that.

MEMBER GRIFFON: So they never had -- no maintenance or anything. They never had to shut the thing down.

DR. NETON: Well we allow for -- I

think the model itself allowed for some of these activities. I forgot, but yes.

MEMBER GRIFFON: So it was 24 hours. I didn't recall that.

DR. NETON: Yes, we had that from worker testimony or worker interviews and that sort of thing. And I think there's actually a White Paper that was one of the Q&As that we -- many of the Q&As we developed addressed that issue at one point.

MEMBER GRIFFON: And then the 6,000 tons per day, I know I looked into this but there -- just from Bill's information, I think there's a couple of memo reports, right, included in there.

DR. NETON: Right, and we actually went through the DOE records of the amount. We sort of back-calculated the production rate, the processing rate of the ore based on the production rate of the uranium product itself because there's a certain known percentage that was coming out the other end.

So we're fairly comfortable with those numbers.

MEMBER GRIFFON: And those first numbers, was it multiple memo reports or was there one memo? I can't remember. I had to look that up.

DR. NETON: I don't know exactly, but I think the issue here though is not so much, are those numbers exactly known because they could be allowed to vary within the model itself. So I think the real question here is, is a probabilistic model of this nature sufficiently scientifically valid in order to be used in the reconstruction of doses for this Class. Again, you know, one can look at the parameters that were modeled and if one believes that the distributions aren't appropriate we can certainly entertain discussions about how those should be widened or narrowed. I think the real question is, is the model itself a valid approach.

MEMBER MUNN: The other

interesting thing about that particular site was that workers did not have specific assigned designations in work sites. Everybody did everything inside the building at one time or another. They moved from one job to another. And there were from six to twelve individuals in the building at any given time following the processes through all three shifts.

CHAIRMAN MELIUS: Jim? Dr. Lockey?

MEMBER LOCKEY: John, could you bring me back up to date about SC&A's evaluation of the model and where you are with that -- where you were with that? I just need my memory refreshed.

DR. MAURO: When you think of the model as an equation -- this is John Mauro, SC&A. Yes, to go back to the beginning, originally when NIOSH proposed 2.3 picocuries per liter as the default radon concentration for Blockson we were asked to review that and

to see whether or not we felt it was a reasonable number. And when we did that, we did two things. One, we reviewed the data upon which that 2.3 picocuries per liter came from and, as indicated just now, we had a problem with it because of the surrogate-data issue. It actually came from facilities which were not very much like the Blockson facility. And then we said, okay, but nevertheless, does the number seem to be reasonable and to check that number we like to come at a problem from a different direction. So at that time we developed a model which simulated the concentration that we thought that might be in the building. So in effect, in a strange sort of way, we developed the model to see if -- where 2.3 would come in. And when we ran the model --- you know, we have all the equations laid out, we pick the distributions for all the key input parameters, we ran it, and we came out the back end with a concentration that was -- well, in our case we picked

different distributions. We came up with around 30 picocuries per liter. So we concluded that the 2.3 number is not very good for two reasons. One, it came from a data source that really wasn't a very good surrogate and, two, when we ran our model, we're coming up with numbers that are about 10 times higher. And at that point we stopped and delivered our report. At that point I believe NIOSH took a look at the model and said -- and my recollection is that they agreed that the use of the 2.3 as a surrogate had its limitations. And by the way, there were also some radon measurements taken at Blockson in the 1980s which were relatively low, as a matter of fact, lower than the 2.3, but we also had a problem with using that as a surrogate because it was 30 years later. And we said, you know, we don't know what happened. We know that when we look at the history of the facility there were some design changes, some ventilation changes. We know

that there were vent hoods put in the interim, so there were things that happened between the time period of interest and the time when the radon measurements were made that we're saying, hmm, that sort of fails our surrogate test. So we had a problem with using surrogate data. And at that point we said however, this model in our mind is a fairly good simulation. Radon is just, it's a very good type of problem that's amenable to modeling this particular Class of problem. So we ran the model and we came up with a number that turned out to be at the 95th percentile, about 30 as opposed to 17 picocuries per liter, and the reason was we were a little bit more -- our distributions were wider regarding air turnover rates primarily. I think that was the single reason. Since we weren't sure what the air turnover rate is, we reviewed literature on air turnover rates and we came up with a range that went from about 0.25 air changes per hour up to five. That was our

distribution. It could have been as low as 0.25 and as high as five. And I believe NIOSH ran a distribution where they started perhaps one or 0.5, I'm not sure, about one. And that was the reason why our 95th percentile came in about twice as high as their 95th percentile. However, SC&A's position is this model is a reasonable approach, scientifically sound approach for predicting the average -- and very important. What we calculated was the 95th percentile confidence level of the average annual concentration of radon in the building, okay? So it's -- so this is really an estimate, a confidence level that we can say with a high level of confidence that we do not believe it's plausible that the average annual radon concentration in the building could be higher than 30 picocuries per liter.

The issue of stratification. The model is not designed for stratification. It cannot be designed for stratification because that involves creating compartments where we

understand the size of the compartments and the exchange rates in the compartments. So, that didn't work. But we were asked to come up with strategies to try to validate the model and I think we came up with five strategies, one of which was the one I believe you folks looked into, strategy number three, where you obtained some data. Not so much to look at the absolute value, but from the data that was out there to see what the variability is in a building. And the variability, as a result of Jim's work, was relatively narrow. That is, the average annual concentration -- if we were in this room and there was a source of radon being produced in this room there's no doubt, from day to day and location to location, the concentrations could vary substantially. But when you average any given part of the room over the course of a year, it sort of flattens out. So and that coupled up with the fact that workers sort of move from location to location to location, SC&A walks

away from this saying, you know, if there's any place where a model is going to work, serve us well, it's in a situation like this. So yes, we came down as saying though we may disagree on the distribution of the input parameters, we believe the structure of the model fundamentally, to address this Class of problems, is scientifically sound.

CHAIRMAN MELIUS: Any of the other new members who have question? Henry or Dick, and then check with David.

MEMBER ANDERSON: Yes, one of the problems with models and the Monte Carlo things is you put in the values and it will generate a distribution. It doesn't really tell you the reliability of those distributions, it's simply the combination of all of the possibilities run, you know, however many times you do it. So you know, so I mean my question is, so you got some measurements from the 1980s. Do you have ventilation information from the 1980s? Do

you have the other variables in 1980s, that you could put into the model and see what it would predict in this facility in 1980, or are you -- are you just going to -- would you just use the same set -- range of variables which would then predict what you found for the earlier years which is going to be quite different, as you pointed out, from what you actually measure? I mean, is there any validation for, you know, the -- you can always adjust the ranges that you put into your model and that'll change the 95 percent or the median value because it's basically just generating a distribution based on those. So you know, you can -- if you don't like one number you can adjust a little and then it'll say, well that's closer to kind of what our professional judgment is but it isn't particularly science- based. That's my only concern with Monte Carlo simulations.

DR. NETON: Well, there's a lot encompassed in what you said there, but I

think I'd remind you that we did use the 95th percentile of the distribution, meaning it was the high end of all the possible combinations of the outcomes of those calculations that we ended up using. We're not applying a distribution with a central value and putting uncertainty about it. We're saying it's the 95th percentile. If you do a sensitivity analysis on this model there's only a couple of things that drive the high concentration: ventilation rate and source term input.

MEMBER ANDERSON: Right.

DR. NETON: Assuming we know the building size, which I think we do because it's -- we have a floor diagram of it. So you know, the ventilation rates that were input into the model were based on a literature review of possible ventilation rates, in particular, oriented towards the time frame that this building was in operation. John mentioned that they use a low rate of about a quarter of an air turnover per hour. We felt

that was on the low side. Our professional judgment was about 1 would be on the low end and 5 would be on the high end to bound it, in that 1950s era. Now, I will say that we have data other than 1980s -- we had only one or two measurements -- I think we had about five measurements, but only one or two in the area of question at Blockson in the 80s. But there are some fairly decent measurements taken in the 1970s, there's an Idaho phosphate plant that NIOSH actually surveyed in that time period, and the values are fairly low. They're much, much lower than what we're using here. I mean, in the -- somewhat in line with what we saw at the Florida phosphate plant. And the interesting thing to me is that the data in the 70s are there, there's not much in the 50s, but you don't see any indication in the literature that there were overt efforts taken to lower the concentrations down to these levels. In a sense, you know, someone realizes these concentrations were very high

and all of a sudden they start ventilating the plants because they felt radon was an issue. So that kind of stuff in and of itself doesn't prove much, but other -- I don't have any evidence that there was, you know, belief that there were higher concentrations in the 50s that needed to be mitigated. So sort of a long-winded answer to your question. I don't know if I answered or not.

MEMBER ANDERSON: I mean, there's no question with this kind of a model, you can put a bound. The question is, is it a reasonable bound and then you start to say well, is a ten-fold factor sufficient, is a twenty-fold factor. I mean, you can just go to -- call it an uncertainty factor and take whatever the measurement you have, multiply it by a hundred like we do with risk assessment and say, well, we're pretty confident.

DR. NETON: Well, I think maybe one needs to look a little closer at the model itself, too. There's some conservatism built

into it in the sense that, where the radon comes out in this process is when the ore itself is put into these digester tanks. These are very large vatted tanks that, from my recollection, went pretty much the length of the building, very high. They were like 2-story tall tanks. So the radon -- the ore, when it's put into those tanks, is digested and the model assumes virtually -- well, it does assume instantaneous release from those tanks, immediately into the building itself, and assumes a fairly high fraction of release. I forget, I think the model, the middle value is maybe 50 percent but allows it to go up to 100 percent release and that's essentially like saying that you open a can of Coke and it immediately goes flat, because the radon is a gas dissolved into this liquid mixture and the model assumes essentially that all that radon is instantaneously released into the building. So there's some very good conservatism, I think, built into the calculations.

MEMBER ANDERSON: I'm just suspicious about that kind of modeling is all.

MR. CELESTINE: May I have a word? This is Frank Celestine, an employee at that facility. Started out as Texas City Refinery, went to Borden. Then it changed finally to Amoco and it had another name in between, Smith- Douglass. Now, nobody can tell me that --

CHAIRMAN MELIUS: Excuse me, sir --

MR. CELESTINE: -- working in that facility and all of the employees has come down with cancer and are dying as a result of the cancer. We got all of that stuff in that particular company and that -- they didn't supply us with nothing to protect us. They just let us go in --

CHAIRMAN MELIUS: Excuse me sir --

MR. CELESTINE: -- what kind of material we were dealing with or nothing and that's why all these people are dying from

cancer and I have lung cancer myself.

CHAIRMAN MELIUS: Thank you, sir, but we're talking about a different facility and this is not the public comment period, but your remarks will be noted. We're not talking about Texas City facility here.

MR. CELESTINE: Thank you.

CHAIRMAN MELIUS: Thank you. I'll get back to you in a second, I wanted to -- Dick, do you have any questions?

MEMBER LEMEN: I was just curious on the SC&A report. It's dated February 10. Is that the correct date on it? 2010.

CHAIRMAN MELIUS: No.

MEMBER LEMEN: Well, that's what it says on what we were given: February 10, 2010. Well, I don't know what this is doing then because it asks the question. Then it's tied on the evaluation of radon levels in Building 40 at Blockson Chemical. She's my witness.

(Laughter.)

MEMBER LEMEN: Well, it's on the footer. It says July 30, 2008. Okay, well thanks -- thank you for confusing me.

(Laughter.)

MEMBER ANDERSON: Thank you, Bill Gates.

MEMBER LEMEN: I guess the question that you raised in this has already been answered then. My question, at the end of this report was that you said, however, given the large uncertainties in radon release fractions for the ore during crushing and digestion, and the uncertainty in the air exchange rates for Building 40, a higher default value may be needed but I think you've addressed that, so.

CHAIRMAN MELIUS: David Richardson?

MEMBER RICHARDSON: Yes?

CHAIRMAN MELIUS: Do you have any questions?

MEMBER RICHARDSON: I've got a few

questions, starting with the model input parameters. Why do a distribution for the volume of the building?

DR. NETON: This is Jim Neton. The square area of the building was taken from a very old diagram, I think, that requires some interpolation and if I recall also there was some indication there may have been a wall two-thirds of the way down the building separating one part from another. And so to account for that it was modeled as a distribution.

MEMBER RICHARDSON: What would the impact of the wall be? I understand that it would be to reduce the volume of the building.

DR. NETON: Exactly.

MEMBER RICHARDSON: Would it be to increase the concentration?

DR. NETON: Exactly.

MEMBER RICHARDSON: I mean, it would increase the concentration because the air exchange rate would be still assumed to be

--

DR. NETON: Right, the air exchange rate is independent of the volume of the building, so yes.

MEMBER RICHARDSON: It's not just one over seconds.

DR. NETON: Well, the air exchange rate is independent of the volume of the building so the direct result if you made the building smaller would be to directly -- proportionateley increase the concentration of radon.

MEMBER RICHARDSON: Okay. The evolution fraction has got a distribution going from zero to 1.

DR. NETON: Yes.

MEMBER RICHARDSON: Is zero a plausible bound?

DR. NETON: We believe so. This is a very huge tank, it's a thousands-of-gallon -- very large tank, 2-story tanks and it's plausible that the

radon is entrained in this liquid. We could not find any good values for the release fraction of radon from liquids of that nature.

MEMBER RICHARDSON: What is it, a hot sulfuric acid? Is that what it is?

DR. NETON: Yes, it's a hot sulfuric acid tank which is also very near the building. There was no account taken of the fact that there were -- we don't know if there was actually forced ventilation over those tanks at the time, but there were certainly open louvers to the top of the building, so the model assumed that it all distributes into the building where, in fact, due to convective forces, a fair fraction may actually have exited the building itself.

MEMBER RICHARDSON: And that would be -- that latter part you're capturing within this parameter for the evolution fraction?

DR. NETON: Well.

MEMBER RICHARDSON: Kind of --

DR. NETON: Zero to one --

MEMBER RICHARDSON: I mean, it's hard to believe that's zero, right? Because I mean, it had to go someplace, right?

DR. NETON: We've had Naomi Harley review this model, I'm sure you're familiar with Dr. Harley, and in her opinion that was a reasonable approach.

MEMBER RICHARDSON: But yes, I mean, I -- yes. Bottom line, I guess one of my concerns with Monte Carlo monitoring is sometimes people end up saying what somebody said is what we're, you know -- these all have bounds and we're kind of taking the upper bound of a series of Monte Carlo draws through these gives you something which is reflective of the upper bound of them all. But in fact, that convolution of all these distributions is also impacted by the lower bounds. And if you have implausible lower bounds on a distribution it does ripple through.

DR. NETON: That's absolutely true. And we're very open to discussing all

the bounds on these models. As I said earlier, those values are up for discussion. It's really whether or not this is a valid analytical or probabilistic approach to bounding the radon in the building.

MEMBER RICHARDSON: Yes. One other question just in terms of how this is applied then. The slide that I'm looking at, this is Blockson Chemical radon PowerPoint. It says that the reconstruction will apply the 95th percentile to the workers during the covered period. Now, do you put an uncertainty distribution around that value, or are you entering these in as then fixed doses?

DR. NETON: That would be put in as a fixed -- it would be converted to a working-level value and put in as a fixed working-level value assuming the person breathed that concentration every hour of the entire year.

MEMBER RICHARDSON: Okay, okay. Thank you, that's all the questions I have.

CHAIRMAN MELIUS: Okay, thanks David. Jim Lockey, you started to have --

MEMBER LOCKEY: I do. As I recall from our last discussion on this, the radon issue from a medical perspective really applies to lung cancer. And setting an upper bound at this level -- I think essentially -- if you have lung cancer I think you're going to fall within that boundary. Is that what I recall from last time?

DR. NETON: I'm not sure. I think it is true that radon exposure primarily causes lung cancer, but our models do allow for doses to other systemic organs but it would be a very small fraction of what the lung would receive. My recollection is that the Blockson model, the way it's structured gives fairly large intakes of uranium and other progeny within the plant such that I think most of the lung cancers are compensable under this model, under the model for uranium exposure alone, uranium and long-lived progeny

of uranium.

MEMBER LOCKEY: I think that would be my concern is the model -- any doubt here -- the doubt is going to be of lung cancer risk and that this model is going to encompass those people that have lung cancer.

DR. NETON: Well, we did a rough look at this a long time ago and I'm not sure it's still valid, but at the time we looked at it, the current model the way it's structured wouldn't change any cases in our possession. But that was some time ago and frankly, I'm not sure how that really should weigh into the decision on the scientific validity of the model itself.

MEMBER LOCKEY: I'm just talking about the medical perspective.

DR. NETON: From a practical perspective you're absolutely -- that's correct.

CHAIRMAN MELIUS: Any other questions from the Board? Yes, Bill.

MEMBER FIELD: I just want to comment, I guess, on what you said toward the end about the emanation. I think radon follows Ostwald's solubility coefficients, right? And much like water does. So it's, like you said, it's really going to depend on what it's produced within, but if you have heating and agitation I would find it hard to believe that there wouldn't be some release. I mean, even rivers, there's production of radon in the rivers but you can never see any radon in a river when you do a measurement. So of course you've got flow and other things working there, but I don't think this has anything to do with whether or not you can't bound. I think you can still bound it, it's just a matter of what's reasonable from a literature perspective. I think there is information out there on the solubility coefficient.

DR. NETON: Well, the Ostwald solubility coefficient predicts about a 1:1000

ratio, but that really doesn't talk about the release fraction, the release rate.

MEMBER FIELD: Right, that's what I'm talking about.

DR. NETON: Yes. Ostwald is just really an equilibrium concentration value but I'm not aware of anything out there that speaks directly to the release rate from a liquid in a tank. I mean we've looked pretty hard and I think SC&A has, as well. I don't recall anything that was directly relevant to this analysis. But I would tend to agree with you, zero -- you've got to remember I think this is a columnar tank, very tall, so the radon, if there is some sort of a fractional release or migration rate of the radon gas through the column, you would have to have a fairly high release movement rate through the column to emanate all of that, all of it. And so depending on what the traveling rate of the bolus of the gas is through the column you could come up with a theoretical lower bound.

MEMBER FIELD: Right, right, and then the other variable is the mixing within the vat, the temperature and also the surface area because it's already coming from the surface, and then if it's mixed and has contact with the surface that's where it's really emanating from.

DR. NETON: Exactly.

DR. MAURO: When we looked at the distribution we said, well, what would be the lower end? We know it's not zero. Something is coming up, but is zero a good -- is a good place to start. So what we ran was a diffusion calculation. We have an approximation of the dimensions, three-dimensional dimensions and the movement. So we're saying okay, what fraction of the radon might lead -- if only diffusion was at work, just diffusion, no invective transport, and the number we came out with a small fraction of 1 percent. In other words, of what goes through the building, for all intents and

purposes, use zero. We could have put in, I forget the number, it was like 0.01 percent, some very, very small number, so for all intents and purposes it doesn't change anything so we just left it at zero.

CHAIRMAN MELIUS: Dr. Lemen?

MEMBER LEMEN: I just want to make one. For a new Board Member like myself I found several of these documents that have the wrong dates apparently on it. Couldn't NIOSH clean that up and make it a little bit easier for us to try and put a history together?

DR. NETON: I'm sorry, I think what you're probably looking at is a Word document and that must be like an autofill in the date function or something?

MEMBER LEMEN: No it's not, because the bottom thing has April 22, 2008, then in the title page itself under the NIOSH Office of Compensation Analysis and Support has April 22, 2009. Now that's not a title fill-in, somebody had to type that in.

DR. NETON: Is it a Word document you're looking at?

MEMBER LEMEN: It's a Word document, but it still would not change it from one year to the other for the same date.

DR. NETON: We'll look into that. I apologize.

MEMBER LEMEN: And there's several documents in here that way, and if I'm going to put a history together I can't do it if I have -- if I don't know what year.

DR. NETON: We apologize for those errors and we'll look to make sure we correct those.

CHAIRMAN MELIUS: Henry?

MEMBER ANDERSON: Can we change topic here? I have one other question. There seemed to be -- I mean, I read all of your minutes during a football game so I've got to say I maybe didn't follow it too well.

MEMBER MUNN: I'm sure you got all the fine points.

CHAIRMAN MELIUS: Green Bay wasn't playing.

MEMBER ANDERSON: But in -- it seemed at one point there was a sample, I think it was a soil or a sample that suggested there was enriched uranium was measured in one of the -- that's the other site? Okay. That's Chapman, okay. Never mind. I read them both at the same time, they sort of -- I don't remember the score either.

CHAIRMAN MELIUS: I think all those Bud Light commercials -- okay. Any other questions? I know why Dr. Ziemer was anxious to point out to me this morning that this wasn't him to chair this particular section because we continue to wrestle with what to do here. I think the question I'd start with is for the new Board Members. Hopefully, some of this background was helpful, but do you feel ready to move forward on this, or would you like to be able to think more, refer back to the documents, see if you

can get the dates straightened out and look at it in more detail before we -- we're asking you in 45 minutes to go through a lot of history and a lot of complications at your first full meeting and you haven't been on the Board very long, so it is requesting a lot. I don't want to move forward if you're not going to be comfortable with doing that yet.

MEMBER LEMEN: Well, for myself I think that I need more time because I'm confused about the history now because I thought I had put these documents in the right order.

CHAIRMAN MELIUS: Okay. Bill?

MEMBER FIELD: I'm fine to vote now.

CHAIRMAN MELIUS: Okay. And Henry?

MEMBER ANDERSON: I think I'm ready.

MEMBER MUNN: He's ready to vote on Chapman.

(Laughter.)

MEMBER ANDERSON: That one, too. The directive we got was to spend a lot of time on these and I did, and now that I've confused them, I think I'm ready.

CHAIRMAN MELIUS: David Richardson?

MEMBER RICHARDSON: I'm -- at least one of the Board Members is asking for more time, is that the way I'm understanding this?

CHAIRMAN MELIUS: Correct, yes.

MEMBER RICHARDSON: I mean, I wouldn't be opposed to having a little bit more time to think about it. I'm not so much -- I think it's the bigger issue that I'm still trying to struggle with of, kind of, the philosophy of the approach of having a cohort that has an unmeasured exposure and reconstructing it through a probabilistic model. I'm not, you know, I guess I'm not philosophically opposed to that, but maybe it

would be worth spending a little bit more time to think about.

CHAIRMAN MELIUS: Okay.

MEMBER LEMEN: I'd just like to say one other thing. If we're going to hold up doing this on account of me wanting more time, let's not do that. If the Board feels comfortable, let's go ahead and vote about it. I don't want to be the one individual that holds this up. I'll, as a new member, respect your judgment on this.

CHAIRMAN MELIUS: Well, Dick, we appreciate that, but I think it's also that we try to reach as much agreement among Board Members as possible. We've had several votes on this, we've been split on those votes and in our recommendations going forward. To the extent that it's possible I think we try to reach as much agreement as we can. So I guess I would hesitate -- I don't want to force people to do that. I really want people to -- again, it's not something holding up something

two years or something. We've already spent a lot of time on this. We do owe the petitioners an answer, but I think waiting another meeting until you've had -- the new Board Members have had time to review this and reflect on what you've learned today I think is --

MEMBER LEMEN: Well, if we do do that, could I ask NIOSH to provide an update of chronological events on this with the right dates on it so I can get this thing in my mind squared away?

CHAIRMAN MELIUS: Yes, we can get that straightened out. Is there anything else that, any action items from last meeting that NIOSH owes the Board relative to this site? I thought you were going to do some follow-up on the Polish study and I can't recall.

DR. NETON: First, to Dr. Lemen's question. Are you referring to the CD that you were provided that had all the documents on it?

MEMBER LEMEN: Yes, yes.

DR. NETON: Okay. I just wanted to make sure that's -- we will fix that.

MEMBER LEMEN: There were like maybe 40 documents on it or something like that.

DR. NETON: Okay. I apologize, I have no idea why those dates are like that, but we'll get to the bottom of it. To Dr. Melius' question, NIOSH as far as I recall had no formal action items. We did have a brief conversation at one point on the side about -- on the side. Somewhere I remember having a conversation about NIOSH reviewing, trying to do two things. One was to possibly get some more background information on the Polish study. If you recall, the data, although they claim to have been distributed about the plant, we really didn't know which locations. One could assume that they were fairly widely distributed to get a maximum distribution, but you couldn't get that from the publication

itself. I did try to locate this person, the author. It turns out that she was a visiting scientist at the time the study was published somewhere in the southwestern U.S. And I did as best I could to try to locate her at her home institution in Poland and I couldn't find it. I did what I could on the internet with Google searches and such, and tracking publication records, and she seems to have disappeared at least from the radar screen as far as I could tell. So I was not successful with that.

The second issue was to redouble our efforts to look to see if we could actually validate the model somehow, using the Mallinckrodt data. I admitted the last time that I had not done an exhaustive search of the documents looking for floor plans and processing rates and such that could be used as input terms at Mallinckrodt. I've gone back and looked through the data. I did find some floor plans, some diagrams, but they

didn't appear to me, at least, to be of sufficient clarity to be able to use in a model, especially when you couple it with the fact that one needs to know specifically the input term into that cell, that compartment. And if you recall at Mallinckrodt they had a variable uranium content in the ore from 10 to 70 percent. I found no information to indicate what the percentage of the uranium -- of the actual production rate on a monthly basis as well as the variability of the uranium ore content which would directly be relevant to the amount of radon being released. So a long answer again, but I did some follow-up and was unsuccessful in answering either of those questions.

MEMBER GRIFFON: I think, Jim, while you're still there, I think part of the reasoning for following up on the Polish study was the same. Did you have enough information? I forget. I know you had measurement data for the Polish study, but you

didn't have floor plans and stuff like that?

DR. NETON: It seemed to be a fairly wide open facility though, I mean as far as -- it wasn't -- Mallinckrodt was very compartmentalized at those times. There was indication in the reports that at one time the radon was getting high in one area, they closed the doors off and those sort of things that just really made me feel uncomfortable of applying a model. I mean, even if we came up with a model and assumed it validated, there would be so many questions unanswered, you know, one could argue it's fortuitous that it came out that way.

MEMBER GRIFFON: That's for Mallinckrodt or for the Polish?

DR. NETON: The Mallinckrodt.

MEMBER GRIFFON: How about the Polish facility?

DR. NETON: The Polish facility seemed to me to be a large industrial plant, sort of open of the same nature. But again, I

can't prove that, I just --

MEMBER GRIFFON: You don't have enough information to put in parameters, is that what you're saying? To test the model.

DR. NETON: But nonetheless, what we do have is this dispersal of data about the plant that indicates that the concentrations themselves were not that variable, as variable as one might think. There was one other issue, the Mallinckrodt, I did provide at one point a discussion of the radon concentrations that were actually observed at Mallinckrodt during a certain time period and if you recall we're proposing 17 picocuries per liter and even at its heyday at Mallinckrodt during the production of the Belgian Congo ore, you know, on the order of 100 or so picocuries per liter seemed to be about the right number, and this ore was about 70 percent uranium by weight. Tremendously much more concentrated than the 30 picocuries per liter -- per gram of uranium that was brought into the Blockson facility.

So that, again, these are all sort of weight of the evidence type issues. None of them in themselves validate the model, but they certainly do provide supportive information.

MEMBER LEMEN: Could I ask one question? The Polish study was a 95 Polish study? 1995?

DR. NETON: It was published in 95. I'm not sure when the data --

MEMBER LEMEN: Can you provide that to the Board? I just asked Wanda and she said the Board had not received it.

DR. NETON: Is that right? I thought I had provided it, but I'll certainly send it.

CHAIRMAN MELIUS: I believe it's on the O: drive.

DR. NETON: It's probably on the O: drive, but I think it's okay to send to the Board. I always worry about copyright issues when you start sending out publications, but if not, I can point --

CHAIRMAN MELIUS: That's fair use, but yes, if you can send it out that would make it easy.

DR. NETON: Okay, I'll do that.

CHAIRMAN MELIUS: We're going to be relying on it for discussion.

DR. NETON: No problem.

MEMBER GRIFFON: And I was just going to follow up on the variability question. I mean, again, the statement that Jim made in his presentation before rings in my ears as we go through this issue several times that there is no good way to model spatial variability. I mean, I like that part of your conclusion. But the -- I guess I'm turning back to the -- there's also some Blockson data which we all agree was not very -- I mean, I think it sort of pushed it aside as far as using it for a model, but if I recall, and I was trying to find the document while all the discussions were going on. I couldn't find it. I know I have it somewhere.

But there was -- I guess I would consider this the variability in that sampling as well. Of course, those were not year-long samples or anything like that. They weren't set out for months, so you have to consider that, but -- I know there were some odd high readings in some places where you would not necessarily --

DR. NETON: I don't think that was necessarily a problem at Blockson. You might be thinking of --

MEMBER GRIFFON: It might be another facility.

DR. NETON: I think you're thinking of the Florida phosphate data where you had some interesting readings outside.

MEMBER GRIFFON: Could have been. I remember seeing some of the readings in the offices were some of the highest readings out of the whole data set and things like that.

DR. NETON: That's not at Blockson.

MEMBER GRIFFON: It might not be

Blockson.

DR. NETON: There was at the Idaho phosphate plant data I think there was a high reading near one of the offices. Not a high, but you know, maybe 2 picocuries per liter compared to, you know, 1.1 or something else for a plant. Blockson, if I recall, there was only one or two measurements in Building 40 itself. Just so that the new members are aware, Building 55 is the building that is the covered facility at Blockson. That is where the radon -- I mean, the uranium was actually precipitated out of the solution as part of the -- it was added as part of the AEC contract to produce uranium. Building 40 is really not part of Building 55. It's a separate building, but the way the facility designation reads is Building 55 and other related processes or something like that, which brings into play Building 40 which was the main balance of the plant where they made the phosphate products, and that's where the

radon issue comes up. There would have been very little radon in Building 55 because the radium had already been removed before it got there.

CHAIRMAN MELIUS: Thank you. So we will schedule this for our next meeting in May, in Buffalo still. Okay. Our next agenda item is another site where the Board has been deadlocked on and that's I think a little bit more straightforward. It's not as much --

MEMBER ANDERSON: Can I ask one other thing?

CHAIRMAN MELIUS: Yes, sure.

MEMBER ANDERSON: It might be helpful if NIOSH by that time could tell us, are there other facilities in the queue where this kind of probabilistic modeling would be the solution to problems that are being faced, I mean, or is this unique here? I think partly my concern is one of policy. I mean, once you go to probabilistic modeling you could do that for the urine levels, I mean.

You basically don't need any data, all you need is bounds and then you generate it and out it comes and then everyone looks at it and scratches their head and says we'll adjust this a little bit. So I mean, it would be helpful to know, do you see this as a step forward that it would be very helpful to have such a model to use elsewhere.

DR. NETON: There are several facilities that process -- that made uranium as part of the phosphate production process for the DOE. The one that's of immediate concern right now is Texas City Chemicals because we have an SEC petition evaluation for it that's being held up until this issue can be resolved, or at least we're holding it. But there are a couple other similar facilities, about a handful, and we can provide that information.

CHAIRMAN MELIUS: Okay. Back to Chapman. Dr. Poston who chairs the Work Group.

MEMBER POSTON: Thank you, Dr. Melius. The members of the Work Group were Michael Gibson, Mark Griffon, Genevieve Roessler, and I think Brad Clawson was the alternate. And I must admit that I was given this assignment soon after I came on the Board and I was quite naive about how easy this was going to be. We had a history of the Chapman Valve going back to February of 2005 when there was a worker outreach meeting. The petition was discussed by the Board and it was assigned to SC&A in September of 2006 to evaluate the Site Profile, and then at that point the Working Group was appointed. And as I said, I was quite enthusiastic so I went with John Mauro and Arjun Makhijani and Mark Rolfes to the site to tour the site as it was, to participate in interviews with petitioners and all kinds of things to try -- because I thought, well, I really wanted to understand what was going on. And then we had a couple of Work Group meetings and at least one or two

telephone calls. In summary, basically the situation as I see it is like this. There are plenty of badge data for external dosimetry for these workers. So the external dose is not in question and so the big discussion centered around internal dose.

Let me go back and clarify a couple of things. We're talking about Building 23, which no longer exists, at the Chapman Valve Manufacturing Company in Indian Orchard, Massachusetts and the covered period is January 1, 1948 through December 31, 1949, a 2-year period. It turns out there was also a residual period from January 1, 1991 through December 31, 1993 where there was FUSRAP activities on the site. The actual production period at the Indian Orchard Site was only about three months. They were machining uranium metal for use in the Brookhaven reactor, but the covered period is two years, whereas actually the activities were only carried on for a short period of time. So as

I said, the effort was focused on, how do you assign, or was it possible to assign internal dosimetry to these folks. We were fortunate enough to find a fairly large document prepared by H.K. Ferguson on machining of the uranium for - the title was Machining of Uranium for Brookhaven Reactor which was dated in 1949 and that gave us a really good understanding of the health physics procedures, the production schedules, rates, quantities, details of the operations with photos and maps, dates and details of minor fires that actually occurred in the facility, as you know, uranium is pyrophoric cleanup and decontamination and waste disposal. We also had a limited amount of data for air concentrations in the facility. And so NIOSH's approach, which at the time seemed very logical to me, was to take the highest air concentration in the facility that was measured during the period and assume that that air concentration existed in the building

every day for -- during the work week, and that the workers were exposed at that, not for the three months, but for two years. So they used that to calculate their intakes and then did the PoC calculation, the Probability of Causation calculation. So, the idea is that if the external dose which was not in question and the internal dose which was estimated using this method. I guess I'm telling a lie.

DR. NETON: We did. We had urine sampling data from the Chapman Valve facility. We used the highest urine sample.

MEMBER POSTON: Oh, I stand corrected. They used the highest urine sample. But the logic is the same, right? You assume that that represented the intake over a two-year period for the workers. And so using external dose and the bioassay data which provide the internal dose the Probability of Causation was calculated and the logic is under these very extreme circumstances of assumptions, if the PoC

didn't equal or exceed 50 percent it would never exceed 50 percent. And so based on those calculations -- it's been a long time, Jim -- the recommendation was that the SEC be denied. So we brought that to the Board.

All the members of the Work Group, when we had our meeting face to face, voted in favor of bringing that recommendation to the Board. When we voted on it, it turned out that the members of the Work Group, some members of the Work Group voted against the motion. So we had a discussion. One of the problems with the Work Group was the thing that Andy just brought up, and that was in the FUSRAP period there was one sample, soil sample, I believe that was obtained outside of the loading dock which showed that there might be slightly elevated enriched uranium present. So Jim Neton very dutifully got in touch with the folks at Oak Ridge, discussed that. We were not able to ascertain its source. We felt, some of us felt it was likely that since

they were dealing with uranium metal that it was not from that particular process, it may have been something else. We later learned that there may have been activities with the Navy and we pulled that string, but we got no cooperation at all from the Department of Defense. Jim again inquired about the activities and we were not informed of any activities. As I recall and -- Jim, I'll let you correct me. As I recall, looking at this one sample statistically not being enriched was not outside of the possibilities. Is that correct? Again, I'm --

DR. NETON: I'm not certain. I thought that in the very beginning, but when we actually posed that question to the team leader from Oak Ridge who was a team leader for the project he brought that question to some people down at Oak Ridge that remembered. They could not determine the exact analysis, but they thought that it would have been enriched uranium. If they reported it as

slightly enriched they believed it was slightly enriched.

MEMBER POSTON: But it was low enriched, I think around 2 percent.

DR. NETON: Yes, very low.

MEMBER POSTON: So as I understand what was going on, this issue is on the table. We've tried to remove it from the table at least once and it's still on the table. And just as with so many things I learned a lot of lessons, but I do think we owe it to the petitioners either to make a decision one way or the other. Just like the Blockson it's been around a long time and we need to dispose of this one way or the other.

CHAIRMAN MELIUS: Let me just clarify one thing with assistance from Dr. Ziemer. Technically, this is not tabled in the formal sort of form of a motion which Blockson was, so we don't have an active motion. We've been deadlocked and it's always been for further consideration. So if there's

not a tabled motion, we don't -- if we decide to act on it we don't need to take the motion off the table.

Secondly, again this may be my faulty memory also because it has a long history trying to remember this, but I believe at one point that NIOSH had inquired of DoD and DoD had done some sort of a computer search for records. There were some other potential contracting records available from the Department of Defense, maybe from Navy, I don't recall specifically, but it would have involved a manual search of these records to try to find if there was a contract. And NIOSH decided that it was not sort of feasible to do. It would have been difficult and I think there were questions as to how much cooperation they would have gotten from DoD to be able to do that. But there was a decision not to pursue that as I recall. So we just don't know. Does that fit? Jim, I saw you nodding your head, but just to -- for the

record.

DR. NETON: That's correct. We found or through the Navy, I don't remember exactly how this came about, but we received indications that the facility had a large number of contracts with the Navy during its operation up until the time that this enriched uranium sample was discovered, but all we were able to find was the titles of the contracts and that in and of itself was not sufficient to allow us to determine which thread to pull. The contract didn't say, like, working with contaminated valving or something like that, so it wasn't possible. We would have had to go through a large number of contracts possibly with no fruitful outcome and we didn't think it was worth pulling that thread.

MEMBER POSTON: But the conclusion was, at least the Working Group concluded before we came to the committee that we believed that NIOSH's approach was sufficient to bound the doses and I think that's the

important conclusion and that's what we brought to the Board.

CHAIRMAN MELIUS: Again, this may be my memory and it differs from what Dr. Poston just said, but much of the discussion I believe of the enriched sample went on after the Work Group. The further inquiry was into the enriched sample, into sort of how that was analyzed and reached. So it was sort of after the Work Group had presented and we were trying to resolve the issue. I think it's also fair to say that, as part of the transcripts, I think the concern was did the enriched sample reflect an activity that went on, some type of production activity that went on at that facility that just was not documented in the record. So the concern was one was it from the nuclear navy, or could it be from some other contract.

MEMBER POSTON: I'd have to look at the transcripts, but I thought we discussed it in a telephone conference. We did have a

Working Group meeting over telephone because when this came up we did ask that it be investigated and that's when Jim made all his inquiries at Oak Ridge and so forth through the FUSRAP group. The key is, to me, the key is the rods that were being machined at this facility were natural uranium and so the one sample is anomalous in that it's enriched uranium, and we haven't found any data or any indication that the rods that were being machined were enriched uranium, that there were ever any rods machined that were enriched uranium. So it's an anomalous situation. We haven't been able to solve what that is.

CHAIRMAN MELIUS: No, I think that's fair. Brad, you were a member of the Work Group or an alternate? I can't recall.

MEMBER CLAWSON: I'm an alternate on that. Part of the issue that I had with it, and I just wanted to bring this up. What Dr. Poston said is exactly correct. I believe they had only two or three samples, I believe

it was two samples that were even pulled. One was enriched, one wasn't. The question also came up because through the petitioners -- that of other work that came back there was supposedly valves, so forth, that came back from Oak Ridge, Tennessee to be repaired and so forth that possibly could have been contaminated. This is where the other facility that had always been brought in to Chapman Valve, and I can't remember -- Dean Street that kept coming back into this, kept playing into it. So part of the issue that I personally had was I did not really think that we had a grasp of everything that had gone on in those facilities had been adequately addressed. As we've come to find out through all of these sites, that they're all interchanged. They all do things back and forth, and I do realize that it's a very complicated issue, but the bottom line is I don't think that for me that I could not say certainly that we were bounding them on one

premise but we didn't really have everything, all the information to be able to say that. We were using one source term where there could have been more source terms.

MEMBER POSTON: I'll leave it to John or Arjun, but my recollection is that when we had the interviews the folks told us that those valves did come to the Chapman Valve facility and then they were -- but they didn't come in the facility. They were transferred from railroad cars I believe to trucks and then taken to the Dean Street facility. So we didn't really consider that that was part of the source term to which the workers inside the facility were being exposed. Is that your recollection, John? So that was the reason that we didn't -- that came from the discussion with the workers, not something that we learned through documents and so forth.

DR. MAURO: Yes, during our interviews with the workers there were a

number, maybe a dozen workers in the room and there was -- one of the women even pointed out, yes, we would get the shipment of a large container which we referred to as a manifold, and she described it as best she can, and that was the first indication to us. We looked at each other when she was describing this that perhaps there were some manifolds coming back because these were facilities for the enrichment facility that were being tested. We thought perhaps Dean Street was not only sending things out, but they were getting things back and maybe that's the source -- when it came back there may have been some residue, but that was just speculation on our part. In other words, we can't say that that in fact is the source. The only thing we can say is that when we look at the Ferguson report which is extraordinarily detailed, it tells a very rich description of what took place those two years, I believe, and there's nothing in there that would indicate that

there was anything other than the machining of these natural uranium rods for Brookhaven reactor. So you know, nothing subsequent to these investigations for example that Jim looked into indicated that there was anything coming back from Oak Ridge. So we don't have any evidence that yes, some material came from Oak Ridge to Dean Street. We know it went from Dean Street to Oak Ridge, but not from Oak Ridge back to Dean Street.

CHAIRMAN MELIUS: Arjun, did you have anything to add to that? And then Jim.

DR. MAKHIJANI: The only thing I might add is the person who dealt with the shipments from Oak Ridge to Dean Street had a very clear memory of things. She remembered names of people that she wrote letters to, and she was very clear that things came back for repair. She was also clear, just for the record, that they came back during the Manhattan Project and that the activity that she was describing stopped during the

Manhattan Project. That said, I would agree with John that we, in our research that we did agree that it was an enriched uranium sample. We could not find any evidence as to where that sample came from or how it got there.

CHAIRMAN MELIUS: Okay, Jim.

DR. NETON: I just -- one comment on what Brad mentioned was that it's true that I think Oak Ridge only measured three samples for enrichment and one out of three came back enriched, or something like that. Two out of three or two out of four, one out of two? One out of two. So the point is that the argument was made well then. You don't really know how much enriched uranium might have been around the plant. But we actually went back and looked at the closure docket after the FUSRAP clean-up had been done and they took a number of samples and analyzed them for enrichment, and I don't recall the exact number, but I looked at about nine of those samples and they -- I saw no sample of the nine that were

measured or something in that vicinity that were -- they were all consistent with natural uranium. There was no evidence of any enriched uranium and they did measure them isotopically.

CHAIRMAN MELIUS: Arjun, yes?

DR. MAKHIJANI: Just one more thing. I looked at the same sample as Jim and I would agree with him that all the other samples were natural uranium. This is from memory from some time back. But the thing about that 2.1 percent, I don't remember the date on which it was taken, but it was much after the period we're talking about. And when the activities ended, you know, there was still a lot of metal being processed at Chapman Valve. And so the enrichment that was found later would not necessarily be indicative of the enrichment at whatever time that it was deposited. It would be some dilution.

CHAIRMAN MELIUS: Mark?

MEMBER GRIFFON: I think he means dilution in the soil or in the, you know.

MEMBER POSTON: How is that going to change the enrichment?

DR. MAKHIJANI: When you have dust that has natural uranium in it mixed with an enriched uranium sample --

MEMBER GRIFFON: It's possible.

DR. MAKHIJANI: -- the enrichment of the resultant sample that you would --

MEMBER POSTON: If you don't do a separation.

DR. MAKHIJANI: At least that's my opinion.

CHAIRMAN MELIUS: Mark?

MEMBER GRIFFON: I was just going to follow up with Jim because I'm trying to remember the nine samples that you said they did an isotopic analysis on at the end, the FUSRAP? Was that final survey data? I don't recall looking for that. Because I know I asked for -- I think it was Bechtel Jacobs

that did the clean-up.

DR. NETON: Yes, Bechtel Jacobs did the clean-up.

MEMBER GRIFFON: And we never had any luck tracking down their reports, did we? Internal reports.

DR. NETON: Well, we talked about this a while ago. I think there's a regulatory docket that was prepared at the closure of that facility having been cleaned up. That's where I found those results and I think it's out there on the O: drive. But this was a formal report that was issued. I think what you were looking for Mark earlier was waste transfer.

MEMBER GRIFFON: Right, some kind of waste transfer.

DR. NETON: I found nothing of that nature. This is where I ran across these isotopic analyses that were done.

MEMBER GRIFFON: Because I think what you're -- I mean, I've been through this

process a number of times at sites and you have your characterization survey. Then they probably did a final closure so they -- in which case you're sampling a cleaned up site. So I would expect a lot of natural uranium in the isotopic analysis.

DR. NETON: I don't know if these were cleaned up sites.

MEMBER GRIFFON: Okay, I'm just trying to clarify.

DR. NETON: I think these were the characterization prior to the clean-up is my recollection, but I'd have to go back and check that for sure.

MEMBER GRIFFON: Right, I want to check that, too.

CHAIRMAN MELIUS: Do any of the new Board Members have questions or have we confused you, as we will. I'll start with you David Richardson. Sorry to put you on the spot, David.

MEMBER RICHARDSON: Have all the

issues that were -- been resolved with SC&A, issues that SC&A raised in their review?

CHAIRMAN MELIUS: Can you -- yes. Have all the SC&A issues been reviewed?

DR. NETON: Yes, all the technical issues related to the machining of the uranium rods themselves have been resolved. SC&A's report I think does mention this unexplained enriched sample, but I'm not sure what they made of it other than it does exist.

CHAIRMAN MELIUS: Well, that is the unresolved issue. I don't know whether --

DR. MAURO: And we also came to the independent conclusion -- our radiochemist looked at the sample and we believe it is a real -- it's not a statistical anomaly in terms of the sample. It's a real enrichment. When it was deposited, we don't know.

CHAIRMAN MELIUS: Any other questions, David?

MEMBER RICHARDSON: No.

CHAIRMAN MELIUS: Okay, thank you.

Bill?

MEMBER FIELD: Maybe more clarification than questions. Going through this amount of material is laborious so there's just a couple of clarifications. The SEC petition was for January 1, 48 through 12/31/49? Does that sound right?

CHAIRMAN MELIUS: That's the covered period, yes.

MEMBER FIELD: Okay. And during this time period, what was the duration of actual activities?

MEMBER POSTON: It was only three months.

MEMBER FIELD: Okay, so it's only three months. That wasn't clear when I went through the documents for the first time. And the questions with bioassay were -- can you just clarify what percent of the workers were monitored with urinalysis?

DR. NETON: We had a few -- I don't remember the exact number of bioassay

samples now, but there were a number. Most of them were at or below the detection limit of, you know, traditional photofluorometric uranium analysis and so we selected the highest sample that was measured of any of the workers and applied that in a chronic bioassay model approach and assumed that all claimants had breathed that amount of air to get that level of uranium in their urine for the entire -- I don't recall now if it was partitioned with this 3-month interlude, or whether we just went over the whole period, but that was the basic.

MEMBER POSTON: My recollection is you went for the whole period.

DR. NETON: Right, so we just assumed how much uranium could you have breathed in and been excreting continually for the entire operation that amount of uranium.

MEMBER FIELD: And you assumed a constant exposure?

DR. NETON: Yes, a chronic

exposure model that would generate that amount of urine in your -- uranium in your urine over the extended period of time. And then as usual we would pick the most favorable solubility Class for that -- for the claimant, to make sure that they got the highest PoC.

MEMBER GRIFFON: I can help maybe clarify that a little bit. There were like 40 samples taken on two different days, mainly I think it was July 27, 48 and June 11, 48 are most of the samples. There might have been a couple other dates when samples were taken, but they were the two big sample-collection dates. Forty samples and it looks like a wide variety. They have job titles with these. There's a wide variety of jobs covered as well.

MEMBER FIELD: So from the data that I read it looks like the documentation for external radiation is pretty good as far as badges that the workers wore, and there was some question about the bioassay but you're

taking the worst case scenario based on the one urinalysis.

DR. NETON: I don't think the question here is the bioassay model or even covering the exposure during what happened in the covered period with the uranium rods. The issue seems to be that we maybe don't know the full source term because of this sample that was found in I think it was 1970s of enriched uranium near the loading dock, and so there's some concern in people's minds that we're not covering the whole source term. But the reality is what added this covered facility was the machining of the uranium rods for the Brookhaven reactor and that's what we reconstructed.

MEMBER FIELD: It's kind of interesting in a way because, if your SEC petition would have been for a longer period, there would have been more questions involved. As it is it's a two-year period when there's three months of work. So the question is, if

your SEC petition was for a later date then there's even more question about the possibility --

MEMBER GRIFFON: What's the defined period?

MEMBER FIELD: What's the defined period?

DR. NETON: Well, I think the question is could that enriched uranium have been there during the covered period and we're not covering it? Was there some other operation going on during that period, and we have no information to suggest that.

MEMBER FIELD: And from what I hear it's not that you just don't have the information, but the information you have does not point that there was an activity.

DR. NETON: Oh absolutely, yes. I mean, this Ferguson report that's a fairly well defined document, a fairly well developed document that Dr. Poston mentioned, explained in extreme detail the nature of the materials,

and we have no doubt in our mind that every rod -- in fact, they stamped these rods when they came through they were natural uranium. There would be no reason to run enriched uranium through the Brookhaven reactor.

MEMBER GRIFFON: And I guess I would agree that that process is pretty well defined and the exposures from that process are pretty well defined. I would point to another document on the O: drive and I was looking for the reference ID number, but I can't place it. I will find it for other Board Members. But it mentions -- I think this is a DOE -- when they initially define the site and the time frame for the site they do their own research, and I think it's a compilation of what they found originally. And it says that, where is it -- very little information has been found that describes the specific operations involving radioactive material conducted at this facility. The memo mentions three operations, production of

valves and manifolds for Y-12 which we've talked about a little bit, machining of uranium rods which is the Brookhaven process and uranium rolling which we haven't heard anything about. So my contention for the last several meetings has been that just because we have this one pesky piece of information we have to have some rationale for what caused it to be there in 1970. If we don't know -- and this reinforces my statement that I don't think we know enough about the process history. We know a lot about the rod process, the Brookhaven operation under H.K. Ferguson, but I'm not sure we know the other pieces of what could have went on there. And I'm not sure that it would have even been during that time period, but I can't say it wasn't, so.

DR. NETON: That was going to be my point, Mark. I mean, I think we have a very good characterization of the radiological operations that occurred during the petition time period. We have no indication that there

was any other radiological operations going on at that time and that's what we've covered.

MEMBER GRIFFON: Well, except for this one pesky piece of information.

DR. NETON: No, but I mean what I'm saying is the Ferguson report details all the radiological controls that were put in place at the facility in Building 23 to accommodate the rolling of the rods. There's nothing else that we've found during that period, that two- year period that says that uranium rods were being rolled at the same time. I mean, so it could -- may have happened, but in my opinion it wouldn't have been during that covered period that the petitioner requested.

MEMBER GRIFFON: I mean, this is DOE's research to define the time period for the site, you know, in this document that I have, and I've got to get the reference ID, but I mean they state these other -- they were looking at these other operations, so --

DR. NETON: I understand.

MEMBER GRIFFON: -- just because you didn't find follow-up reports doesn't allow me to say okay, forget about it and forget about this other piece of data too, you know? That's all I'm saying.

CHAIRMAN MELIUS: Henry or Dick, do you have questions?

MEMBER LEMEN: I would just like one clarification from what Bill said as to what the exact Class Definition is. Is it what it says in here, January 1, 48 through December 31, 49, and then January 1, 91 through December 31, 1993?

CHAIRMAN MELIUS: Yes. Those are the covered periods. They're not really a Class Definition because NIOSH when they did their evaluation basically said their evaluation was to turn down the petition. That group should not be added to the SEC Class. So there is no Class Definition. It's a covered period.

MEMBER GRIFFON: I don't think 91 through 93 was necessarily residual, it was a cleanup period wasn't it? It was --

CHAIRMAN MELIUS: Yes.

MEMBER LEMEN: So the proposal as it is now is to reject it?

CHAIRMAN MELIUS: That was the recommendation from the Work Group. There is no -- that was the proposal, but there's no motion active.

MEMBER LEMEN: But that's what NIOSH's recommendation was?

CHAIRMAN MELIUS: Correct.

MEMBER LEMEN: Okay. That's all my questions.

CHAIRMAN MELIUS: Henry?

MEMBER POSTON: It is the Work Group's recommendation it be accepted?

CHAIRMAN MELIUS: Yes.

MEMBER ANDERSON: Is there -- I mean, the pesky sample now that I've got it at the right facility, is there any indication in

the later period that enriched uranium would have been there? So that, you know, you don't -- I mean, the issue of well, do we attribute it to the early years or later years. If there's some indication that some enriched uranium moved through there in some other way then that would help explain, but if through the whole period there's no indication that there was any enriched uranium materials going through there then we're sort of left with, you know, a big question.

DR. NETON: That's right. We've spent considerable effort trying to identify where this uranium sample could have -- enriched uranium sample could have come from and we uncovered nothing.

MEMBER ANDERSON: My next question --

CHAIRMAN MELIUS: Can I just clarify? But NIOSH did refuse to go pursue that any further with the Department of Defense. That's on the transcript from a

statement from Larry Elliott. Doing a manual search, he said he would not do it. That was a judgment he made.

MEMBER ANDERSON: Then my other question is we've now got ten years of experience going into the data from, you know, lots and lots of facilities. Have you ever come across an unexplained sample like this before?

DR. NETON: That's a tough question.

MEMBER ANDERSON: I know.

DR. NETON: I don't know, off the top of my head, anything. I would say that we have -- Mark brought up the issue of rolling operations. We have a very good track record of where the rolling operations occurred. This all started with Bethlehem Steel and we know -- we have very good compilation of multiple reports that indicate where these rolling operations occurred. We have no indication that it ever occurred at Chapman

Valve. So that would have been the only other piece. I mean, the valves, Dr. Melius is correct, we didn't continue and finalize our search on the valves from the Navy because of the volume of work required.

MEMBER GRIFFON: I will say, when I was preparing for this meeting, that the mention of rolling in here surprised me.

DR. NETON: We could provide you numerous documents on the history of the rolling activities in the AEC operations because they're fairly well documented. We've uncovered a lot of information on that.

CHAIRMAN MELIUS: Dr. Roessler, yes.

MEMBER ROESSLER: You're referring to this pesky sample as being enriched uranium, and as I remember going back there was this sample that somebody took and I can't remember how he analyzed it or evaluated it, but said it was consistent perhaps with enriched uranium. But I think we had some

discussions, and I don't remember if this was a spectral analysis or you know, that the energy region that was showing could have been something else and I think we ought to go back to that. Am I remembering incorrectly?

CHAIRMAN MELIUS: No, you're remembering correctly, Dr. Roessler. We spent some time trying to determine whether it was truly an enriched uranium sample and the fact is we hired the team leader of the project to go back and confer with his folks down at Oak Ridge to try to recollect how that sample was analyzed and no one could remember. It could have been isotopic analysis, it could have been gamma spec, we don't know.

MEMBER GRIFFON: Jim, that's not quite the way I remember reading. I read over that interview. He said likely mass spec or alpha spec.

DR. NETON: Did he say likely? Okay.

MEMBER GRIFFON: Yes. So I --

DR. NETON: I was going to --

MEMBER GRIFFON: -- look at Foley's interview. It's interesting to read that.

DR. NETON: I was going to follow up saying that was their eventual opinion, that it was likely to be enriched, but I misremembered that other piece. Thanks for correcting me.

MEMBER MUNN: But still, nobody knows. So we're spending all this time debating about whether or not this possible enriched piece of material which may or may not have been in the facility or near the facility at the time that we have concerns has any bearing at all on any claimants' current process before us. It seems to beg the question how much impact such a thing could have had in any case during this three-month period.

CHAIRMAN MELIUS: I will go back to my question we have on Blockson which is

since this was -- this session was designed, the information provided was for the new members to get up to speed and understand what's been a longstanding and difficult situation for the Board, are you comfortable taking some steps if there were a motion, or would you prefer to have more time to read the information and give input maybe in the context of what you've heard today and to gather more of that. Henry, I'll start with you.

MEMBER ANDERSON: I don't know what more we would get.

CHAIRMAN MELIUS: Okay.

MEMBER ANDERSON: I'm not sure that it's resolved the issues, but I'm not sure what I would ask for if I would say this is what I need. I shuffled through it the best I could, so.

CHAIRMAN MELIUS: Okay. Dick?

MEMBER LEMEN: I'm ready to hear the motion.

CHAIRMAN MELIUS: Okay. Bill?

MEMBER FIELD: It would be nice to get more information, but it sounds like we're not going to get that so I guess I'm ready, given the information we have.

CHAIRMAN MELIUS: David? David, can you - do you need more information or are you prepared?

MEMBER RICHARDSON: What are you offering?

(Laughter.)

CHAIRMAN MELIUS: I don't know. I guess it would be more time to become familiar with the CD that you were sent that had all this information on it.

MEMBER RICHARDSON: Again, I wouldn't be opposed to that. If everybody else is ready to move ahead I could do that, but you know, I don't think I have this entirely digested, no.

CHAIRMAN MELIUS: Okay. In that case I think that we will postpone until the

next meeting and we'll put this on the agenda again. Because I think it's only fair to the new members to do that. If there's specific information. Actually, what I was thinking for both Blockson and Chapman we will put our Board call on the 31st. We will put both of them on just as an informational discussion in case there are questions that come up in the meantime so that when we get to the May meeting that we'll -- everyone will have the information that they're seeking. So if there's further information you get, let us know in the meanwhile and so forth.

MEMBER FIELD: Can I just ask so that we -- so we know what we're thinking about during this period. Would it be possible -- I don't know the procedures, how they're usually run by the Board, but would it be possible to hear the motion so we can consider what's being considered?

MEMBER BEACH: I have a question. Would it be helpful to maybe give them the

dates of some of the transcripts that they could review those as well?

MEMBER LEMEN: We've got the transcripts.

CHAIRMAN MELIUS: It might be -- the Board does not. I believe that only the new members received those CDs, is that -- and the same on Blockson. It actually might be helpful for those of us on the Board to review those also.

MEMBER GRIFFON: All the transcripts are on the website.

MEMBER MUNN: Well, yes. We're big kids, they're on the website, we know where to find them.

MEMBER POSTON: Can't we answer the question? Bill, the motion from the Work Group was to accept NIOSH's recommendation that the SEC be denied.

MEMBER ZIEMER: I believe that it was not specifically to deny an SEC so much as it -- if I could just clarify the wording. I

believe that NIOSH said that they could reconstruct dose with sufficient accuracy.

MEMBER POSTON: Doesn't that follow, then?

MEMBER ZIEMER: Yes. I think the effect is the same. I don't believe that they actually put it in those words.

MEMBER GRIFFON: But I do want to -- just for the record and while John was talking I was searching the transcript for the word recommendation and I don't think the Work Group ever made a recommendation. There's actually some dialogue in here where Lew Wade explained that the Work Group won't be making a recommendation, but rather presenting their findings to the full Board. So I'm not sure who made the motion. I'm not disputing your notion of what went on, but I don't think we made a formal recommendation from the Work Group. It doesn't make a difference to where we're at, but yes.

MEMBER LEMEN: I agree with you, I

don't think the Board minutes say what the committee decided. Because I was to the left and I agree with Bill that we should see at some point what is being proposed. But I think I have an idea of what it is.

MEMBER POSTON: Well here, I will read you the slide if you will give me a moment.

CHAIRMAN MELIUS: I will.

MEMBER POSTON: It says, after much discussion and exchange of information among the NIOSH staff, the SC&A staff and the CV Work Group, the Work Group concludes that the NIOSH approach to dose reconstruction will provide bounding but claimant-favorable estimates of doses to the workers at Chapman Valve over the periods of interest in this petition. Based on this conclusion the Work Group does not recommend that SEC status is warranted for CV employees. I don't know what it says in the transcript, but that's what the slide said.

CHAIRMAN MELIUS: Okay. Okay, it is time for our lunch break. We are running about 20 minutes late so maybe if we could be back about -- cut a little bit short because we do have a petitioner we believe that will be on the phone with us for the discussion of United Nuclear. So if we could try to get back by 2:15. Two-fifteen, we'll plan on starting.

(Whereupon, the above-entitled matter went off the record at 12:54 p.m. and resumed at 2:18 p.m.)

A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

(2:18 p.m.)

CHAIRMAN MELIUS: We have got to try to stick somewhat on schedule for the rest of the afternoon because we have people calling in on specific sites, so petitioners or other interested parties. So we're going to try to be timely. We have to make up 15 minutes at some point. So why don't we start

with United Nuclear?

Did you have an announcement, Ted?

MR. KATZ: I just wanted to check in with our Board Members who are afar. David Richardson, are you with us yet?

MEMBER RICHARDSON: Yes. Can you hear me?

CHAIRMAN MELIUS: Yes.

MR. KATZ: Great. Thank you. And Mike Gibson?

MEMBER GIBSON: Yes, Ted, I am here.

MR. KATZ: Great. Thank you.

And then just a reminder for everyone else listening in on the phone, please mute your phones. Use the *6 if you don't have a mute button. Thank you.

MR. RUTHERFORD: Check and make sure is the petitioner on.

MR. KATZ: Oh, yes. Thank you.

And is the petitioner for United Nuclear Corporation on the line with us now?

If you're muted, you might have to unmute your phone to let us know.

(No response.)

MR. KATZ: Okay. We don't know.

CHAIRMAN MELIUS: I think we start anyway. We can't --

UNITED NUCLEAR CORPORATION - SEC PETITION

MR. RUTHERFORD: All right. My name is LaVon Rutherford. I am the Special Exposure Cohort Health Physics Team Leader for OCAS. And I am going to talk to you about the United Nuclear Corporation SEC petition.

This petition was received on June 19th of 2008. The petitioner-proposed Class is all employees who worked at the United Nuclear Corp. in Hematite, Missouri from January 1, 1958 through December 31, 1969 and January 1, 1970 through July 31st, 2006.

The petition qualified for evaluation on November 4th of 2008. And the basis of qualification was a lack of personal monitoring records, specifically at that time

for thorium.

The Department of Energy facility database initially indicated the site was covered through the end of 1969. During our evaluation, we uncovered information that we felt that the Class warranted -- extended through 1973, actually, the covered period. We provided that information to the Department of Labor and the Department of Energy in February of 2009.

In May of 2009, they ultimately responded and concurred with our assessment that the covered period should be extended through 1973. This has other implications, which you will hear soon.

So the Class evaluated. We evaluated all site employees that worked in any area at United Nuclear Corp. from January 1, 1958 through December 31, 1973, which is the covered period, and January 1, 1974 through July 31st of 2006.

As you have seen earlier, we

received this petition in '08. So the first question is why did it take so long to complete the evaluation? During the qualification process, we granted the petitioner extensions to respond to deficiencies and clarifications that we had with the petition.

And ultimately we did qualify that petition. We worked through those issues. Also, in March of 2009, approximately a month before we were ready to issue our Evaluation Report, up to this point, we had had very little luck receiving documentation through the current site operator, Westinghouse.

And in March of 2009, for some reason, they determined that they would grant us access to the documentation that they had during the covered period. And it was a determination by the OCAS Director that we would extend our evaluation to retrieve that documentation.

So we went and we performed two

data captures in March and April of 2009 and recovered a large amount of documentation. And as we were ready to complete our analysis again in our evaluation, that's when in May of 2009 the Department of Labor issued their finding that they concurred with us that the covered period should be extended through 1973.

So now we had a period of 1970 to '73, where we had to reconstruct all exposures versus what we were originally thinking we were only going to reconstruct residual contamination. This forced us to go back and further evaluate that period, the '70 to '73 period.

And, with all luck, during the 1970 to '73 period, looking at the data that we had, we determined that the bioassay, the contractor who was analyzing the bioassay during that period was a contractor that we had previously determined we would not accept their data because it was deemed unreliable

based on their actions at another site. So we would not use the 1970 to '73 bioassay data.

Most of the Board Members will remember an evaluation under NUMEC where we actually had that same contractor. This initial problem existed at the Sandia. And we have pretty much stuck to our guns on not accepting their data once that falsification issue arose.

A little background. United Nuclear Hematite was on approximately 228 acres of land. It was purchased by Mallinckrodt, roughly 40 miles south of St. Louis. Mallinckrodt was the initial operator of the site. And they sold their rights to United Nuclear. I can't remember the exact year, during the covered period time frame.

Site operations involve mainly about a seven-acre tract in the geographic center of the property. Construction of the facility began in 1956, and it became operational in September of 1956.

Their main mission from the beginning through the end of the covered period was producing uranium fuel, mainly for the Navy fuel program and other government applications.

The production facilities consisted of two main buildings. And it also included some incoming storage and blending buildings and outgoing storage building located between the two main buildings. I also want to point out that the AEC covered work did not begin until 1958. And I will discuss that in a few moments.

A little picture of the site. I should have blown it up a little bit bigger. Building 240 was the initial production facility, built in 1956. Building 255 was built in the 1957-58 time frame.

Building 240, to go back to it, was where most of the operations, where the uranium enrichment fuel work -- it was broken down into three separate rooms, Blue Room,

Green Room, and Red Room, depending on the enrichment. That's where most of the uranium fuel production work began; 255 is where the uranium oxide pellet fuel was produced for the most part.

The facility was built '58-'59 time frame and also included the Item Room, which is where a lot of the experimental work and stuff that went on with Navy fuels; 250 and 251, 250 and 251, were storage areas. They were also some blending operations. And 250 was built in 1956; 251 was built in '57-'58 time frame.

One-zero-one and 120 were buildings that were actually on the site when Mallinckrodt purchased it in 1956. It was called a tile building. And I can't remember the other exact name he used for it, but the site used those mainly for storage.

One-ten was actually not built until 1972. And that was the administrative building that later was used from the time it

was produced in 1972 as an administrative building and -- security access.

The Atomic Energy Commission covered work began in 1958 with a contract to process un-irradiated scrap. It continued until 1973. Again, throughout its history, the UNC Hematite plant's primary function was to manufacture uranium metal and uranium compounds from natural and enriched uranium feedstocks for use as fuel in nuclear reactors, including the U.S. Navy submarine reactors.

Where we look for information. We looked at Site Profiles. We do have a Site Profile for this facility. It was on Battelle-6000, Appendix D.

That Battelle-6000, Appendix D was developed before we actually got all the information from the Hematite site. And I will discuss that a little bit later.

We looked at technical information bulletins. We had interviews with former

workers. We also had interviews that were provided by the petitioner as well in affidavits, in the form of affidavits.

We looked at the existing claim files; again, documentation provided by the petitioner. We looked at the site research database. And we did additional data captures.

Our main data capture was at Westinghouse Electric Company. We had very little documentation at the time on the site. We did have some early inspection reports. We had some bioassay data prior to our data capture at Westinghouse. And we had some air monitoring data. We also had a little bit of film badge data. But with our data capture at Westinghouse, we did get a lot more of that data.

We went to the Missouri Department of Natural Resources, DOE Germantown, DOE Legacy Management, OSTI, NNSA, the NRC ADAMS database, and then NRC, also Washington State

University, Southern Illinois University.

We did an OpenNet search on OSTI database. We did internet searches. We looked at the CEDR database and other various DOE locations, National Academies Press, and United States and United Kingdom Patent Offices.

You will look at the table above. This is actually out of the report. And you'll notice it's June 8 of 2009. I wanted to identify what we had in the report but also provide an update.

We had 51 claims that were initially identified for UNC. Of those 51, 11 were pulled, 8 of those for SEC for Mallinckrodt. So they went SEC. The other three were pulled by DOL for other reasons.

We had another eight of those claims that were compensated by using Appendix D of Battelle-6000 prior to this evaluation, and we had five claims that were held up with DOL under employment verification.

So at the time, we only really had 23 claims that we were concerned with that we went in and we linked the data that we received from the facility. And we came back. And of those 23 claims, we had internal and external monitoring data for those 23 claims at the site. And at that time, we had completed 33 dose reconstructions.

Since then we have received two additional claims. We now have 53 total claims that had been received at one time. The same number have been -- pulled.

We completed 37 dose reconstructions. And of those 37 dose reconstructions, 33 of those claims have some level of internal and external monitoring. I say "some level" depending on the -- because you'll find out in reading it operators were monitored more frequently than the non-operators.

Again, UNC Site operations, primary focus when manufacturing uranium metal

and uranium compounds from natural and enriched feedstocks. They also recovered uranium, especially enriched uranium, from scrap, process effluents, and other wastes.

Documentation indicates in 1964 UNC Hematite produced thorium-uranium oxide fuel pellets to demonstrate its ability to produce the product in an attempt to obtain breeder reactor fuel contracts.

Some of the Board Members will remember another site that we actually did an SEC for, W. R. Grace. W. R. Grace was a site that also was trying to get the contracts for this thorium-uranium fuel mixture. And so they were making the pellets as well.

In 1964 or '63 time frame based on the documentation, the Hematite Site decided they wanted to attempt to get into this process because they felt that it could be very good with breeder reactors coming along, could be a process that ultimately could get a lot of production.

So in '64, again, they produced uranium-thorium pellets for that year. And they used those and actually provided them as samples in later years. As you can see, the material was on site until 1968.

Our source compounds. Uranium was normal and enriched, solid form and in various compounds, including uranium hexafluoride, tetrafluoride, and dioxide. Thorium, the only source of thorium was in the form of thorium dioxide powder.

Our internal exposure sources during a Class period, airborne uranium and thorium associated with fuel production, airborne uranium from scrap recovery. Also, external sources were photon and beta exposures from uranium and thorium. And also you had the neutrons from alpha-neutron reactions with enriched uranium and fluorine.

Our internal monitoring data. You'll notice I point to table 6-1 and 6-2 of the Evaluation Report. Urinalysis data exists

for all years except 1961. It exists for 1970 through '73. However, as I discussed earlier, the contractor that was doing the bioassay during that period, we've deemed that unreliable. So we are not using that data in the '70 to '73 period.

In 1961, the contractor determined that -- actually, the site determined that they could comply with 10 CFR 20 requirements and not have a routine bioassay program but only bioassay during events or conditions where they felt that it warranted.

Ultimately that didn't go very well because they had upset condition. And they ended up sending some workers down to Y-12 to have some analysis done on those workers and actually ended up having some initial whole body counts done as well. So in 1962, they reimplemented their program. And their program, bioassay program, continued throughout the covered period.

Routine whole body counts are

available starting in 1968. This is pretty much consistent with when whole body counts became more prevalent. And we have some non-routine, as I mentioned, whole body counts in 1963-65 time frame as well. Those were for incident investigations for the most part.

Other internal monitoring data. A considerable amount of air data is available for the covered period, as it is identified in table 6-2. The data includes general area breathing zone and process samples.

There are only 11 samples in 1958, but, again, that was the start of the AEC period. I also want to point out in the 1956 AEC inspection report indicated that there were only 40 workers at the site in 1956. In 1958, that had increased to 60. We believe based on the dosimetry data and based on the documentation that in 1970, around the 1970 period, they were up closer to around 200 employees. Over 200 air samples for thorium operations were retrieved for the 1964 period.

External monitoring data. Film badge data exists for all years, as identified in table 6-2 of the report. The amount of data for 1958 through 1960 is not quantified in the table. We used, actually, summary data for that period from the AEC inspection.

We also had additional -- we could probably update that and give you better numbers now on the '58-'59 period than what we have. I should have provided that. I apologize. But we do have summary information from '58 to '60 now.

Maximum exposures and average exposures are also identified in the compliance inspection reports. The AEC inspection reports identify for the given period for that inspection period, here is the maximum exposure that was identified. And here are what the average exposures are. And those are in the references that we provided to the Board.

So our two-prong test, we evaluate

is it feasible to estimate level of radiation dose of individual members of the Class with sufficient accuracy. And if so, if it's not feasible, then is there a reasonable likelihood that their health had been endangered?

In this case, we feel that we have the available monitoring records, process descriptions, and source term data are adequate to reconstruct dose with sufficient accuracy for the evaluated Class of employees.

Our internal dose feasibility approach. All existing claims at the time -- and that is wrong. It says, "All existing claims have individual personnel monitoring data." Thirty-three of the 37 claims that we completed dose reconstruction had personnel monitoring data, internal and external data. Individual personnel monitoring data can be used to reconstruct the dose.

In addition, we have thorium air data, which consists of general area breathing

zone stack and hood air sample data representative of all operations performed for thorium-uranium fuel pellet work. This work was performed in the same areas that the uranium oxide pellet work was done, with the same type of equipment. And we have air data from that.

Whole body counts and air data. Because we cannot use the bioassay data from '71 to '73, we looked at the whole body counts. And we also looked at the air data that we had. Is the air data from the '71 to '73 period consistent with what we had seen in the previous years? And yes, it is.

We looked at the plant activities during that time frame. Did they change in that '70 to '73 period that would possibly give us indication that exposures might have been different and that they did not change? So the air data from this period is consistent with the values from the previous years.

We also have Appendix D of

Battelle-6000. It is specific for United Nuclear Corp. The Appendix contains intake values for types of workers based on urinalysis and air data. I will say that the Appendix is currently being revised at this time because we got a lot of additional data.

We do know that the air intake values based on the bioassay data that we have, the air intake values that were defined in Appendix D are bounding and that based on the urinalysis data that we have retrieved.

We also have to revise Appendix D because the covered period extended to 1973, which Appendix D originally only addressed up to 1969. So we have to revise it for that as well.

We also have to revise Appendix D because of 1964 thorium exposures. That was not originally recognized. We have the approach for that as well.

External dose. Film badge data exists for existing claims. We have Appendix

D again, Battelle-6000 used the -- the Appendix contains external dose values for types of workers. It's a very similar approach to what is used for the internal dose based on the AEC inspection reports.

Again, this Appendix, as I said, is being revised to include the '71 to '73 time frame. And it's also going to evaluate the additional external monitoring data that we received from the March and April data capture.

Also neutron exposures we are estimating using TIB-0024. Estimation of neutron dose rates from alpha-n reactions in uranium and thorium compounds. I did provide -- on the Board's O: drive, there are sample dose reconstructions as well for those.

Residual exposures. Appendix D estimates internal and external dose for the residual period by taking the highest intake rate from the intakes derived from the bioassay data and air data, and converting

that to an air concentration, assume it settles and accumulates over a year.

And then the intake value is then determined using a resuspension factor. And external dose is based on surface contamination.

Although we feel this is bounding, we are revising this approach as well in Appendix D to be consistent with TIB-0070. I think that TIB-0070 has been a pretty good document that we have been able to get a consistent path forward with doing our residual exposure periods.

And so we are revising that. And what we will do is we will take the highest -- or an air concentration from the 1973 period based on the data we have and do a decay function down to the data that we currently have from the end of the -- which they're still remediating that site and decommissioning that site at this time. So we have data for that.

So our feasibility determination is we can do internal dose and we can do external dose for the '58 through 2006. And, again, this is just a different recommendation is that we can -- NIOSH finds that radiation dose estimates can be reconstructed for compensation purposes for the period.

Questions?

CHAIRMAN MELIUS: Board? Phil?

MEMBER SCHOFIELD: Yes. I am a little concerned about how you are going to do the internal dose for people who may not have any bioassay or --

MR. RUTHERFORD: What we did is we actually did -- it's basically a coworker model. We took the internal dose or the bioassay data that we had, and from that bioassay data, basically we developed a distribution. And then we set it up for operators getting a certain amount and so on.

Now, again, I told you we are revising that based on the additional internal

data that we have. We have received a lot more internal data from that March, April 2009.

CHAIRMAN MELIUS: Any other questions? I have a question that just helps, maybe help decide how to go forward a little bit. I believe that SC&A has reviewed the Site Profile. I'm not sure which site --

MR. RUTHERFORD: Yes. I can actually --

CHAIRMAN MELIUS: -- which era that -- maybe you can clarify.

MR. RUTHERFORD: Yes. I believe that SC&A looked at that prior to getting all of the documents that we recently received. So their take on this site at that time is not really fair to what the -- I'm sure that they would say that they haven't had the opportunity to review all of the existing documentation that we received in the March and April of 2009. So you are correct.

CHAIRMAN MELIUS: And I believe

your report was, SC&A report was sent to us in October.

DR. MAURO: That is correct.

CHAIRMAN MELIUS: We have never set up a Work Group to deal with that. That's one of the other pending issues we had to decide on.

Yes, Paul? And then --

MEMBER ZIEMER: Well, I wanted to point out that, first of all, on TBD-6001, that is in the Work Group. The revision has not been looked at. I think we still have the findings from SC&A on 6001. This Appendix has not been looked at or technically assigned to the Work Group.

You may recall last time the Board assigned Bliss & Laughlin and I think Electro --

MR. RUTHERFORD: Electro-Met, yes.

MEMBER ZIEMER: -- Electro Metallurgical to TBD 6000/6001 Work Group. So that Work Group now has the resolution

matrices for both TBD-6000, 6001.

It has the matrix for Appendix BB, which is the site, what amounts to a Site Profile for General Steel Industries. It has the matrix for the General Steel Industries petition. It has Bliss & Laughlin and Electro Metallurgical and possibly this one if it's so assigned.

So that workload is getting a little heavy, but I simply point that out.

CHAIRMAN MELIUS: Josie?

MEMBER BEACH: This is an observation and a question. I noticed on our memory sticks that we were given -- we got the ER report for August. And it looks like there's a rev 1 out.

MR. RUTHERFORD: I am glad you brought that up. I was going to actually mention that. The report that came out in August is actually the report.

The revision that came out, if you look at page 1 of the data capture synopsis of

the Evaluation Report, the only thing that changed in the report from August of 2009 to the recent one we just printed out was the first page of the data capture synopsis did not reflect the actual data capture in March and April of 2009. So our feasibility determination, everything in the report is the same except for that one thing.

We did contact -- I think I sent that out in an email to the Board. It may not have provided that clarification. I apologize.

CHAIRMAN MELIUS: Do we have the petitioner on the line? If the petitioner is on the line, could you speak up for United Nuclear, petitioner for United Nuclear on the line?

(No response.)

CHAIRMAN MELIUS: Okay.

MR. RUTHERFORD: I do want to point out that the petitioner -- I talked to the petitioner last week. And even though she

has not been on the line, I wanted to point out that she did point out that she did not receive all of her FOIA requests. She FOIA requested all of the reference documents on the Evaluation Report. And she had not received that all. So I do want to point that out.

We're working on getting that all to her. There were some kind of difficulties she had. If you remember, we delayed presentation on this.

We were going to present this at the October meeting. And because of family issues, she requested us move this to this meeting.

So she didn't get the FOIA request in because of her movement until December. We were unable to get her FOIA request completed prior to this meeting. I wanted to point that out. I know that was a concern of hers.

CHAIRMAN MELIUS: I just want to -- just a clarification also for the new

members is I guess our usual pattern on something like this, which has not been reviewed and where we haven't had a Work Group or a review is to refer it to a Work Group for the SEC evaluation and for resolution.

And here it's a little bit more confusing because we've had a Site Profile, but it's really not an up-to-date Site Profile. And it really won't be for a while. And we've got Paul's Work Group also, but, anyway, just keep that in mind.

Henry?

MEMBER ANDERSON: Yes. On your slide, the basis for the petitioner was lack of personnel monitoring records for thorium and how you have turned up.

MR. RUTHERFORD: Yes. Actually, that is pretty much what happened. If you look at the March and April time frame of 2009, last year, during our evaluation, when we did that data capture, prior to that, we did not have any of the air sample data that

we retrieved, the 200 air sample data, 200 air samples from that period. So yes, that is when we got that.

MEMBER ANDERSON: But you had been -- performing dose constructions without that information --

MR. RUTHERFORD: You are correct, and that is a very good point. And what will happen is that when we revise our Appendix D and we complete that, at some point, we will have to do a PER, a Program Evaluation that we will go back and we will determine if any of the existing dose reconstructions that we completed are potentially affected by this change in the Appendix. So we would have to revisit those claims.

MEMBER ANDERSON: So your assumption when you were doing those was despite their having processed thorium, there was no thorium exposure? How did you do it?

MR. RUTHERFORD: Actually, we were unaware there was any thorium processing going

on at the site at all.

MEMBER ANDERSON: Okay.

MR. RUTHERFORD: If you look at the Appendix D, which is available on the O: drive, you can actually see that we had no indications. And we had no indications from the documentation that we had the thorium operations occur, only after we had -- during the petitioning process by the petitioner, one of the affidavits provided by the petitioner actually had identified thorium operations and that had -- for these thorium pellet operations.

And from that, we were able to -- okay. We got additional information. And I can't remember what it was, but we felt that would qualify the petition to evaluate this thorium exposure.

CHAIRMAN MELIUS: Gen? Then Brad, then Bill.

MEMBER ROESSLER: Do you have whole body counts for before 1971?

MR. RUTHERFORD: Yes. We have whole body counts starting in 1968.

MEMBER ROESSLER: Okay.

CHAIRMAN MELIUS: Brad?

MEMBER CLAWSON: Help me understand your table 6.2. Like bioassay, you've got seven. Then we go over. Then we've got a 21, then parentheses, what I'm looking at a lot is the X. And the X says that we don't have data, but then we've got 3,822.

MR. RUTHERFORD: Wait. What page are you on, Brad? I'm sorry.

MEMBER CLAWSON: It's table 6-2, page 28. I'm just trying to understand the table that --

MR. RUTHERFORD: All right. You know, I have to be honest with you. I went back and -- okay. Are you looking at '58 through '60?

MEMBER CLAWSON: Yes, or any of these. I am trying to figure out because

we've got smears and --

MR. RUTHERFORD: Sure. First of all, the parentheses number, all the parentheses numbers are the Site Research Database number. So if you go onto the Site Research Database, you can take that number, put it in there, and you will find that data. I really like that about the table.

If you look at '58 through '60, I actually -- and I know Mark likes that a lot because the '58 through '60 period, you will actually see in the film badge data the Xs with a 2 by that. And if you actually go to the 2, it explains at the end of the report. And it says, "Indicates data exists, but the specific number of samples collected or individual monitored was not available."

So at the time -- and that is what I had mentioned. We could actually have provided an updated number to that. And I will work to do that for the Board and get you updated numbers for that. When this table was

initially put together, we were loading and linking all of that data at the time.

MEMBER CLAWSON: Okay. I was just trying to figure out what that second number was.

MR. RUTHERFORD: Sure. Yes.

MEMBER CLAWSON: Thanks.

CHAIRMAN MELIUS: Bill?

MEMBER FIELD: Yes. I just had a general question about when you see that there is thorium exposure -- and this is probably more related to my inexperience with exposure assessment and how it is done. Do you look at the exposure for also the decay products for thorium?

MR. RUTHERFORD: Sure. I anticipated that, actually, you would ask that. You know, in the current form that we got this, I would not anticipate a high thoron concentration from the daughter product because we got thorium oxide powder.

The concern that you get into is

when you actually combined it and heat it together do you drive the daughters out. There is actually a very good document in the references where Hematite actually recognized that issue. They knew that they had a -- at the point where they were combining and heating the process, they would drive those daughters out. And they took the thorium MPC limit, and they took the uranium MPC limit.

Initially they used a modified MPC based on the uranium and thorium. And then during the actual operations where they combined them, they stuck with the thorium MPC limit. And they also discussed why they felt the daughter products, although they would be driven out, would not provide an exposure concern to the workforce. I can get you that number. It's a pretty good document.

CHAIRMAN MELIUS: Okay. On the phone, Mike Gibson or David Richardson, do you have questions?

MEMBER RICHARDSON: Yes. I have a

couple of questions.

CHAIRMAN MELIUS: Can we have some volume, please?

MEMBER RICHARDSON: How many people worked at this site?

MR. RUTHERFORD: I am sorry, Dr. Richardson. Could you repeat that?

MEMBER RICHARDSON: How many people worked at the site during this period?

MR. RUTHERFORD: Actually, during the early period of 1956, there were roughly 40 people that worked there. It's not a large site. In 1958, based on AEC inspection documents, it indicated they increased to around 60 workers.

And then based on the monitoring data and the other information that we have uncovered, we believe in the 1970 period, it was more closely around 200 workers.

MEMBER RICHARDSON: And there were a couple of things that struck me. One was the weekly badging. And another one was the

fact that you've come up with such a high level of completeness for the bioassay data, which would be different than even a facility like Y-12 or something like that.

So I don't know. Is this a consequence of this starting out as a Navy facility? I don't know. Maybe that's my personal bias.

(Laughter.)

MR. RUTHERFORD: I've got the same personal bias. So you're all right.

MEMBER RICHARDSON: I mean, it's sort of remarkable.

MR. RUTHERFORD: You know, I don't know the reason. I really don't know.

CHAIRMAN MELIUS: Any other questions from Board Members? Anybody have a -- maybe not a motion but a recommendation on what we -- again, as I said, the standard practice would be review this to a Work Group and to SC&A for review which we probably would do it at some point anyway. I think we need

to decide which Work Group, which we can decide tomorrow if we did that, though.

Wanda?

MEMBER MUNN: Well, I am wondering what we would achieve by postponing this, what new material is likely to be discovered that would change the assertion that these claims can be reconstructed now.

I understand that the fullness of the material can yet be developed further. There is some question as to whether that would be productive in any way other than to verify that claims which have already been done were adequately done.

Is there any reason why we should not continue to allow the new information to be developed as it wishes to be without holding up any dose reconstruction activities that are going on at the time?

It seems unlikely that what is going to transpire will change the ability to do dose reconstructions.

CHAIRMAN MELIUS: I guess I would have two responses to that. One is I don't think we would be necessarily holding up dose reconstructions by referring to the Work Group because NIOSH's usual pattern in this situation would be to continue to do dose reconstructions. To the extent they may be held up because they are still developing some of the information also, it may go on, but that is going to happen anyway.

Secondly, we do have from LaVon information, and I think some transmitted through other people at NIOSH that the petitioner had some concerns and was trying to receive additional information about it.

MEMBER MUNN: That's true.

CHAIRMAN MELIUS: And I think we owe some duty to the petitioner to do that. We thought the petitioner was going to be on the call today, but we tried to reach the petitioner.

I don't know what happened with

that, but I guess I am a little uncomfortable moving forward without hearing from the petitioner and without the petitioner getting the information that they had requested earlier.

MEMBER MUNN: That's certainly true --

MS. BROCK: Dr. Melius, this is Denise Brock. I am on the phone. Prior to the meeting being reconvened, I did hear the petitioner online. It was very light. So I don't know if she was probably having some problems with her phone.

I have not heard her speak up yet, but that was what she had stated, that she was wishing that she could have her presentation put off until the May Board meeting.

MEMBER MUNN: Well, that resolves the issue for us if that is the petitioner's wish. We can certainly do that. And in the interim, if it was necessary to assign this to any Work Group, then the existing Work Group

is -- I can't speak for the Chair, but the Work Group certainly exists that -- for that specific purpose.

CHAIRMAN MELIUS: We could take that under consideration. I will have discussions with that Work Group Chair.

MS. EATON: Denise, I'm on the line.

CHAIRMAN MELIUS: Hold on. There are voices on.

MS. EATON: Hello?

CHAIRMAN MELIUS: Hi.

MS. BROCK: Dr. Melius, I believe the petitioner is on the line now.

CHAIRMAN MELIUS: Okay.

MS. EATON: Yes. I apologize. I am not real familiar with how you turn your mute off. So I tried, but it was unsuccessful. I apologize for that.

I'm calling on my cell phone. If you can tell me how to get back on with this land line, I would appreciate it.

MR. KATZ: You are on. We're listening to you.

MS. EATON: Yes, I know, but I want to hang up my cell phone. I had to call you in again.

MR. KATZ: Oh, I see. Oh, I see. So wait. You want to hang up and call back in again?

MS. EATON: No. I am on the other phone, but how do you turn the mute off?

MR. KATZ: Oh. You have turned the mute off. I thought I understood that.

MS. EATON: Okay. Let's start over.

MR. KATZ: *6. *6 to turn mute off.

MS. EATON: *6?

CHAIRMAN MELIUS: Yes.

MS. EATON: Thank you. Can you hear me now?

MR. KATZ: Perfectly.

MS. EATON: Thank you. I

apologize for that. I did not know how to get back on. But yes, I have been on the line. This is Clarissa Eaton. I am hesitant to really -- I don't want to forfeit my opportunity later on, but I am just here observing. I just wanted to let you know I am on the line.

CHAIRMAN MELIUS: But you don't have any comments at this point? Okay.

MS. EATON: Again, will I be forfeiting anything?

CHAIRMAN MELIUS: No, no, no. You're not by saying anything now. You will have other opportunity.

MS. EATON: Well, I do have a couple of comments about the thorium work that was done there and all the daughter products that go along with it.

Secondly, there seems to be a lot of secrecy around this plant. And I'm not speaking so much of this particular -- but in the past with our community group we have been

very unlucky at getting a lot of straightforward answers.

I still would like to reserve my time, if I may, to review some of the -- documents of my FOIA request and be able to try to -- through that. I would ask that you reserve, not make a decision today, that you would give us a little bit more time. And I apologize for that.

I think there are a lot of questions that we still have. And that's all I really wanted to say for now.

CHAIRMAN MELIUS: Okay. Thank you. I apologize about the difficulties with the technology. We'll remind Ted Katz to tell people how to unmute. We are very good at telling people to mute but not telling them how to unmute. And it's sometimes different on -- I've had the same trouble.

MS. EATON: If I may say one more thing? I had sent Mr. Elliott a letter, a pretty lengthy letter, when I found out about

alleged data that had recently -- in the 11th hour of the ball game.

I am a little uneasy about that only because Westinghouse is the current owner and operator. But I had noticed in the past there have been some discrepancies with their safety, their documents, for instance, they had claimed that the petitioner, [identifying information redacted], had given a [identifying information redacted] sample in which he said that he had never participated in, but, yet, they somehow come up with the documents or the tests. And that was before the company had released any information.

My second concern is the fact that they were withholding the information when this is a federally legislated program. I don't understand how they can hold onto pertinent documents that may clarify some of these workers' illnesses. To me that is gross misconduct.

And I was really shocked to learn

that there was no consequence or anything about that. That was part of my letter to Mr. Elliott. I requested that he respond in writing on what his thought about the situation was.

It makes me very suspicious that, all of a sudden, now they went from no docs to truckloads. You know, I could have prepared documents in the time that we had filed the petition. And I'm very uneasy about the fact that Westinghouse was able to produce a [identifying information redacted] that [identifying information redacted] had never participated in. I believe I brought that up in my petition as well.

Those are just some of my concerns. But, again, I would like to reserve my time to give a better and more accurate presentation at the proper time if we are granted that opportunity.

Thank you.

CHAIRMAN MELIUS: Okay. Thank

you.

So is it the general consensus of the Board that we delay? Okay. Yes?

MEMBER CLAWSON: Do you want me to make that motion?

CHAIRMAN MELIUS: I don't think that it is really necessary, just continue open. We can continue. It's not necessary. And we'll move on to our next site, which is --

MEMBER ANDERSON: And you are going to refer her to some committee?

CHAIRMAN MELIUS: Yes. And we will make that assignment tomorrow.

MEMBER ANDERSON: You'll negotiate that?

CHAIRMAN MELIUS: We'll negotiate that with the good friend sitting next to me here.

MEMBER RICHARDSON: Can I ask a question?

MEMBER CLAWSON: We've got

somebody on the phone.

MEMBER RICHARDSON: This is David Richardson again.

CHAIRMAN MELIUS: Yes?

MEMBER RICHARDSON: I was just wondering if there was any opportunity right now for there to be a response to the points that were raised there.

CHAIRMAN MELIUS: Which are you referring to, David?

MEMBER RICHARDSON: Are there repercussions to withholding data was one of the questions. Are there questions about the authenticity of the data that appeared at the 11th hour? So I wrote those as two of the questions. There may have been others.

MR. HINNEFELD: This is Stu Hinnefeld from OCAS. Repercussions to not providing data I would guess there are not probably any. We can with the assistance of the Department of Labor subpoena information. And that is an administrative subpoena.

I mean, I don't know that there is any particular consequence of a violation of an administrative subpoena. So I don't know that there are any repercussions from people who refuse to provide the data.

MEMBER RICHARDSON: Are there any repercussions to providing you with falsified data?

MR. HINNEFELD: To our knowledge, that has never happened. And I don't know that I have had to pursue that. I think that would require some consultation with people, other people, in the Institute and perhaps maybe other agencies to get a better answer. I don't know.

MEMBER RICHARDSON: I would like an answer to that question. I mean, I think that is a fundamental question.

MR. HINNEFELD: I will see what I can do.

CHAIRMAN MELIUS: Yes. We can talk about it either tomorrow or at the next

--

MEMBER RICHARDSON: And, again, because I am still shocked by kind of the urinalysis data that you got now for these people who now all have, 33 of the 37 people have urinalysis data, you described the program as being on a quarterly or a biannual basis, urinalysis samples. Do those people have urinalysis results on a quarterly or a biannual basis?

MR. RUTHERFORD: Dr. Richardson, this is LaVon Rutherford. Actually, as I had said in my presentation, it is varying. Not all of them have quarterly all the way through their period. Not all of them have biannually all the way through their period.

There are different amounts of that data. And that's why I had indicated it is varying. I couldn't go through and -- I guess I could have actually went through and broken it down into the percentages that had 100 percent and so on, but it would have taken

some effort. That information is there.

MEMBER RICHARDSON: Okay. Yes. I mean, you know, in my experience, that would be phenomenal. It would be almost unbelievable. I mean, maybe that is the case because it is a small facility, but at DOE sites, I have just not encountered people that have that complete of a bioassay sampling result. But maybe that's -- again, but okay. Thank you. That is useful.

MS. EATON: May I say one more thing?

MR. HINNEFELD: I think the claimant wanted to say one more thing or the petitioner.

MR. KATZ: Yes, Clarissa?

MS. EATON: Yes, sir. One thing you also said, that you had quite a bit of personnel internal and external data from some of the employees. But the Item Room you said they had a lot of experimental work. And, for example, the petitioner [identifying

information redacted], who was a [identifying information redacted], he was around the hot stuff the most.

I am just wondering if the data you have isn't from areas where one would imagine the levels to not be quite as high as they would be in the Item Room, where the experimental work was carried on.

You know, as far as what data you have for which people or which department, is the Item Room where they had the experimental work? How much data do you have for one of the hottest areas of the plant in the data capture that you have?

Did I ask that -- do you understand my question?

MR. RUTHERFORD: Yes, Ms. Eaton, I did understand that question. We do have actual data for the -- we have bioassay data for some of the workers out of the item plant. We also have air data from that as well.

And, as I pointed out during my

presentation and you pointed out yourself, that is a unique area because there were research activities that were being conducted at that time with Navy fuel, both internal and external.

MS. EATON: And then one final thought. Did you say you had absolutely no thorium records or minimal?

MR. RUTHERFORD: Prior to the data capture that occurred in March and April of 2009, we had no thorium monitoring records at all. And then during that data capture in March and April of 2009, actually, Westinghouse sent us a table, a list of all the different documents and types and things that they had. And in that, we recognized the thorium air sampling data. And so we recovered that during that March and April time frame.

CHAIRMAN MELIUS: I think there will be further opportunity. This will be followed up. We actually have scheduled a

review of another petition with another petitioner on. I really think we should move on at this point. You will have other opportunity to ask some questions and follow up on this.

MS. EATON: Thank you, sir.

CHAIRMAN MELIUS: Thank you.

Now we have Hangar 481 at Kirtland Air Base and Sam Glover.

DR. GLOVER: Thank you, Dr. Melius. Can you hear me okay? All right.

HANGAR 481 AT KIRTLAND AIR FORCE BASE

SEC PETITION

DR. GLOVER: So this is a Special Exposure Cohort Petition Evaluation Report for Hangar 481. This actually is one of the -- well, it was one of the newest sites that we had. When we got this -- LaVon, about when did this start? When did we actually get Hangar 481 as a new site?

MR. RUTHERFORD: Oh, gee.

DR. GLOVER: Essentially as soon

as we got an Evaluation Report, we had done no site research. We had no information about the facility. So we had to hit the ground running and produce this report and go through the evaluation.

You will also note this probably has as many slides as I did for Hanford. It is probably harder to work on a site that has potentially low exposure and because of the monitoring types that you have versus a facility which is extremely complex. But I will go through these so we will stay on time.

All right. A bit about the site history. Hangar 481 is located at Kirtland Air Force Base in Albuquerque, New Mexico. Ross Aviation, which had operations based at Hangar 481, was under contractual agreement with DOE to provide air transport of personnel and equipment associated with DOE operations at the Sandia National Laboratory, of course, in Albuquerque, New Mexico.**

Ross Aviation maintained air

transport services for government-owned aircraft at government-owned facilities. These included Kirtland Air Force Base; Las Vegas, Nevada; Tonopah Test Range; Los Alamos; and Desert Rock, Nevada. They transported equipment, including packages containing radioactive materials associated with the atomic weapons programs.

I apologize. For some reason, the PDF, in the report, it actually circles where Hangar 481 is. And so when I copied this in, I didn't recognize that it did not grab that off of the piece.

But Hangar 481 if I can get this little laser to work with my fingers is right up here off of Apron C. It's right up here. Hot Pad Number 5, which we discuss in the report, is way off, if I can aim this little thing, is way off over here.

And I want to be clear. This is only Hangar 481. Department of Labor defined this very strictly at the Hangar 481, not on

the hot pads, not anywhere else. These are the activities that occurred in Hangar 481.

This is a picture of Hangar 481. So the petition overview. It was received February 27th, 2009. And this, of course, should not be an 83.14. It should be an 83.13. September 8, 2009, it qualified for evaluation. That doesn't seem right. December 18th, we had an Evaluation Report issued. So I would double check. That seems to be lengthy. There seems to be an error, a typo.

So the petitioner concerns were lack of personnel monitoring for certain individuals employed at Hangar 481; deceased former Ross Aviation employee at the Hangar 481 did not wear dose monitoring badges, and to the best of his knowledge, there was no monitoring of any kind at Hangar 481 or adjacent thereto.

They also said that shipments of substances and items were delivered to the

hangar in guarded shipments from Sandia National Labs and loaded into planes at Hangar 481 with further delivery by personnel wearing dose badges.

They further submitted a statement by another Hangar 481 employee, who said, I recall pilots, flight engineers, and flight mechanics who were present at the time of loading on the ramp would be wearing radiation dose badges. I was not required to wear radiation badges during times that I assisted in loading cargo into the planes or while cleaning the planes.

So the employee's name was redacted would have been working in the offices in the hangar building and on occasions when the cargo would have been loaded into airplanes parked at the ramp located adjacent to the Ross Aviation hangar.

So why did we qualify the petition? Based on other research that we conducted for Hangar 481 data capture efforts,

we determined that it has access to summary reports that contained personnel monitoring data, but we did not have the individual data. We actually only had summary data that responds to the overall. We lacked the individual monitoring records.

So NIOSH identified a lack of individual dosimetry results for the evaluated period. NIOSH found support for the petition basis regarding lost or otherwise unavailable personnel monitoring data.

The petitioner proposed Class Definition as all employees who worked at Hangar 481, Kirtland Air Force Base from March 1, 1989 through February 29th, 1996.

The petitioner-proposed Class was evaluated by NIOSH. And this evaluated Class represents the entire covered period as defined by the Department of Labor.

I will say for the record that we do have a letter to the Department of Labor. We have evidence that the contract preceded

this date. But we are required by law to only review the data in the covered period.

Sources of available information. We conducted extensive search of the DOE databases and internet resources, certainly used the ORAU Technical Information Bulletins, procedures, and the Technical Basis Documents, including those at the Nevada Test Site; Sandia National Laboratory in New Mexico; Tonopah Test Range, Nevada. We used the TIB on X-ray procedures, as we often do.

We had 194 documents at the time this was written for the Site Research Database. We certainly had the case file in the Claims Tracking System.

We had summaries of personnel radiation exposure for Ross Aviation during the covered period, a Nuclear Regulatory Commission radiation exposure information recording system, and also DOE occupational radiation exposure reports for 1996.

NIOSH also reviewed a document

that was provided as part of the basis for exempting Ross Aviation from performing internal exposure monitoring for Hangar 481 activities. We also had the documentation provided by the petitioner.

Eight interviews were conducted as part of this. We had two with current or former DOE Albuquerque employees and also two individuals with the NNSA, or -- I'm sorry -- the National Nuclear Security Administration, Office of Secure Transportation; three former Ross Aviation employees, including the former Director of Safety and Security and the former General Manager and Personnel Director.

As of this, we had one. I did note that on the Department of Labor statistics, they showed three or four claims. So we have a discrepancy. That may have been as a result of just the difference in dates between now and then. We had one at the completion of this report.

All right. So activities at

Hangar 481 that we observed. We have radioactive materials were transported in sealed containers in accordance with DOT requirements.

From former Ross employee accounts, radioactive shipment loading activities took place on specific loading areas, called hot pads. They were located at least 6,000 feet from Hangar 481. And I want to reiterate that hot pads are not considered part of the facility. Cleaning and servicing of unloaded aircraft took place at Hangar 481.

Based on Ross Aviation shipment records, radioactive material shipments predominantly consisted of tritium, depleted uranium, and mixed fission products.

During the majority of the covered period at the site, aircraft non-destructive testing was performed at Hangar 481 via X-ray analysis. It was documented and also reaffirmed in interviews that this operation was performed for short durations and

typically at night or during the night in off-shift hours.

A Health Protection Division appraisal document dated April 1994 stated that the X-ray operations at Hangar 481 had been curtailed.

So information gained through personal interviews with a former Ross Aviation Safety Director indicates that the X-ray testing was outsourced sometime around 1992 or early '93, but the interviewee was unsure of the exact date. After that, X-ray testing was no longer performed at Hangar 481. The planes were taken to an off-site facility.

Of course, only non-destructive testing operations performed at the covered facility would be evaluated or in this evaluation.

A December 2nd, 1992, Occupational Safety and Health Inspection Report stated that Ross Aviation does not handle, store, or

use radioactive materials in the Albuquerque facilities. There is an X-ray machine used in one building. Most people wear external dosimetry to support other Ross Aviation activities involving loading and unloading aircraft as well as flight operations.

It further states Ross Aviation uses a Baltograph IV X-ray unit and a central console. This unit is operated for non-destructive testing and inspections, approximately ten minutes per month. There are only two qualified operators, who are the only current radiological workers at Ross Aviation. Inspection records, operator training records, and device records/interlocks were inspected, and no discrepancies noted.

The Ross External Dosimetry Program is contracted through Eberline. It is in the DOE Laboratory Accreditation Program. The highest recorded exposure for 1991 was approximately 45 millirem. No discrepancies

were identified in the dosimetry records from Eberline to Ross Aviation.

On August 7th, 1997, the Transportation Safety Division of DOE's Albuquerque Operations Office issued the technical basis for radioactive material intake potential involving Ross Aviation at Hangar 481.

Based on one, the TSD agents' specified tasks, they have no contact with package contents; that the operational history with confirmatory surveys showed no package breach or leakage; the use of DOT-compliant shipping packages and programs, the document concluded no credible path for an intake of radioactive materials occurred during normal operations.

We did state that because Kirtland Air Force Base is directly adjacent to the Sandia National Lab, it is conceivable that internal dose to individuals working at 481 could have occurred as a result of ambient

exposures. So we did consider that as part of this evaluation.

Based on the available information on the radiological program and potential for internal exposure sources, NIOSH concluded that internal radiological exposures to Ross Aviation employees resulting from services rendered for the DOE at Hangar 481 are unlikely to have occurred.

Radioactive materials handled by workers at 481 were in sealed DOT-compliant containers and monitored in compliance with DOT regulations to verify radiation and contamination levels on package exteriors. Results of available radiological surveys performed on the packages and in the transport aircraft support this premise.

So now we're going to talk about the external sources of exposure. External radiological exposures to employees occurred as a result of handling the packages. Those radioactive materials emit photon and particle

radiation: gamma and beta. However, since the materials were sealed in packages, photon radiation was the dominant external form.

Non-destructive testing was performed at Hangar 481 via X-ray analysis. This work was performed at night, as we previously discussed.

In a personal interview, a former Ross Aviation Safety Director stated the names of two individuals involved in Hangar 481 activities. The names provided are listed in the personal monitoring summary available to NIOSH.

Therefore, NIOSH concludes that the personnel dose from these operations would be accounted for in the personal exposure summary data available to NIOSH.

According to the available radioactive material shipping documents associated with Hangar 481, the principal photon-emitting radioactive materials were predominantly depleted uranium and mixed

fission products.

Photon exposures from depleted uranium are primarily from thorium-234, the daughter of uranium-238. Photon exposures were also possible from radioactive material shipments containing mixed fission products. Shipping documents indicated that such shipments consisted of samples taken from weapon-test tunnels.

Non-destructive X-ray testing was performed at Hangar 481 and served as a potential external photon exposure source. This work was performed, as we discussed, about 10 minutes per month in the evenings. Bremsstrahlung effects could be considered as a photon source but are accounted for in the exposure summary data.

Beta/neutron. Due to the fact that the radioactive materials were transported in sealed DOT-compliant containers, beta exposure was not likely. However, as recorded in the personnel

dosimetry data, some shallow exposure is listed in that non-penetrating photon radiation did occur.

Neutron generators were frequently transported by aircraft at Hangar 481. These devices emit neutrons only when powered and energized. Since these devices were only being transported, neutron exposure was infeasible.

This statement was backed up by neutron monitoring data which indicated that no positive neutron doses were ever recorded for any individual at Hangar 481. Based on this information, neutron exposure is not considered as a factor in this report.

For incidents, the petitioner did not file a claim on the basis of exposure incidents. It did not indicate knowledge of any having occurred at the Hangar 481. The former Director of Safety and Security stated there were no incidents involving radioactive material shipments at Ross that he was aware

of.

A NIOSH review of all Ross Aviation/Hangar 481 documents that we have in the Site Research Database has no information regarding any radiological incidents. Therefore, incidents are not considered a factor at this site.

External dosimetry monitoring practices. Interviews indicated that those with the highest exposure potential were monitored: mechanics, pilots, those involved with handling or securing packages; non-destructive X-ray testing was a source of external dose to specific individuals and that they were badged.

Thermoluminescent dosimeters were issued and exchanged quarterly. We have shallow and deep dose. In 1996, activities had ceased. So no monitoring was required. That is the end of the contract period.

Area monitoring focused on surveys for contamination in areas where it was

possible for contamination to spread from damaged or improper packaging.

Records found included shipping records and surveys of empty aircraft. The source term data could be obtained by reviewing radioactive shipping records and receipts.

Shipping surveys were reviewed and were found to contain isotope data as well as surface and one-meter dose rates. External dose rates from packages and time estimates could be used to estimate maximum doses for those who handled radioactive packages.

However, based on the hierarchy of data established by OCAS, personal dosimetry information is preferred. Even though we don't have individual dosimetry results, we do have results for the group that was monitored.

The available area monitoring data support that there was no spread of contamination. These data also provide information about the program and plane

conditions.

However, the data do not provide a reasonable means of bounding external doses and are, thus, not supportive of external dose reconstruction. Bounding of external doses will rely on the available TLD data for the group.

And so this is a table, 7.1, out of the report. You see here we have the number of monitored individuals. This is the maximum individual shallow dose, the maximum individual deep dose, and the total person-millirem. You see there was not a lot of dose at this facility that was recorded.

Eberline provided external badge services. Records of external dose for individuals have not yet been received, although we are working to try to recover those.

Annual summaries of external dose are available and will be used to bound dose until such data become available. NIOSH will

use the highest recorded annual dose for all years during the covered period for all individuals, deep dose of 172 millirem per year, shallow dose of 89 millirem per year, including the partial year of 1996.

Since this measured dose would include ambient dose, no additional environmental external dose will be assigned. Dose estimates will be used to evaluate the partial year of 1996, even though the activity had ended and no exposure to radioactive materials was expected. Medical dose will be bounded by assuming standard TIB-0006 X-ray examinations using standard NIOSH methods.

So internal dose. Based on the findings provided in the Evaluation Report, NIOSH has concluded there is no potential for internal dose.

Proximity to the Sandia National Laboratory suggests that ambient internal dose be evaluated using the information from the Sandia Site Profile.

So a sample dose reconstruction. These are on the Advisory Board working site. We used a non-destructive technician, a male, birth date 1923. We did a few cancers, lung, basal cell carcinoma, and prostate, to kind of give you a feel for the types of doses with the probability of the causation. We assumed a date of 12/31/2009 as the date of diagnosis; ethnicity: White, non-Hispanic; and never smoked.

We used maximum photon and electron doses for all years, 100 percent anterior to posterior exposure, 100 percent 30 to 250 keV photons, 100 percent greater than 15 keV Beta.

Organ dose conversion factors of unity. Assigned missed dose assuming all dose from a year was from a single TLD exchange. Their dose would be missed dose.

Intakes from environmental internal dose and annual medical X-rays. So the total PoC from all three cancers would

have been about 26.24 percent. You see the dose that was calculated, medical dose, internal, the total. Here is the Probability of Causation for each of the cancers.

So NIOSH evaluated the petition using the guidelines in 42 CFR 83.13 and submits a summary of findings in a petition. This was issued December 18th, 2009.

We applied, of course, the two-prong test that was discussed many times previously. And we found that the available monitoring records, process descriptions, and source term data are adequate to complete dose reconstructions with sufficient accuracy to evaluate a Class of employees, health endangerment determination not required.

In summary, we find that environmental, gamma, beta, and occupational medical X-ray are all feasible.

Thank you very much.

CHAIRMAN MELIUS: Thank you, Sam.

Questions from Board Members?

MEMBER LOCKEY: Who unloaded the planes on the pads for the pads? Who did that? Who was responsible for that job duty? The pads are not included as part of the hangar, the hot pads.

DR. GLOVER: It very well could have been Ross Aviation personnel who -- Bob may have had direct knowledge of who actually went out to the site.

MEMBER PRESLEY: I shipped stuff on the site probably every week for close to 20 years. It's called the round robin. It's the plane that ran from side to side. It started out on Monday in like a big circle and ended up back -- in I think Albuquerque for the weekend.

Wherever the plane landed, it always landed way away from the airport. In Knoxville, we used the military side to load the plane.

Y-12's people were the ones that did the loading and unloading. They were

always badged. The stuff that we put on the airplane was always in a DOT container.

And you ought to be able to find the records for everything from everywhere because they monitored what went on that plane to a fare thee well because if they had had an accident or something like that, then they would have stopped the program with this thing flying.

And if it went to the test site, the test site people were the people that loaded it and unloaded it. If it went to Livermore, their people were the ones that went to the plane and loaded it and unloaded it, the same thing for Sandia.

Knowing what I know about it, probably the only time that it ever went into the hangar was to get its NDT checkups and to have the plane cleaned. I guarantee you it was probably checked out fairly well before it ever made sure that there wasn't any residual radiation before it ever went to the hangar.

CHAIRMAN MELIUS: Phil?

MEMBER SCHOFIELD: Yes. I can say when the planes lasted in Los Alamos and took off in Los Alamos, there was LANL personnel who loaded and unloaded them. There were several flights a day, usually to and from Nevada Test Site.

Ross Aviation employees did not load or unload those planes, at least in Los Alamos. I can't say about any other facilities, but I know at least there, it was done by LANL personnel.

CHAIRMAN MELIUS: Okay. Mike Gibson or David Richardson, do you have questions for Sam?

(No response.)

CHAIRMAN MELIUS: Okay. John Poston I believe has a question.

MEMBER POSTON: Sam, it is just a curiosity. Those of us who have been around a long time know that Ross has been flying for -- why was this period chosen and not the --

MEMBER PRESLEY: The whole time.

MEMBER POSTON: Yes.

-- not the whole time?

MEMBER PRESLEY: They were flying the whole time I was over there.

DR. GLOVER: Yes. We provided some information to the Department of Labor. And they have that under their consideration.

CHAIRMAN MELIUS: Can you clarify that a little bit, the same on the hot pads, too? I mean, I'm sure it's an issue, but in terms of the covered facility. So you're saying you provided this additional information to the Department of Labor for consideration about expanding the time period?

DR. GLOVER: Yes.

CHAIRMAN MELIUS: Okay. Is the petitioner on the line?

MR. ARMIJO: Yes, sir.

CHAIRMAN MELIUS: Okay. Would you like to speak, have any comments related to the petition?

MR. ARMIJO: Yes, we do. And thank you very much.

We have been listening to the presentation. I take it the first speaker was Dr. Sam Glover?

CHAIRMAN MELIUS: Correct.

MR. ARMIJO: And there were a couple of other speakers after him. And I heard what they said, but I wonder if you could tell me in the order of the two that spoke who spoke up.

CHAIRMAN MELIUS: I'm not sure I can get the order, but one was Robert Presley, who is a Board Member. And the other was Phil Schofield, who is also a Board Member. And I believe that was the order in which they spoke.

MR. ARMIJO: Thank you.

CHAIRMAN MELIUS: And then the third one, last question, was from Dr. John Poston, who is also a Board Member.

MR. ARMIJO: I would like to

address a few things. My name is Roberto Armijo, I go by Bob. And I am the attorney for the petitioner, who is also present. His name is Benito Salazar. He is seated right beside me.

He is the petitioner and the surviving husband of his wife, Monica, who passed away as a result of pancreatic cancer that she contracted after working several years there at Ross Aviation and several other places. All of those details are in the petition as far as dates and so forth.

One of the comments I wanted to make first of all is to the term of coverage by this application. The documentation that was provided to us identified only the time period that we have spoken to in the petition, which was that 1989 through 1996 time period.

We thought that the period was longer than that, but we were never given any information to confirm that, in fact, the time period that Ross had a contract was longer

than the period we were given.

Our client went to work there -- what was it? -- 1985?

MR. SALAZAR: Nineteen eighty-five.

MR. ARMIJO: She was there 1985 to 1994. And we wanted to claim the entire period but felt that we needed to be respectful of the information provided to us. And so we limited it to that.

I heard the comment made that apparently there was indeed a contract for a longer period of time than was disclosed to us. And since the Department of Labor helped us to get this information, I suspect that, likewise, what was disclosed to them, at least at the time that we were trying to put this together, failed to include the entire time period.

I noticed in the petition itself, looking at the Appendix, that, indeed, there was a 1998 reference to some testing. On page

12-11-9 of the petition, the fourth from the last entry indicates there was a shipping record in 1988, July 12 of 1988, which would have been long before the period that we have.

If, indeed, there was a longer term of the existence of a contract, we think that that needs to be corrected somewhere in this process, maybe not today and maybe another petition needs to be filed. But if, in fact, there was a longer term that Ross Aviation had a contract that potentially would provide coverage, that needs to be recognized and somehow added to this.

The second observation that I would like to make has to do with the table 7.1. It appears that -- and Dr. Glover I think made a very fine summary of this petition. And, you know, we can't complain about the reasoning and analysis that went into this. We may, respectfully, disagree with the conclusions and perhaps the completeness, but, I mean, we really have no

way to attack the substance of what has been done. And so my comments I hope aren't taken that way.

I do notice on table 7.1, page 12-11-09 of the report that the total person-mrems that were listed in 1994 was 1,501, which at least seems to us as lay people to be a very high number, particularly when it is compared to the other numbers reported.

And, of course, 1994 would have been the last year that our client's wife worked there and before she retired or stopped working there.

The third thing that I would like to mention is it appears that the Eberline data on page 12-11-09 of the report at the bottom, it indicates NIOSH is working with Landauer to obtain from Eberline the raw data represented in the summary reports to permit data validation for the pedigree review of this report.

It would be our position that that information is not yet available, that the submission of this report by NIOSH would be premature, and that it wouldn't be fair to allow this to become final without having that data available to the extent that it may alter the outcome of this.

The next thing that I would like to state is the report itself does have a map that shows Hangar 481 and its location in association to other items or other places at Kirtland Air Force Base. The comment was made that all of the loadings took place at hot pads located quite a distance from the hangar.

Now, I don't want to mistake this, but my understanding was that the description of the area covered by this petition included Hangar 481 and the adjacent apron to that. The hot pads obviously weren't included.

It's my recollection that the statement that we obtained from one of the workers there indicated that the loading

actually took place at the apron, which would have been right adjacent to the hangar we're talking about.

Now, obviously the personnel who were there who are more knowledgeable than I am about these things may differ about that, but that is a statement that is in the record in the affidavit that was submitted by a person that we were able to find that actually worked there.

The next thing I would like to state is that we really feel that since there was no actual monitoring of the personnel such as Monica at this location, that truly there would not be a way to know for sure that we did not have an overexposed situation.

I recognize that there may very well be secondary sources that can be referred to to try and reconstruct by some other means a reconstruction of dose, but we would urge the Board to consider the fact that it is impossible to know everything that might have

gone on, especially for those people who are on the outside looking in and that in the sense of making sure that there would be a general consensus of acceptance of this process, that some leeway needs to be granted to the fact that we do not have any individual biomonitoring at all, right or wrong, for the people that worked there at the hangar.

Maybe this is not something that should be brought up, but I suppose I will. In today's newspaper, the Albuquerque Journal, the Metro and New Mexico section, of course, this is talking February 10, 2010 and not back during the time that we're talking about in terms of this petition.

Above the fold that indicates that the Air Force decertifies the squadron at Kirtland that maintains the 2000 nuclear warheads or more that are stored at Kirtland Air Force Base, it goes on to say that there are no safety risks and that they expect the decertification to be taken care of, but

certainly the article suggests that there was or there is nuclear activity going on there as far as storing of a large number of nuclear warheads at Kirtland Air Force Base.

The article doesn't say where, and I can't verify the sources of [identifying information redacted], the Journal staff writer who wrote that report. However, I don't have any articles from the time frame of similar reports, and I don't even know if these 2,000-plus nuclear warheads were actually stored there back in the 1989 to 1996 time frame or possibly the earlier time frame, but there certainly are a lot of things that may go on that may not necessarily be identified in the secondary sources that would be queried.

Also, the information concerning this matter, again, it's impressive, the work that went into this. We haven't had an opportunity yet to go forward with our FOIA requests.

And I did speak with Mr. Rutherford in January after we had received this report and after I had had an opportunity for my client to come to the office so that we could review it. And I expressed the concern that we would like to submit a FOIA request for some of the documentation, particularly those statements appropriately redacted, of course, that were obtained from Ross personnel and others that formed a basis for this.

We don't have any evidence that we were ever given any incorrect information, but we did have a difficult time to start with getting any information.

And it was just through the good efforts of the Labor Department in communicating with the Department of Energy that we are able to find out at all that there was indeed a contract. And once we did find out there was this contract, we limited it to the period we have. We are now learning there was a longer period.

So I think that we need to scrutinize the information that may be available to us through FOIA requests in order that we can fully understand and come up to something as far as this petition is concerned.

As I understand it in talking with Mr. Rutherford, the potential exists that we could request that this either be referred to a Work Group for further evaluation. And it would seem to me that that would be an appropriate thing to request.

We also would like the opportunity if it can be done without great interruption to the process that this Board goes through that the finalization of this be held in abeyance until we have an opportunity to do our review of documents.

Mr. Rutherford indicated that it would probably be very unlikely that those documents could be provided to us prior to this hearing. And since I was still in the

process and my client as well of trying to understand the data, we decided that we would delay requesting FOIA requests until we had this meeting.

And then it can be, the information can be, provided to us in a timely fashion without trying to break the bank, so to speak, to get this information right away.

I appreciate very much the comments that were made by Mr. Robert Presley. I believe he's the gentleman who spoke that he had firsthand knowledge about the loading and unloading of the planes over the years at Kirtland Air Force Base and how that was done. And I certainly don't dispute anything he says at all.

The gentleman that said that we have the statement in the file indicating that some of this activity took place at the hangar, you know, he may have been mistaken, but it was stated. So I wonder if maybe there might have been opportunities when things were

taken to the area immediately adjacent to the hangar to be looked at.

I don't recall the gentleman who also indicated that these planes would have been very carefully screened before they were put into the hangar for determination of whether there was any, I suppose, radiation available or on the planes, but it is clear that these planes were stored in the hangar where our client's wife worked. And she would have walked through those areas regularly as part of her duties during the day.

There is a comment that there was some testing by an X-ray machine that we learned about in this report. And the statement is it was only ever done at night. So there was some form of testing and a need to do that testing actually in the hangar building.

That raises a question of what materials might have been in that building that needed to be tested and whether they may

have been there during the day when our client was there or perhaps under the context of the petition when other employees who were not monitored for internal/external dose might have been present.

I think that is about all I can say. If I have said some things that are incorrect here, I certainly apologize. We very much respect the work that this Board is doing. We very much respect the work that NIOSH has done.

We respectfully believe that more work needs to be done before this petition can be decided. We would request that it be referred to a Work Group. We would also request that we be given the opportunity to present FOIA requests, obtain additional information, and to participate further in this process.

And ultimately we believe that this SEC petition tracking number 00139 should be accepted and approved and that the Hangar

481 Site should ultimately be added to the list of Special Exposure Cohorts.

So thank you for listening to us. And I stand ready to answer any questions that may need to be addressed to us. Of course, my client is available as well, although he would not have a great deal of information because of the privacy things that he respected while his wife worked there.

Thank you.

CHAIRMAN MELIUS: Thank you.

Sam Glover, do you have responses to any of those questions?

MR. HINNEFELD: This is Stu Hinnefeld from OCAS. I think that we are certainly supportive of the idea that the petitioner is entitled to the information that he intends to FOIA before any particular action is taken on this. I think that is only fair that that information be made available.

I'm not sure what other question or --

CHAIRMAN MELIUS: Well, I jotted down some of these. One I think I can answer, but you can correct me, Stu. One was a question about the covered time period area. What we were talking about before was that NIOSH has already referred some information relative to that to the Department of Labor.

Department of Labor is the Agency that makes the determinations on what is the covered time period. And presumably they have this information under consideration now and will be following up on it.

I don't know. Jeff, can you? Jeff Kotsch is here from the Department of Labor. I don't know if you have knowledge of that or --

MR. KOTSCH: I don't have direct knowledge --

CHAIRMAN MELIUS: Okay.

MR. KOTSCH: This is Jeff Kotsch, Labor.

-- direct knowledge of that

submittal because that goes into a different part of our organization, but if it was submitted, they will be evaluating it.

CHAIRMAN MELIUS: Okay. Thanks for that.

And then I believe one of the other questions, you were requesting -- this is from Eberline -- some additional data, individual records. And I think his question was, what is happening with that request?

MR. HINNEFELD: I guess these are part of the records that now Landauer is the holder of. Is that right, Sam?

DR. GLOVER: That's correct. Yes, sir.

MR. HINNEFELD: We are working with Landauer to establish essentially their entire customer list, you know, what customers did they have, what years were they customers of Landauer or these certain other predecessor companies that Landauer later acquired.

And so we don't have that product

from Landauer yet. There is a possibility we get some of the actual original microfiche ourselves for duplication, but I haven't been in contact with Landauer for several weeks now. So I don't know exactly where they stand.

CHAIRMAN MELIUS: Okay.

DR. GLOVER: The only brief thing I would say is that for the preceding period --

CHAIRMAN MELIUS: Can you speak up a little bit?

DR. GLOVER: I am sorry. I must have dangled down a little bit.

For the preceding period before this covered period, Sandia actually did the monitoring. And we actually have the records from Sandia.

CHAIRMAN MELIUS: Okay. Thank you.

Any other Board Members have questions? Josie?

MEMBER BEACH: I don't know if I have a question so much. I would be interested, on slide 41, you did mention that internal would be assessed using Sandia National Lab. I would just be interested in hearing a little bit more about how you would assign dose from an internal perspective from Sandia's Site Profile.

DR. GLOVER: Because Sandia is part of the base, it has emission rates or what the maximum internal-related intakes are for various radionuclides. And we would use those during our process for doing the example dose construction. We did use those as part of our dose construction process.

And those are included in the Sandia Site Profile, but that's just because it's near, we figured that would be bounding to be included as part of the Sandia part.

MEMBER BEACH: And do you have those for all of the years listed?

DR. GLOVER: It goes back, way,

way back, yes.

MEMBER BEACH: Thanks.

CHAIRMAN MELIUS: Dr. Ziemer?

MEMBER ZIEMER: I was just going to comment on the question that was raised by the petitioner's attorney about the values in table 7.1, particularly the item for the year 1994, which shows a total person-rem of 1,501.

I just wanted to make sure that it is understood that that is the total dose of taking in the 66 monitored individuals and adding those doses together, which on average is about 23 millirem per person, with the highest value being the one in the table, 172.

And I recognize that, for example, in 1995, the dose, average dose, is going to be about half that. So in that sense, yes, that year is higher, but to put the 23 millirem in perspective, that is much less. It's less than ten percent of what the average person gets from natural background and is about half of what everybody gets from the

natural potassium that is in our muscle tissues, at least for those who have muscle.

(Laughter.)

MEMBER ZIEMER: And I don't want to trivialize that. I just want to make sure that we don't have the impression that these are high numbers. They are not high.

MR. ARMIJO: Thank you, Doctor.

CHAIRMAN MELIUS: Thank you.

I believe that, I think NIOSH has said that given when this report came out that -- and, again, I think our usual practice had been with these 83.13s to refer for further review, both by a Work Group and possibly by SC&A. So is that something everyone on the Board is comfortable with pursuing?

MEMBER MUNN: I am not. I am not comfortable with that at all.

CHAIRMAN MELIUS: Okay.

MEMBER MUNN: That seems extremely excessive in light of the information that is available here. There do not seem to be any

major technical issues to be addressed, which is our normal process.

CHAIRMAN MELIUS: Okay.

MEMBER MUNN: That's why we go through that normal process, because of the technical issues involved. The technical issues here are fairly straightforward.

It would appear that the claimant certainly has a right and a need for better information with respect to their claim. And that should be forthcoming from the agencies with whom they interact.

But, just as the description of what constitutes serious dose needs further explanation for the petitioner, certainly what is involved with the DOT packaging and what might be expected, even if people were in close proximity to that, needs to be better explained, I think, for the client and for the client's attorney.

That does not in my view give any reason for us to stipulate a Work Group or any

further action from our technical contractor. I think the technical expertise that is necessary to evaluate this probably exists on this Board.

CHAIRMAN MELIUS: Okay. Does anybody else have comments on that?

MEMBER PRESLEY: I feel the same way Wanda does. I mean, I would hate to see us spend the time and the money for something that has been -- I feel like Mr. Glover has spent a tremendous amount of time and effort telling us what they found out on this.

CHAIRMAN MELIUS: Does anybody disagree with deferring the petition until the next -- we can defer. I just would add that if we do defer it and it comes up in the whole meeting, we want to spend significant time at the meeting dealing with this petition simply because we won't have a Work Group.

And I think it sort of behooves us on the Board to make sure that we have reviewed, all of us have reviewed, the

information and are comfortable with it and make sure that any questions that we have have been addressed. That's all.

MEMBER MUNN: Hopefully NIOSH has an adequate amount of information available that they will be able to respond to the claimant and make us privy to the responses to the claimant's questions so that we would not be required to spend an undue amount of time and energy on this specific claim.

CHAIRMAN MELIUS: Any other comments on that?

(No response.)

CHAIRMAN MELIUS: Okay. We will defer and then we can deal with this. And then we will take a 15-minute break. Then at 4:15, we need to start right at 4:15 because we have other people coming on the phones.

(Whereupon, the above-entitled matter went off the record at 4:00 p.m. and resumed at 4:16 p.m.)

MR. KATZ: We are about to get

started again. Let me check the phone lines first for Dr. Richardson and Mr. Gibson. Do we have you on the line?

MEMBER GIBSON: Ted, this is Mike. I'm here.

MR. KATZ: Great.

MEMBER RICHARDSON: Yes.

MR. KATZ: Great. That is two. So let me also check on the line to see if we have the petitioner for NTS.

MR. FUNK: Yes, I am here, Ted, one of them, John Funk.

MR. KATZ: Yes. Welcome, John. I recognize your voice.

MS. GLENN: Raili Glenn.

MR. KATZ: I'm sorry? Is that Raili Glenn?

MS. GLENN: Yes.

MR. KATZ: Welcome to you, too.

MS. GLENN: Thank you.

MR. KATZ: And let me also check. There was supposed to be a staff person or

two, actually, from Senator Reid's office. Are you on the line with us?

MS. ROZNER: We are, but also Paul Stednick, petitioner, is on the line. Paul?

MR. STEDNICK: Yes.

MS. ROZNER: And then it's Kathy Rozner and Sabrina Badger.

MR. KATZ: Well, welcome to you all, too. That's great.

Oh, yes. And so the next point of order is for members that have conflicts at this point to recuse themselves. Let me note for the record that Mark Griffon is headed out the back.

CHAIRMAN MELIUS: Thank you. And we will get started. We are here for an update on the Nevada Test Site SEC petition. We are going to hear from three people in order: Jim Neton; Arjun Makhijani; and then Bob Presley, who is head of the Nevada Test Site Work Group. So we will start with Jim Neton.

DR. NETON: Thank you, Dr. Melius.

NEVADA TEST SITE SEC PETITION

DR. NETON: Since there are three presentations and I can see the screens of some of the folks' laptops on the table, make sure you have the right presentations in front of you. This is the NIOSH presentation to cover the Evaluation Report for SEC petition 84, which is indicated on the slide here as revision 1. Oh, I'm sorry. You have hard copy handouts? Okay. Sorry.

Petition 84 was submitted to NIOSH as an 83.13. That is on behalf of a Class of employees for a person who filed that thought we couldn't reconstruct dose with sufficient accuracy during the requested period, which was all employees at the DOE and DOE contractors or subcontractors who worked at the Nevada Test Site from January '63 through September '92. And that is through essentially the end of underground testing at the Nevada Test Site or underground nuclear

weapons testing.

If you will recall, earlier there was an SEC Class added for the above-ground testing period, which was all activities prior to 1963.

I have a brief summary of the petition history here. I think Bob Presley has a somewhat more detailed presentation that goes into a lot of the discussions and Working Groups and such that were held regarding this petition. And they are quite extensive.

The petition was received way back in February of 2007, qualified April 2007. And our original evaluation for revision 0 was issued September 27th, 2007. I believe Mark Rolfes presented that report to the Board in January of 2008.

Since that time, the Petition Evaluation Report was referred to a Working Group for evaluation. And there have been a number of discussions that have gone on related to our ability to reconstruct dose

with sufficient accuracy during this time period.

And ultimately, after a lot of discussion, deliberation, NIOSH issued a position paper on our ability to reconstruct internal dose on November 25th, 2009 and subsequently issued this Evaluation Report, rev. 1, January 25th, 2010.

The Class that NIOSH evaluated for purposes of revision 1 is slightly different than that of revision 0, that being that the covered time period now goes from January 1st, '63 through December 31st, 1992.

If you recall, the other petition I think was through September 1992. We added those few months because the last shot happened in September. And given the fact that it may take some time to wind down operations and do subsequent testing, we felt covering through the end of that year, calendar year, was more appropriate, that coupled with the fact that some documentation

allows us to start reconstructing dose in 1993, which I'll talk about in a little bit.

Okay. You've seen this before. This is right out of revision 0, the site history. Obviously the Nevada Test Site is a fairly large site, 1,400 square miles, that conducted above-ground testing from January '51 through July '62. As I mentioned, that piece of the Nevada Test Site covered period is already a member of the Special Exposure Cohort.

From the partial test entry, it was ratified in '63. Underground testing was only conducted with the last underground test being in 1992.

Aside from testing of weapons, there were several other operations, a number of other operations, that occurred at the Nevada Test Site, such as research into nuclear reactors, nuclear-powered rockets, peaceful uses of nuclear energy, Project Ploughshare. And, of course, there was a

number of waste management issues associated with the waste that was generated during all of this testing of nuclear weapons.

This is our usual list of information available to evaluate what we have, how we can do dose reconstruction at the Nevada Test Site. Again, this is exactly what was in revision 0.

We have technical information bulletins. We had a number of radiation safety reports and surveys, operating procedures. There is a fairly good robust document set available to us as to how things were at least conceptually done at Nevada Test Site, although there are some important gaps that I will talk about later.

We also have these all loaded on the site research database. We conducted interviews with former test site workers and Livermore staff, who worked out at the test site during the shots.

The petition also provided some

affidavits, affidavits that relayed where they thought the holes may have been in our ability to reconstruct doses. And, of course, we have the case files with the NIOSH claimant database.

This is not in the revision 0. This is a very important piece. This last bullet is we now have in our possession and have evaluated the Nevada Test Site electronic database for personnel monitoring data. That would be a complete collection of the bioassay data that was taken on the workers. That will play an important role in my discussion as I go forward.

Here is the slide that depicts the number of cases that we have from Nevada Test Site. It's a fairly substantial number: 1,863 cases or claims that have been submitted as of the end of last month. We have completed 1,310 of those. And 196 of those were pulled by the Department of Labor in response to the granting of the original SEC

petition for workers between 1951 and '62.

For this period that I am discussing here, '63 to '92, there are a significant number of claims in this petition pool: 1,411. Not interestingly but as a fact, only about a third of those cases have internal dosimetry monitoring data available in the records that were supplied by the Department of Energy.

Conversely, there is a very robust collection of external dosimetry monitoring data. I think, I didn't do the calculation, but it seems to be 1,392 out of 1,411, somewhere around 98 percent of the cases that we have received have some form of external monitoring information.

The petition had a number of bases and concerns that were raised. And I just listed them there. And as the Work Group undertook efforts to determine if we could really do these dose reconstructions with sufficient accuracy, each and every one of

these concerns was discussed in some detail.

Those included hot particle exposures, defeating universal badging, that was a concern that indicated that workers would remove their badges as they got to exposure limits that in order to keep working as they approached exposure limits, they would remove their badges and not wear them, that sort of thing. A lot of effort was put into that during the Work Group deliberations. And eventually that issue was addressed.

Ambient dose reconstruction; that is, the environmental modeling that was done, we now had a -- we finally have developed a fairly robust ambient dose model.

There were some concerns raised about records verification, validation. You know, have we gone through and vetted these records and made sure they're complete? And what is the quality of the data associated with that sort of thing? Incidents were raised, as often is in the case of petitions.

And internal dose reconstruction was an issue, was the only real issue that was left unresolved at the end of all of these extensive Working Group discussions.

External dosimeters for assemblers, I don't recall exactly the discussions on that, but external dosimetry ended up being an area where we feel that we can do dose reconstructions and then destroyed or lost records.

So all of these issues were discussed in some way, shape, or form. And keep in mind the internal dosimetry is the area that we still have unresolved.

So during the process, NIOSH went back to the drawing board or not the drawing board but went back to the data and collected some additional monitoring data, reviewed our sources of information.

And, again, as I indicated, we resolved all of the issues with one exception. And that is listed at the bottom of the

slide. Can NIOSH bound internal dose for unmonitored workers who have the potential for exposure?

As I mentioned, only about a third of the workers, the claimants, had internal monitoring data in their records. It was pretty clear to us that there were other Classes of workers, eventually pretty clear to us that there were other Classes of workers, that could have been exposed of those 66 percent that weren't monitored, which would necessitate the need to have a coworker model to determine what their potential internal exposures may have been, as I said here on the bottom. In other words, can NIOSH develop a suitable coworker model to bound doses?

I'm getting a little ahead of myself. As I said, about two-thirds have no monitoring data. And so we evaluated a number of approaches that could be used to fill in this gap.

One of the initial attempts by

NIOSH was to look at the external monitoring record, the people with external monitoring, because we had a very robust external monitoring pool, and determine did the people who were most highly exposed externally also have the highest internal exposures.

And after some very vigorous debate and discussion on that, the bottom line is there was no correlation between external exposure and the internal monitoring data that we could hang a hat on it. SC&A correctly identified that as an issue fairly early on.

In addition to that, of the people who were monitored, the rad safety workers were the most frequently sampled workers in the database.

Now, that is well and good, but there is no real a priori reason to believe that the rad safety technicians and workers were the most highest exposed workers on the site. It's true that they were there and present at virtually all radiological

operations, but were they really in there hands on doing the work near the source term? It's hard to convince yourself that that was true.

I think the second most frequently monitored workforce was the security personnel and, again, similar situation. They certainly had access to all areas of the site, radioactive materials. But, again, were they really the type of workers that were involved in drillbacks and mining operations, that sort of thing? If you really answered the question honestly, the answer is probably no, can't really say for sure.

Again, there is a variety of above and below-ground activities that had a fairly high potential for exposure that were above and beyond the radiological technicians.

So the idea was, then, well, what was the basis for why these workers were monitored? Could we go through the records and find some good documentation, describe the

technical basis for the bioassay sampling program?

We looked very long and hard for information to the point that they picked the people with the highest potential of exposures and that is why they were monitored and that sort of thing.

And at the end of the day, nothing came out. There was no real basis that we could find in all the documentation that we reviewed that indicated that there was a good, solid basis behind who was selected for the monitoring programs. I'm not saying there wasn't, but we just couldn't find any documentation to that effect.

The other issue is, remember, we're trying to develop a coworker model here. So, at a minimum, what you need to establish the internal coworker model is that at least the people that were sampled that you have data for are, at a minimum, representative of the exposure population or in most cases, a

lot of times we'll see that the most highly exposed workers were monitored. Neither of those conditions could be determined in this case.

To help evaluate some of these issues even further, we obtained the complete electronic data set for the bioassay samples for the Nevada Test Site. It was unknown to us through the early parts of the discussions that this data set was available and was linkable uniquely to individual employees. That was key. I mean, once we found that out, we made extreme efforts to get this database very quickly to analyze it.

It had greater than 100,000 results. I think there may be about 124,000 bioassay results during the period that we're evaluating here for seven different exposure types.

Unfortunately, though, although there were unique results by employee, they were ordered by name and Social Security

number. There was no indication in the database itself of job type or work location. So, again, we couldn't connect these 100,000 results with who was what doing when and where, that sort of thing, probably when but not where they were doing it.

Most of the results were for tritium, plutonium, gamma, and beta analyses, which is nice. And it's very good, a lot of data sets. But there are a lot more nuclides than that present at the Nevada Test Site. I mean, they were detonating nuclear weapons that develop a whole cadre of fission activation products, that sort of thing that we'll talk about a little later.

In addition to the fact that we couldn't link any of these workers in the database to what they did, there were data gaps, some data gaps identified in the database, specifically fission product analyses, fission product results analyses, were not, specific fission product analyses

results were not reported. That is, these were beta/gamma analyses. So you know the beta/gamma activity.

But, again, you're detonating a nuclear weapon. There are a large number of different fission products: cesium, the cobalts, the iodines, strontium, those sorts of nuclides. And the concentrations of those radionuclides varies considerably depending on when a sample may be taken in relation to when the shot was because some of them have short half-lives and they decay away, that sort of thing.

Also, we only found about 300 bioassay records for uranium out of this entire data set. And the number of plutonium monitored workers was fewer than 200 for many of the years that we looked at.

In fact, what somewhat surprises me, of the plutonium results that we looked at, there were a fair number of positive plutonium results.

I initially expected, looking through this database, that the plutonium results would all be sort of at the detection limit. That was not the case in this situation. So there were clear exposures to plutonium for these workers, at least by looking at the bioassay results.

So after careful review of all the data, including the database, several coworker model issues remain. I talked about these: the unknown technical basis for the samples collected, you know, who was collected and why or who was monitored, what type of workers are monitored, why were they monitored, the existence of the data gaps in the records, the unique nature of the work activities at the Nevada Test Site.

Unlike a lot of other sites, like Fernald, say, or Savannah River, where they have sort of a continuing operation ongoing where you can have a routine bioassay sampling program and take a urine sample monthly,

quarterly, whatever, and have some good confidence that your people aren't being exposed, the Nevada Test Site was somewhat of an episodic event. It was campaign-driven.

There would be nothing going on or not nothing, but the shots would occur sort of sporadically. And a lot of activity would be going on for a short period of time and then nothing for a while.

So these were sort of sporadic events that occurred, which doesn't really lend itself very well to a chronic coworker model, the type that we have developed for many of the sites coupled with the fact that there was a wide array of work activities ongoing. You have drillback operations, tunneling, tunnel operations, contaminated soil all over the site in general, people disturbing that type of soil, reactor experiments ongoing, that sort of thing; and, again, the wide variety of radionuclides present in the source term. Virtually I

wouldn't say the entire periodic table, but a good portion of it, of the radioactive elements, were present at the site.

So because of all of that, NIOSH has found that the available monitoring data are inadequate to complete internal dose reconstruction. We can't develop a coworker model. At least at this point, we don't feel we can develop an adequate coworker model to bound the doses for those two-thirds of the workers that weren't monitored.

Some workers in the Class may have had their health endangered through exposure to inhalation of these particulates as a result of the testing of these weapons.

So the proposed Class at this point is all employed at the Department of Energy, its predecessor agencies and contractors and subcontractors who worked at the Nevada Test Site from January 1st, '63 through December 31st, '92, for an aggregate of 250 days.

This last slide is just our standard summary, where it says that we cannot reconstruct internal dose for that period from '63 to '92, but we believe we can reconstruct external dose for gamma/beta, neutron, and occupational medical X-rays.

That concludes my presentation.

CHAIRMAN MELIUS: Okay. Thank you, Jim.

Are there questions for Dr. Neton from the Board? We can ask some now. And we can also have some later after the other presentations. Dr. Ziemer?

MEMBER ZIEMER: Jim, could you remind me, had NIOSH proposed a coworker model for the internal prior to this most recent analysis of the --

DR. NETON: Yes. That was the so-called top 100 that I alluded to during my presentation. We took the top 100, the people with the top 100 external exposures, cumulative external exposures, and tried to

correlate their bioassay results with --

MEMBER ZIEMER: Okay. That was my thought. So I was a little surprised that after obtaining over 100,000 actual bioassays, that your position somewhat reversed, maybe more than somewhat. So I am trying to understand this fully.

I think I recognize the issue of health physicists not necessarily being the highest because I think I have had enough practical experience to know that once you got the readings, you let people work and stood back and let time things and so on. So that is not so surprising.

However, to me it would be somewhat surprising if the population of bioassays somehow did not include the highest exposed workers. You would almost have to postulate that someone sat back and said, you know, "Let's do a bioassay program on the lowest exposed workers."

I know I am sort of being a little

facetious here, but it seems to me pretty hard to say that that group of 125,000 did not include a sufficient representation that you couldn't, at least theoretically, develop a coworker model. Now, I'll just leave that hanging there for a minute because I want to add to that.

I believe, though, what you are also saying is that, even if that were true, it's not appropriately isotopically specific. Am I understanding this right that, yes, we have these samples, but there are a lot of key ones that aren't covered?

DR. NETON: That's art of it.

MEMBER ZIEMER: And that would make a little more sense to me if that is the issue. I am trying to sort out why. In fact, well, let me make the third point. On the campaign-driven approach, I guess, although I agree that that is very different from sort of the routine chronic, it seems to me intuitively one could still develop an

appropriate model that would be bounding, that it would be more complex, I'm sure.

DR. NETON: Yes.

MEMBER ZIEMER: Does that in your mind, the campaign-driven aspect, rule out in and of itself a coworker model?

DR. NETON: I think there are several things that you talked --

MEMBER ZIEMER: Right. They're all kind of mingling in my mind.

DR. NETON: Yes.

MEMBER ZIEMER: I'm trying to sort out what is the sort of, which factors are the game-breaker here?

I mean, I think in principle, it seems to me in principle, you could do a coworker model, even in a campaign-driven thing, if you had the right nuclides sampled.

DR. NETON: I think that is a kind of deal breaker, the campaign-driven, the incident-driven approach that was used, aside from the fact that we don't have all of the

radionuclides that were covered. You could do some scaling --

MEMBER ZIEMER: Yes. Well, I'm thinking the lack of nuclides may be the deal breaker for me, but --

DR. NETON: That's one of them, but think about the scenario here where prior to 1993, the site was operating under what I would call an ICRP-2 type bioassay program.

MEMBER ZIEMER: Right.

DR. NETON: That is based on making sure that workers were at less than the maximum permissible body burden, which all of the other sites that we dealt with have been as well.

The unique nature of the Nevada Test Site is that these were sort of incident/campaign-driven. So you could establish parameters and say, "Okay. I think all of these workers based on a few air samples I have taken are well below the MPBB. The maximum permissible body burden or the

maximum permissible concentration of air is going to be such that they will not be overexposed."

Well, that, in and of itself, would not require you to take any bioassay samples. So here you have this ongoing sort of chronic exposures. And then it seems to us that the samples, a lot that we have, were taken almost on like an incident-type basis.

MEMBER ZIEMER: Yes. You have multiple samples in a given day.

DR. NETON: Right.

MEMBER ZIEMER: I understand that, yes. Yes.

DR. NETON: Right. And so, then, were all of the incidents captured?

MEMBER ZIEMER: Yes.

DR. NETON: You don't have sort of this routine baseline that you can rely on like we do at the sites that had these chronic-type exposure situations or very routine operations, where you have uranium

samples every three months or six months and you can sort of put a cap on it?

MEMBER ZIEMER: Yes.

DR. NETON: And so, then, on top of that, it's not just one type of operation. You have these drillbacks, these ventings that occurred. And some of the ventings were pretty robust. I mean, I think there are a million curies or something like that vented during this period of fission activation-type products, noble gases. I think all those factors together, the campaign-driven nature, the fact that we don't have the knowledge of the isotopic specifics, and the fact that the isotopic-specific composition changes as a function of time post-detonation.

So if you took a sample one week after a shot versus three weeks, you have a completely different mixture. One would argue that those are short half-lives and the exposures are not very large, but I'm not sure. It depends on how large. There could

have been some substantial episodic exposures that occurred very closely in time.

MEMBER ZIEMER: Could I ask one other? Also, there was an implication that the coworker model had to be job-specific. But we have had models that aren't job-specific. Is that really an issue? I mean, couldn't there be a -- I mean, suppose you had the highest exposed group. You wouldn't need to know what other people's jobs were if you --

DR. NETON: True, yes.

MEMBER ZIEMER: Okay. So the issue of not --

DR. NETON: Well, except you have had some really disparate work activities here ongoing, very different than a plant environment. I mean, you have people that are exposed at reactor experiments that caught fire. There is one Class of workers. There are people who were involved in these drillbacks, another Class. There are

tunnelers who are largely exposed to a lot of tritium.

So you have some fairly unique job categories out there exposed to fairly different source terms, I guess. I mean, so it's a little different than if you have a uranium product and you're generating uranium aerosol and you say, "Okay. I know that this worker at the rolling mill had the highest potential for airborne uranium," then we could cap the doses to the workers. But this one is a little different. It's also the --

MEMBER ZIEMER: So in your mind, it's more the combination of all of these factors that no single one is the deal breaker necessarily, but taken together, they're --

DR. NETON: Yes. I never really thought about one of them particularly being --

MEMBER ZIEMER: Well, I'm trying to in my mind eliminate some -- like I asked the question about the job thing. I mean, if

you had a complete set of bioassay and you had sampled for the right nuclides, then would it matter?

DR. NETON: Yes. Yes. If we had all of the highest exposed workers monitored for all of the nuclides, then picking the highest value in the distribution would allow us to do some bounding, bounding calculations. But I'm not sure we can. I don't think we can do that here.

MEMBER ZIEMER: Yes. Okay.

CHAIRMAN MELIUS: Anybody else have, Board Members have, questions? David Richardson or Mike Gibson?

(No response.)

CHAIRMAN MELIUS: Okay. Why don't we move on to our next presentation? Arjun? Arjun Makhijani from SC&A will be presenting as soon as our technical person returns.

DR. MAKHIJANI: Actually, Dr. Ziemer, some of the specifics will come out, some of these slides.

After NIOSH issued their paper on November 25th, "Internal Dose Issues Analysis" -- it was a Type H paper -- the Working Group met and asked SC&A to review that paper. And so I am just going to focus on that review and not go over any other issues since there was only one question we were looking at.

As we mentioned, the objective was to review the conclusion that doses can't be constructed with sufficient accuracy, was it valid and robust. We had a couple of corollary objectives. We had two other reports that were issued and sent to the Working Group October 2008 and March 2009 in which we looked at NIOSH's Evaluation Report and suggested that there weren't enough data of quality enough to construct a coworker model for the members of the Class.

And so we wanted to see whether since there was a much larger data set, whether that data set confirmed our findings or changed them in some way or provided any

new insights into dose reconstruction feasibility.

So we reviewed the electronic database by job type. The reason the job type thing is important since it came up is were the people who were monitored among the most exposed. And so you could construct a coworker model. That was a question that had come up in the October and March studies that we had done.

In those studies, we had looked at the 100 that had been selected, 100 workers selected by NIOSH for their coworker model. And we also had taken 20 workers at random from among the claimants in six different job types, which are listed there: RadSafe, laborers, miners, welders, wiremen, security.

And these job types were selected partly because some of them were monitored more frequently than others and partly from interviews as to which ones might have had exposure, significant exposure potential for

radionuclides internally. Then we also examined each one of NIOSH's four findings to see whether we agreed with them or not.

Okay. So, just to go over briefly our prior findings, we have kind of mushed them into a few bullets. There were a number of findings. So we found, as Jim has said, that the 100 workers were not sufficiently representative and could not be used for a coworker model, partly because of how they were selected. But then we have these other 120 that we had selected at random in six job types.

What we found in that was that the RadSafe for plutonium, for instance, there was almost no monitoring except for RadSafe throughout the period.

Security workers were monitored but only after the 1980s. So for four job types, there was almost no plutonium bioassay. So once you split it up by job type, then you have to show that RadSafe were the most

exposed and then how do you do that. In the initial -- there weren't enough data for plutonium to do that.

There were some data for tritium that indicated that RadSafe was not the most exposed job type, that miners were the most exposed job type. But they had almost no plutonium data.

So then we have also some concerns about the quality of plutonium and gamma bioassay data, not about the others. And specifically a lot of those concerns related to minimum detectable amounts. And very often positive results were reported in the bioassay data that were less than the minimum detectable amounts and became unclear how you interpret those positive results.

We also determined that it was important to examine data by period. And so the job of coworker model feasibility remained. That was the earlier set of findings.

So we compared the electronic database. And the electronic database did contain Social Security numbers, but, as Jim has said, did not contain job types. So we sorted the database to match.

And I have to say Bob Barton, our young nuclear engineer, did a lot of heavy lifting. He's not here, but he really had played a stalwart role in helping us do this analysis well and very rapidly.

And so we sorted the database by Social Security number and matched it to the claimant database of NIOSH and extracted all of the claimants from the workers in the electronic database and then examined the same six job types so we could compare.

Now, there is an essential difference between the claimants in this data set and the claimants selected at random earlier because this data set consists only of workers who had some bioassay.

And, as Jim has told you, most

workers, at least most claimants, did not have any bioassay. So it was not a directly comparable data set, but we found almost exactly the same patterns emerging in this data set.

RadSafe were the most monitored. Security workers have data in the 1980s and that you could not make comparisons of RadSafe with other job types because in many cases, there just wasn't enough data. In most cases, there was not enough data for most periods. And then the quality concerns seem to persist.

Now, this electronic database was not complete. We did a simple test to see whether all of the claimants that we had examined previously as having monitoring data in our earlier analyses were in this electronic database. And depending on the type of monitoring, a minority, but in one case a significant minority, was not in the database.

All right. So here this

illustrates the importance of examining the data by period. And the blue diamonds are the 1960s. And you can see it might have been some incidents in the 1980s that represent the top three points there, but most of the high readings are for the 1960s, even though the number of readings in the 1960s are the smallest number. As you can see by the frequency of points, most of the data are from the 1970s and 1980s.

All right. Now, there was a new finding here. Because we had a lot more data, we were able if we ignored periods, which you can't really do if you want to construct a coworker model, but if you ignored period, what kind of pattern emerged about relative exposure potential? And it turns out that no single job type emerges as having high exposure potential.

There are some indications, as Dr. Ziemer was saying, that RadSafe did not have the highest exposure potential. I will show

you some.

So we did this for tritium. And you can see the right-most -- the curves would represent the groups with highest exposure potential. So here the right-most curve is for miners. And then you have, well, you know, different parts of the rank ordering.

You either have the laborers or the wiremen. And all of these people do pretty closeup work in contaminated areas. So you can see that the RadSafe workers, which are the pink or magenta, had lower exposure potential than most.

But this doesn't really represent exposure potential as you would represent it in a coworker model because period is missing. And you can do this comparison only because this is an indicative thing and not a definitive conclusion. This is the same --

MEMBER POSTON: What unit is this?

DR. MAKHIJANI: You know, these are the kinds of units that appear. They are

microcuries per cc. They've been written as MI per cc because that is how they appear in the original data. And there is some discussion about units and the odd ways of writing the units in the NTS bioassay data presented some difficulties in analysis, but we have written the original notations down in the graphs.

MEMBER POSTON: So that is microcuries?

DR. MAKHIJANI: Yes.

MEMBER POSTON: Okay.

DR. MAKHIJANI: And you have the full report, Dr. Poston. And there is some discussion of that, of the unit question, in the report.

So this is the same, the gamma bioassay results. And you can see here that except for security workers, RadSafe actually have generally lower results for given rank order than all four other job types.

You get the same for gross beta,

not quite the same but approximately. And then you also see if I go back, in tritium, you see miners having the higher results.

With gamma, you see welders and laborers having the higher results. With gross beta, you see -- what are the brown? You see miners having the higher results. So there is no single job type that emerges as indicating the highest exposure potential so you could go there. Even if you did, these job types had no plutonium data from among these four types of bioassay where there were the most monitoring data.

All right. So the conclusions from our review of this extensive database were that it's essentially the same. We had actually a very large sample that we analyzed before.

We analyzed 220 claimants out of 1,400 and odd that I don't remember the number that Dr. Neton talked about but a very large sample from among the claimants in NIOSH's

database.

In fact, we felt so strongly that we did not think that analysis of further data would yield any different conclusions, that the pattern that emerged with the electronic database did not fill in the gaps that we had discovered previously.

Then we examined the four findings of NIOSH, that not sufficient documented evidence about the rationale. And we agreed that there were several job types that had exposure potential. And that data were very sparse for most job types in most periods except for the RadSafe job type. And, as I have mentioned, the partial exception to that was security workers in the 1980s.

The data do not support a conclusion that monitoring was driven by exposure potential. That is also an indicative conclusion because if it's campaign-driven, you can't really determine that very easily.

Then the second finding was the thing that came up about fission products and the timing. There is actually a long section in the report written by Rich Leggett.

I had promised Dr. Roessler during the Working Group meeting that Rich Leggett's views would be consulted on this question. And there is actually a long section that he drafted that is in the report on this particular question.

And there, you know, Dr. Leggett noted that if you knew the timing of the exposure and the timing of the analysis of the sample, you could probably tell a lot.

But in this case, there were so many short-lived radionuclides. And there is an example given where even if you had a bioassay for iodine, where you did not know the time of analysis, that you could easily be off by an order of magnitude depending on what isotope you assumed it was due to.

In that case, it actually was not.

Most of the exposure appeared to be due to I-133, not I-131, which mostly people look for. So under other circumstances, gross beta data could be more useful than here.

Then as part of that same finding, there was also a question about insufficiency of uranium data. And the number of workers monitored for plutonium would be small.

And so the plutonium source term actually and exposure potential turn out to be significant. And the data for most job types are just not available.

Dr. Ziemer raised this question earlier. And the bottom line there is because plutonium data are concentrated with a RadSafe job type and they don't appear to have -- you can't establish that they have the highest exposure potential. So you cannot actually construct a coworker model based on the available data, even though in some there are quite a lot of bioassay samples.

Then this question about

shorter-term campaign-driven activities. And, actually, Harry Chmelynski did this statistical analysis to try to determine whether there was routine sampling or episodic sampling or some mixture.

And here is gamma bioassay data by job type, no periods here, with normal scores. And routine sampling would be indicated by a straight line more or less around points clustered around a straight line with a log-normal distribution, but you can see all of these lines are pretty wiggly. And they're not indicated. They don't indicate a routine sampling.

There is some evidence that some workers may have been sampled routinely at some points, but mostly it does not appear to be routine sampling.

Then there was a question of what about the other radionuclide? We have talked about the four types of bioassay sampling. Actually, the revision of the Site Profile, I

think the site description, the latest revision has a table showing how many different kinds of radionuclides there were because of the many different job types, the testing, the reactor testing, the waste handling, the laboratory work.

And many radionuclides have no data that we could discover, like thorium or radium. Iodines have almost no data. Americium have no or almost no data. Now, I cannot remember whether there were a few data points.

And then in our earlier reports, we had actually reported some iodine-131, 133, and 135 data, but there were very, very few data points, even among all 220 workers. And in the electronic database, we found none.

So the overall conclusion of NIOSH has just been reported. I won't repeat it. We concurred with this conclusion. We also examined each of the four points to see whether every one of them was important and

valid. And because we agreed with all four of them, we concluded that NIOSH's finding was also robust.

We did not look at the period beyond 1993 where NIOSH said in their paper that they can do dose reconstruction. Our mandate was to look at the SEC period.

We did look a little bit at this period, October, November, December 1992, to see whether there was any dramatic change in monitoring patterns or anything like that. And there is a short description of that in the full report.

And we found generally that the frequency of monitoring went down a little bit, but there were no significant changes. And so we agreed that since activities go on, that it was reasonable to extend the period by three months. We also felt that partial dose reconstruction can be done with some appropriate cautions.

This was our team. I managed the

task. And Joyce Lipsztein and Rich Leggett were the internal dosimetry, and Harry Chmelynski did the statistics. Bob Barton and Lynn Anspaugh, John Mauro were reviewers and John Mauro, of course, the project manager and signed off on the report.

CHAIRMAN MELIUS: Very good. Thank you, Arjun.

Do we, any Board Members, have questions for Arjun? Dr. Ziemer?

MEMBER ZIEMER: Sorry to monopolize this. Arjun, I want to look on slide 12 where you are responding to NIOSH finding 1. The statement is, "The data do not support a conclusion that monitoring was driven by exposure potential." I would like to ask if you could comment on the reverse. Do the data support a conclusion that the monitoring was not driven by exposure potential?

DR. MAKHIJANI: No. I mean, we discussed this question some, Dr. Ziemer. And

we don't have any conclusion as to what other than it seemed to be --

MEMBER ZIEMER: I wanted to make that clear. It doesn't support it either way.

DR. MAKHIJANI: Either way.

MEMBER ZIEMER: Okay.

DR. MAKHIJANI: And I believe, if I remember correctly, Mr. Roessler, there was some discussion of this during the Working Group meeting and admittedly speculative that perhaps security workers and RadSafe were monitored because they were available more routinely, more easily.

MEMBER ZIEMER: I just think it is important on the record that you are not stating that it wasn't, --

DR. MAKHIJANI: Oh, no. We're not stating --

MEMBER ZIEMER: -- only that you can't support that it was.

DR. MAKHIJANI: Yes. We're not --

MEMBER ZIEMER: I think both sides

of that are important.

DR. MAKHIJANI: I agree with that. We're not stating, as you asked earlier, Jim Neton, that was there, some kind of selective are we going to bias our results by selecting the lowest exposure potential? No, no. We're not saying that.

MEMBER ZIEMER: Okay. Thank you.

One other thing. And I just want to clarify. I'm looking at slide 16, which is the episodic bioassay sampling. It's one of a number of similar curves.

Can you tell me whether those curves are simply the points or did you fit --

DR. MAKHIJANI: No, no. There is no fitting.

MEMBER ZIEMER: No fitting?

DR. MAKHIJANI: No.

MEMBER ZIEMER: Okay. Because I was going to mention that I could probably fit a straight line to those data points, just for the record because you said they don't fit a

straight line. You haven't fit anything to them.

DR. MAKHIJANI: Well --

MEMBER ZIEMER: And I can fit a straight line to most data points.

(Laughter.)

DR. MAKHIJANI: Well, I was going to say that you can run a straight line through any number of data points.

MEMBER ZIEMER: Well, sure. Right.

DR. MAKHIJANI: The question is --

MEMBER ZIEMER: And then the argument is, which kind of curve fits better in terms of the departure from the points? You haven't fit anything here.

DR. MAKHIJANI: No. We didn't feel it was necessary.

MEMBER ZIEMER: Okay. I just want for the record the statement that this doesn't fit a straight line. You have not examined that --

DR. MAKHIJANI: Well, we didn't think --

MEMBER ZIEMER: -- or have you?

DR. MAKHIJANI: Whether something fits a straight line or not, you know, there's a continuum as to whether it's a straight line or not. You have to examine the x minus x bar2 as the --

MEMBER ZIEMER: Exactly.

DR. MAKHIJANI: -- as the figure of merit.

MEMBER ZIEMER: Yes.

DR. MAKHIJANI: And, looking at this, it didn't seem necessary to do that because you're going to have a high x minus x bar2.

MEMBER ZIEMER: I've seen a lot of graduate theses that have bigger scatter than this that fits a straight line.

DR. MAKHIJANI: I would like to hope that this is somewhat beyond a graduate thesis.

MEMBER ZIEMER: Not at Purdue, of course.

(Laughter.)

MEMBER ZIEMER: But at Texas A&M, this is a good straight line. I can't help putting those things in.

But my point remains that this is --

DR. MAKHIJANI: I don't --

MEMBER ZIEMER: It's just as you visualize it, that is what it is.

DR. MAKHIJANI: It's not in the report. Now, Harry, are you on the line?

(No response.)

DR. MAKHIJANI: No. I had not actually thought Harry would be on the line. I didn't anticipate this particular question. Now, Harry may have --

MEMBER ZIEMER: No. I just want to make sure that we're not saying more than the data say.

DR. MAKHIJANI: Well, I actually

reported a conversation I had with Harry about this. I can't represent that Harry did not do all of that fitting before he had that conversation with me. It's just that it's not in our report --

MEMBER ZIEMER: Okay. Thank you.

DR. MAKHIJANI: -- for the record.

CHAIRMAN MELIUS: And, Dr. Poston, you get equal time at the appropriate --

(Laughter.)

CHAIRMAN MELIUS: -- to talk about your graduate students.

Bill?

MEMBER FIELD: One question I have is it's hard to tell by some of these plots. But if you would say, is this a true statement that the variation between groups is lesser or greater than within?

DR. MAKHIJANI: The variation between groups?

MEMBER FIELD: Between or within variation. Are you seeing greater variation

within the different groups or between them? In other words, like if you did a regression, would these be significantly different?

DR. MAKHIJANI: Well, we can look at some of these data. You know, I would say the variation within groups except for security workers who were only monitored in the '80s tended to have low results.

So we have no -- in many cases, we have no data for most periods. So we can't really say. But if you put it all together like this in this rank ordering, you would see that the variation within the group would appear to be bigger because they have results that are all over the map.

However, the most important defect of all of these graphs, which are indicative, is that they are not parsed by period because we really don't have enough data --

MEMBER FIELD: I understand. I understand.

DR. MAKHIJANI: -- to make those

statements.

MEMBER FIELD: No. I guess my point was if you would select a surrogate data, within that one group, there would be such a large range that it would be hard to differentiate between different groups. It would overwhelm it in some ways, the variation.

DR. MAKHIJANI: Yes. I mean, normally you're trying to find some group of workers that is representative, as Dr. Neton said, of those with the higher exposure potential. So then if you choose a median or 95th percentile value, you are reasonably confident that you are going to be bounding dose.

But in this case, you just don't have the information to be able to do that. And whatever information there is indicates that these data are really, even though there are lots of data points, they are quite insufficient to the task.

CHAIRMAN MELIUS: David Richardson or Mike Gibson, do you have questions for Arjun?

MEMBER RICHARDSON: No.

CHAIRMAN MELIUS: Okay. Thank you.

Okay, Arjun. Robert Presley, who was Chair of the Work Group on the Nevada Test Site, will now present.

MEMBER PRESLEY: If there are no more questions, I presume everybody is ready to vote.

(Laughter.)

MEMBER PRESLEY: All right. I wanted to see if everybody was awake or not.

I would like to thank SC&A, John Mauro, Arjun for the work that they have done on this. As you will see when we get into this, we have been going for approximately four years.

This is probably one of the first SEC petitions that a Working Group was started

on. Mark Rolfes was the NIOSH lead. And, of course, we had members, myself as Chair, Brad, Wanda, Gen, and Phil, working on this.

The program started out in February 2004. It was approved by, the NTS Site Profile was released by NIOSH. December of '05, SC&A issued their first draft review of the NIOSH NTS Site Profile. And in the Spring of 2006, a Working Group was formed to review the Site Profile for accuracy and authenticity. SC&A was tasked with reviewing the NTS Site Profile and its findings to the NTS Working Group.

Over the years, we have been criticized for taking so long and not having enough meetings. This, like I said, is probably one of the largest undertakings that any Working Group has done.

Also I would like to state, as you will see, this Working Group has had 15 meetings in the last four, about three and a half years, to try to get this thing to come

to a close.

The tasks for the Working Group that the Working Group may recommend to the Board are NIOSH changes to the Site Profile as it finds appropriate. The Working Group should review Evaluation Reports for related SEC petitions and develop recommendations to the Board on adding Classes to the SEC.

Under "Site Profile Review," SC&A issued a report with 25 findings on the NIOSH NTS Site Profile in December of 2007. Some of the findings were determined to be appropriate. Changes were made to the Technical Basis Document. And you will see resulting information.

Other findings required significant resolution of differing techniques and positions between NIOSH and SC&A. The NTS Site Profile was updated to provide clarification for the use of the technical information bulletins.

The Working Group reviewed. Some

findings were found to be appropriate to other sites. These were passed on to the NIOSH and the Board with the recommendations that a Working Group be appointed to look into these findings as a multiple-site issue.

Here is the history I was talking about. I'm not going to read these off. We've had a tremendous amount of work time on this. There's been a tremendous amount of discussion or reading to get to where we are today.

Topics that were reviewed and discussed: environmental internal dose reconstruction methodology, radiation monitoring practices, external coworker dose data, external exposure geometries, neutron/photon ratios, time-dependent beta/gamma ratios, internal coworker dose data, radon exposures, and an infamous site Area 51.

Major issues complex-wide. We had dose reconstruction that covered significant

radionuclides; hot particles, internal and external; oronasal breathing and ingestion; dosimetry limitations/reliability; missed dose; extremity monitoring; badging geometry; assumptions for unmonitored workers; and high-fired plutonium.

The history of the NTS Working Group. On December the 19th, 2007, the NTS Working Group reviewed all 25 of SC&A's findings. NIOSH worked to resolve each finding and update the Site Profile as appropriate.

January 2008, the NTS Working Group was tasked by the Board to review the NIOSH Special Exposure Cohort Petition Evaluation Report, NTS SEC-0084.

January 7th, 2008, the Working Group reviewed and discussed open comments concerning factors for external doses due to geometry of organs related to the location of film badges, and internal nonuse of film badges. Issue is resolved and NIOSH's update

on the Site Profile.

As part of the SEC discussion, NIOSH presented an extensive analysis of worker affidavits, re-entry data, access logs, external dosimetry records, and pocket ionization chambers and data.

April the 23rd, 2009, the status of the three most recent issues were discussed: removal of dosimetry badges. This was found to be an SEC issue. NIOSH and the Working Group considered this issue closed in the NTS Site Profile and the SEC analysis.

Environmental intake model was deemed to be a Site Profile issue. NIOSH proposed a combination of air monitoring data with a resuspension model for assigning internal dose to workers inside radiological areas and outside controlled areas.

Number third was coworker internal dose model. That was also deemed an SEC issue. NIOSH proposed using bioassay data from the 100 highest externally exposed NTS

claimants to bound unmonitored workers for internal dose. And this is where we started another direction.

Under the history, the discussions, the top 100 coworker models, in the SEC-0084 Evaluation Report, NIOSH proposed using bioassay data from the 100 highest externally exposed NTS workers to bound unmonitored workers' internal dose, discussions by NIOSH, SC&A, and NTS workers on who would be in the most-exposed groups, a lot of discussion.

NIOSH agreed to request additional bioassay data from DOE for a more defensible coworker intake model. We had six Site Profile or Technical Basis Documents that came to light. There they are. They went everywhere from an introduction site description, medical X-ray dose, environmental dose, internal dose, and external dose.

When you look at what took so long, Jim, what has this got? Six hundred?

The six documents were 600 pages, something like that, a tremendous amount of paperwork to go through and keep up.

April the 10th, 2006, NIOSH issued an 83.14 SEC Evaluation Report. And, of course, as everybody knows, this was voted on and accepted. And the Class was added July 26, 2006.

On petition 0084, NTS covers, the new petition covers, January the 1st, 1963 through September the 30th, 1992. On September the 25th, 2007, NIOSH Evaluation Report determined that significant information is available to allow dose reconstructions to be completed with sufficient accuracy. At this point in time, we thought okay. Everything is good.

But on April the 13th, 2009 at the Working Group meeting, NIOSH informed the Working Group that they had found four new databases that had somewhere in the neighborhood of over 100,000 bioassay records

for NTS workers. The Working Group tasked NIOSH with reviewing its data to see if it would change the NIOSH, their present position on 83.14.

NIOSH reviewed the new bioassay data. They published their findings on November the 25th, 2009. NIOSH reported its new position on the SEC-14 to the NTS Working Group at our last meeting, on December the 15th, 2009.

And NIOSH reported to the NTS Working Group that upon completion of the review, there were data gaps and concerns associated with the internal monitoring data from the NTS Site between 1963 through 1992.

Based on the new information and the NIOSH review, NIOSH has identified a need to modify its original position on the SEC-0084-NTS Evaluation Report.

And upon review of the data and the NIOSH report and our help with SC&A, on November the 25th, 2009, the NTS Working Group

has voted to recommend the acceptance of petition SEC-0084.14 from January the 1st, 1963 to December the 31st, 1992.

Have you got any questions?

CHAIRMAN MELIUS: Brad?

MEMBER CLAWSON: This is Brad Clawson with the Work Group. When you were thanking the people, I guess one of the things I wanted to bring up, too, is a thanks to John Funk. John tirelessly brought an awful lot of information to both the Working Group, NIOSH, and SC&A. It was amazing with what came up.

I just wanted to take the opportunity to tell him how much we appreciate it. And I'm sure that the Nevada Test Site people thank him, too.

MEMBER PRESLEY: Thank you, Brad.

CHAIRMAN MELIUS: Any other questions for Bob?

(No response.)

CHAIRMAN MELIUS: No? We also should hear from the petitioners. I believe

they're on the line.

MEMBER CLAWSON: John is.

CHAIRMAN MELIUS: I know John is.

MR. FUNK: I will wait until last.

CHAIRMAN MELIUS: You will go last?

MR. FUNK: Yes.

CHAIRMAN MELIUS: Ms. Glenn?

MR. STEDNICK: I am Paul Stednick. I was one of the petition people on the Special Exposure Cohort with Senator Reid's people. There are a lot of those things that I didn't understand was going on.

I am no chemist in that, but I worked in, a lot of people worked in, drilling. And that is where we did all the post-shot work. And to talk to these people who make these statements is unbelievable what you get from them, how film badges was throwed away and different other situations, which we have all brought up.

I believe that these people that

worked out at the Test Site that have come up with the cancers and that should be compensated for it.

CHAIRMAN MELIUS: Okay. Thank you.

Who else is there that wishes to speak?

MS. GLENN: My name is Raili Glenn. I am also a petitioner.

CHAIRMAN MELIUS: Okay. Do you have comments?

MS. GLENN: Yes. Yes. My name is Raili Glenn. My husband is David Glenn. After he graduated with honors from Washington State University, David got a job at Lawrence Livermore National Lab to do experiment and theoretical studies.

He often traveled to NTS Test Site. He was stationed at the Test Site for weeks at a time depending on the particular task.

David was charged with many

nuclear tests at NTS. David also worked in tunnels that were damp with water seeping in. He would have to get on his hands and knees to install diagnostic equipment, often way back in the tunnel. There he would have to install his instruments and remove them after the job was over and take the readings on the cages.

David dedicated his whole life to work on U.S.A. government research to keep the country safe from other superpowers, basically in time of Cold War. Our nation's space program would not be up in scale like it is today if we didn't choose the nuclear testing. They also benefit from that.

David's work in NTS' most contaminated areas, like Yucca Valley, Rainier Mesa, Areas 12, 16, and 20, no protective clothing was ever worn. And he often got only three hours of sleep at night. And he was on a monthly salary. And there was not overtime pay. If you count the late hours he spent at

the work, he ended up working minimum wages.

David had written publications on the plant area and after that, and initially was shut down to the Nevada Test Site and cut testing in half. Six thousand curies of radioactive material were suspended in atmosphere. The radionuclide included diffusion products associated with the detonation device.

David did dynamic flow studies, which were conducted over a wide range of high energy type flows. The project was 500 pipings of marble was used close to nuclear events that exposure potentially for an exposure in an area previously tests that has been done.

David also had a health physics degree. He was there. There was a danger of getting too much radiation contamination. He loved his job. He loved his country, just like a soldier getting into war and they know there is a danger. But they also know that if

they get into it, the government will pay the medical and if they die, their families get some benefits.

David had to pay all of his medical expenses, which totaled $167,272. Common sense tells me, how can a person be working 25 years in that kind of hours/environment not to get contaminated?

At age 58, David was diagnosed with cancer, polycythemia vera and thrombocytosis. Polycythemia vera is a pre-leukemia progressive bone marrow disease. It is the same diagnostic rubric used by NCI, DOL, and EEIOCPA as leukemia. His cancer turned to leukemia.

It was a long time to be on chemotherapy. It was hard for him and his family. He had to take every day chemotherapy, hydroxyurea, and also three times a week in sections.

That is not the way to spend your retirement, what's supposed to be your golden

years. David was suffering damages also, radiative contamination.

David's illness did not only harm David but also his family. I had to quit working to take care of him and take him to medical treatments and doctors appointments, which happened several times a week. It had a big impact in my life: financially, physically, mentally, and emotionally. At least I did not have to testify this to you. But, unfortunately, this is not a case because he is not here anymore.

I thank you for listening. And I hope that you are looking quickly at my case and bringing this case to a closure.

Do you have any questions?

CHAIRMAN MELIUS: No, but thank you very much.

Other petitioners? I don't have the list here. Mr. Funk?

MS. CLAYTON: This is Dorothy Clayton.

CHAIRMAN MELIUS: Okay.

MS. CLAYTON: Yes. I just want to thank the Working Group for all the hard work that they did. I just appreciate the SEC for the widows that have been waiting a long time for this. And also I would like to thank the SC&A group. They did a wonderful job, too. Thank you very much.

CHAIRMAN MELIUS: Thank you.

MS. CHRISTIANSON: Hello, sir?

CHAIRMAN MELIUS: Yes? Go ahead.

MS. CHRISTIANSON: All right. Yes. My name is Kathy Christianson. I am an authorized representative for a widow for her husband who worked at Nevada Test Site. And I, too, would like to thank you.

We filed a claim in '02 and have been waiting for this time to come. I do thank you all for reviewing what you did and for all the inaccuracies that were always very disturbing and hard to explain in all of our petitions and findings of facts and denials

and appeals and on and on.

So we have been watching the whole thing as it has fallen down. And we do appreciate you reconsidering the decision and to acknowledge these people. We're all around that stuff all the time. And I would like to thank you for that.

CHAIRMAN MELIUS: Okay. Thank you.

Anybody else from the petitioner group?

MR. FUNK: This is John Funk.

CHAIRMAN MELIUS: Yes?

MR. FUNK: I would like to thank the Board and all the working boards, especially the working board, especially Brad, and also like to thank Dorothy Clayton, too, because she was very instrumental in a lot of this stuff coming out in the open.

So thank you, Dorothy. And thanks to all the Board Members for all the hard work you did. And that's about all I've got to say

now.

CHAIRMAN MELIUS: Okay.

MR. FUNK: Thank you.

CHAIRMAN MELIUS: Thank you, Mr. Funk.

I believe Sabrina Badger from Senator Reid's office is on the line. There is a letter from Senator Reid that has been sent to the Board. We all have it. We were given it. It's under the material we provided the beginning of the meeting under "Miscellaneous." It's the third file from the bottom.

MS. ROZNER: Hi. Actually, this is Kathy Rozner with Senator Reid's office. I suffer with bronchitis. So Sabrina will be reading the letter.

But I just wanted to also say that Senator Reid wanted to thank Dr. Ziemer for his years of dedicated service as the Board's Chair and also to congratulate Dr. Melius on his new position. We look forward to working

with both of you.

And, with that, I will turn it over to Sabrina.

MS. BADGER: Hi. Thank you. Okay. Here's the statement from Senator Reid. Thank you, Chairman Melius and distinguished members of the Advisory Board for the opportunity to make this statement.

As someone who helped write the authorizing legislation for the Energy Employees Occupational Illness Compensation Program Act, EEOICPA, I know that this program is not working for our Cold War veterans as Congress intended.

Today I urge you to grant those who worked at the Nevada Test Site, NTS, from January 1st, 1963 to December 31st, 1992 membership in the Special Exposure Cohort, SEC. NTS workers cannot and will not receive the timely, fair, and adequate compensations and medical benefits they deserve unless they are granted SEC status.

As you know, I helped several NTS workers and survivors submit an SEC petition to the National Institute for Occupational Safety and Health, NIOSH, three years ago. And I supported and monitored the progress of the petitions since then.

I was happy to see real progress being made in the last year to address the scientific merits of the NTS SEC petitions. And I commend Sanford Cohen & Associates, NIOSH, and the NTS Working Group for the work they have done to research and consider the technical and scientific concerns related to NIOSH's original denial of the petition.

At their December 15th, 2009 meeting, the NTS Work Group voted unanimously to accept as their own recommendation NIOSH's revised position paper recommending that NTS workers employed during the underground testing years be added to the SEC.

As you know, NIOSH's revised position paper finds that the internal

radiation dose received by employees at the Nevada Test Site from January 1st, 1963 through December 31st, 1993 cannot be estimated. Therefore, these workers fully deserve to be granted SEC status.

I appreciate your addressing an issue that is so critical to Nevada's Cold War veterans and their families. And I ask that the Board accept the NTS Work Group's recommendation, which is supported by NIOSH and the Board's independent contractor, Sanford Cohen & Associates, SC&A, as soon as possible.

Further delay in voting to add NTS workers employed during the underground testing years would be a betrayal to these men and women, who clearly deserve this compensation.

While the addition of those who worked at NTS during the underground testing years to the SEC will be a tremendous step towards ensuring Nevada's Cold War veterans

are given the recognition and compensation they deserve, there are several issues I would ask the Board to address after you have voted on those recommendations.

Following your vote, I ask that the Board begin to deliberate the scientific merits of adding to the SEC certain other workers who do not fall into the SEC categories for either the atmospheric or underground testing years.

Specifically, I ask that the Board examine the 250-day rule and the addition of cancers, such as, but not limited to, basal cell carcinoma and chronic lymphocytic leukemia, CLL.

Again, I ask that the Board address these issues after granting NTS workers employed during the underground testing years membership in the SEC.

Ten years ago Congress passed EEOICPA in order to help our Cold War veterans avoid years of waiting and bureaucratic

nightmares so that they may receive the compensation they deserve.

Unfortunately, this has not always been the case for many NTS workers, some of whom died while unnecessary bureaucratic delays kept their claims from being approved.

I would like to thank you for all the work you have done for EEOICPA claimants over the years. And I certainly hope you will carefully consider and vote to add workers employed at the NTS during the underground testing years as members of the SEC, as both the science and patriotic duty demand.

Thank you.

CHAIRMAN MELIUS: Thank you.

Okay. Any further questions of Mr. Presley, Mr. Neton, SC&A, Arjun before we --

(No response.)

CHAIRMAN MELIUS: If not, do I hear a motion?

MEMBER PRESLEY: So moved.

MEMBER SCHOFIELD: Second.

CHAIRMAN MELIUS: Second from Phil. If not any further discussion, Ted, do you want to call the vote? The motion is from Mr. Presley.

MS. HOWELL: Would you please state for the record what the motion actually is?

CHAIRMAN MELIUS: I think the motion would be, in fact, to accept the NIOSH proposed Class for the SEC, which is all employees of the Department of Energy, its predecessor agency, and its contractors and subcontractors who worked at the Nevada Test Site from January 1st, 1963 through December 31st, 1992 for a number of workdays, aggregating at least 250 workdays, occurring solely under this employment or in combination with workdays within the parameters established for one or more other Classes in the SEC.

MR. KATZ: Okay. So I am going to

run this alphabetically. Dr. Anderson?

MEMBER ANDERSON: Yes.

MR. KATZ: Ms. Beach?

MEMBER BEACH: Yes.

MR. KATZ: Mr. Clawson?

MEMBER CLAWSON: Yes.

MR. KATZ: Dr. Field?

MEMBER FIELD: Yes.

MR. KATZ: Mr. Gibson?

MEMBER GIBSON: Yes.

MR. KATZ: Mr. Griffon?

(No response.)

MR. KATZ: Oh, wait. I'm sorry. Mr. Griffon is recused. Excuse me.

Dr. Lemen?

MEMBER LEMEN: Yes.

MR. KATZ: Dr. Melius?

CHAIRMAN MELIUS: Yes.

MR. KATZ: Ms. Munn?

MEMBER MUNN: Although I believe that the science is adequate to do the required dose reconstruction, I will vote yes.

MR. KATZ: Dr. Poston?

MEMBER POSTON: Yes.

MR. KATZ: Mr. Presley?

MEMBER PRESLEY: Yes.

MR. KATZ: Dr. Richardson?

MEMBER RICHARDSON: Yes.

MR. KATZ: Dr. Roessler?

MEMBER ROESSLER: Yes.

MR. KATZ: Mr. Schofield?

MEMBER SCHOFIELD: Yes.

MR. KATZ: Dr. Ziemer?

MEMBER ZIEMER: Yes.

MR. KATZ: That is unanimous, 15 in favor, 1 Board Member recused. In favor.

CHAIRMAN MELIUS: Okay. Thank you.

And I would just add that in response to --

MEMBER LOCKEY: Ted, I will say yes, too.

MR. KATZ: Oh, how did I do that? I'm sorry. Dr. Lockey, I don't know how I

missed you. But Dr. Lockey says yes.

CHAIRMAN MELIUS: We recorded your vote anyway.

(Laughter.)

MR. KATZ: I don't know how I did that. Sorry.

MEMBER LOCKEY: I just wanted to make sure he knew I was here.

CHAIRMAN MELIUS: I would just add in regard to some of the issues mentioned in Senator Reid's letter -- and we will respond formally to it, but the 250-day issue, as I will report tomorrow from -- we had a meeting of that Work Group on Friday and are making progress.

We will have another Work Group. I hope to be able to report back on that and hopefully with some recommendations to the Board at our next meeting in May. And that includes consideration of the Nevada Test Site along with some other sites.

And I believe, as we heard from

Dr. Neton earlier from NIOSH, NIOSH is making progress and is about to go forward on the chronic lymphocytic leukemia issue, pending some further I guess review within the Department and so forth. We expect that to go forward.

And I believe at our last meeting, actually, we talked about the basal cell carcinoma issue also. And I believe that is also something moving forward. So I think we can respond affirmatively to all of those. And we will be following up.

With that, we will take a short break. Then 6:00 o'clock we have public comment period.

I do want to relieve Dr. Lockey of some of his worries here. I have actually done -- I think we have four letters that we need to approve regarding that. I have already completed three of them since I actually found the old one on the computer. And I'll take care of the other one, too.

MEMBER LOCKEY: I would say Dr. Lockey is appreciative of that.

CHAIRMAN MELIUS: Okay. And with that, we'll break for 15 minutes or so and start again at 6:00 o'clock.

(Whereupon, the above-entitled matter went off the record at 5:46 p.m. and resumed at 6:04 p.m.)

CHAIRMAN MELIUS: If we will get seated, we will get started. We have a public comment session. Just to remind you, tomorrow we have a number of Work Group reports to go over, including one from our Worker Outreach Group.

And there were some documents that were sent to you, you have also been provided here at the meeting that we will be going over tomorrow. And they include some recommendations and options for further follow-up that we would like to try to address and reach some agreement on tomorrow.

So pay attention to those and be

ready to deal with them, I guess, along with all the other things we will be doing tomorrow. So do that.

And we will now have our public comment session. I will turn it over first to Ted to give his --

MR. KATZ: Right. Thanks. Just on that last note about the presentation for Worker Outreach tomorrow, if any of you Board Members can't find the file for discussion related to Worker Outreach, let me know. It's back there in paper, too, or pick it up, the paper, please.

CHAIRMAN MELIUS: There are two files. One is a presentation, PowerPoint presentation; and the other is a Word document.

MR. KATZ: It's an option paper for dealing with comments to the Board. Okay?

So then we still do not have any people signed to present public comments here in the room. So it will be people on the

line. And we will check with the room, but I don't see anybody possibly who would comment.

So, just to remind you or some of you may not know on the line with respect to making public comments, the Board, NIOSH, has a redaction policy, which is just to be very succinct about it.

Everything you say is transcribed verbatim and ends up in the transcript that is available to all of the public on the NIOSH website, a transcript of the Board meeting. So if you give your name, the name will be there. Any other personal information you give, that will be there as well. But any information you provide about third parties, other people, that is identifying for those other third parties would be redacted, just to let you know that. And if you want to know the full policy in all its glory, you can find it on the NIOSH website under the Board section, I believe.

CHAIRMAN MELIUS: And I would add

to that that we also have a policy of comments should be limited to ten minutes or less. And we will hold to that policy.

The one person we know that did want to make public comment is Terrie Barrie. Terrie, are you on the line?

MS. BARRIE: Yes, I am, Doctor.

CHAIRMAN MELIUS: Okay. We can hear you. So go ahead.

PUBLIC COMMENT

MS. BARRIE: Okay. Well, good evening, Dr. Melius and members of the Board. My name is Terrie Barrie. And I am with the Alliance of Nuclear Worker Advocacy Groups. I want to thank you and Ted Katz for allowing me to call in my public comments tonight.

I also want to congratulate you, Dr. Melius, for being named by President Obama as Chair of the Advisory Board and to you, Dr. Ziemer -- can you hear me?

CHAIRMAN MELIUS: Yes, we can hear you.

MS. BARRIER: Okay. And to Dr. Ziemer, I thank you for your years of dedicated service. I am pleased that you will continue with the Board. And, finally, a sincere welcome to the new Board Members.

I want to express my appreciation to Dr. Howard also for his commitment to review the program. As you know, over the years the advocates and claimants have raised many issues concerning Dose Reconstruction and the SEC petition process.

If I may, I would like to give a few examples from the Rocky Flats SEC petition and Site Profile to show why this review is necessary.

You are aware that I recently raised an issue where the workers in Building 460 were exposed unknowingly and without monitoring to plutonium and uranium. LaVon Rutherford is currently looking into this.

However, just this past Sunday, another former Rocky Flats worker came forward

and informed me that workers in building 440 were exposed to and monitored for neutron radiation, at least during the years 2000 to 2005.

I checked with NIOSH's Site Profiles. And page 52 states about building 440, and I quote, "No radioactive material is known to be present," end of quote.

A quick search on the internet turned up a picture of a glove box cell that was used to process nuclear residue and DOE documents from approximately 1996, which reveals the plan to turn Building 440 into a temporary waste storage site.

The Board voted yesterday, I believe, that Santa Susana Field Laboratory should be approved for SEC status. This was a proper decision to make considering that there were limited dosimetry records available that would allow NIOSH to reconstruct dose for that facility.

I wish to remind the Board that

Rocky Flats also had questionable dosimetry records. You may remember that SC&A issued a report on the completeness of records for years 1969 and 1970. Page 4 of that report has a table which illustrates the percentage of penetrating dose entered into the HIS database that had zero readings.

The year with the highest percentage of zeroes during the production era was 1981, with 63.2 percent zero dose defined. During the cleanup era, 2004 was the year with the highest zero readings. And that was at 79.7 percent.

During recent Board Working Group meetings, the discussions often involved whether a model was considered reasonable.

I would like to put this question to the Board and to NIOSH. Is it reasonable that a nuclear weapons facility during production years and cleanup years would be so safe that workers were never exposed to radiation 30, 40, 60, even 80 percent of the

time? If you conclude that it is not reasonable, then I respectfully request that a second look must be taken at this issue.

One of the reasons that the zero readings may have not been explored more thoroughly during the SEC debate was that NIOSH and the Board accepted Roger Falk's explanation. You can find his opinion on page 109 of SC&A's Rocky Flats Site Profile review.

Last week NIOSH issued its conflict of interest/appearance of bias policy. If this policy were in place five years ago, it is likely that a more critical eye would have been taken to Mr. Falk's opinion.

For the new members of the Board, I wish to explain that Roger Falk was the Manager of the Dosimetry Program at Rocky Flats. He wrote the first Site Profile for the facility and also coauthored the neutron dose reconstruction project, which is used to reconstruct dose for Rocky Flats claimants for

years 1967 through 1970.

This new policy for future SEC petitions is very important. And we appreciate it. And I also want to let you know that Rocky Flats is not the only site where the person in charge of the Dosimetry Department was also used as a site expert.

I have a question. Will NIOSH now review technical documents drafted by conflicted personnel?

The advocates have repeatedly raised problems of conflict of interest with certain personnel, both during the Board's public comment periods as well as letters to HHS. I am thankful the policy is now in place.

The policy mentions that personnel can apply to HHS for a waiver. And it may be in the interest of the stakeholders that waivers be awarded in certain circumstances.

Will these applications and subsequent decisions be available online to

the stakeholders? Will Board Members who have work experience at sites be eligible to apply for a waiver so they can speak as a private site expert?

Again, I thank you for this opportunity to address the Board. And ANWAG looks forward to the new cooperative spirit in addressing the concerns of all of the stakeholders. Thank you.

CHAIRMAN MELIUS: Thank you, Terrie.

Is there anybody else on the phone who wishes to make public comments?

MR. FUNK: This is John Funk here from Nevada Test Site.

CHAIRMAN MELIUS: Okay. Hi, John.

MR. FUNK: One more small comment I would like to bring to the attention of NIOSH. It is my understanding -- I might be wrong, but is it that Yucca Mountain is not included in the Nevada Test Site SEC? Is that correct?

CHAIRMAN MELIUS: That is correct.

MR. FUNK: Okay. This is why I want to bring this up. Yucca Mountain sits in Area 25. Area 25 was part of the Nevada Test Site during the testing period. So there were people going to be working over there and may get disqualified because they were in Area 25, which might be referred to as Yucca Mountain. And I would like to bring it to your attention.

The Yucca Mountain project only became official in 1994. I know this because I was employed there at the time by Peter Kiewit Underground. And I built the mole plug out there.

And that is when they renegotiated the collective bargaining agreement because the funding for Yucca Mountain was not American taxpayers' money but was franchise generator users' tax.

That only became a -- Yucca Mountain was a depository project in 1994. So

we're going to have people that are going to be showing up working in Area 25. I want to make sure that this is understood that this was part of the Nevada Test Site up until 1994.

CHAIRMAN MELIUS: Yes. My understanding -- maybe Stu or somebody could address this, but that it would be an issue that would come up when a person would apply through the Department of Labor, correct? And I think we could certainly pass this along to the Department of Labor to make sure that that is understood when people apply. Is that?

MR. HINNEFELD: As I understand the question and understand how things would work, this does sound like a question for one of the other agencies, either Labor or Energy, because it sounds as if it is a facility designation. It is a description sort of issue that falls into the category of the other agencies, I believe.

MR. FUNK: If you look at the map

on the Nevada Test Site, you will see Area 25. And you also see a little notation there where it says, Yucca Mountain. The original boundaries of Nevada Test Site for the testing period, Yucca Mountain is in it, contained within that area.

And there was no repository at the time. All there was was the source tower for the environmental task. And there was Super Kukla. And there was a couple of other things going on out there.

There was people working out there. And they're going to show up as working in that area. And some of them might mistakenly say Jackass Flats or Yucca Mountain. And they will automatically be disqualified because they will think they were working on the Yucca Mountain repository project when they were actually working somewhere else.

MR. HINNEFELD: Yes. Again --

MR. FUNK: I want to make sure

they get that clear that Yucca Mountain repository only became official in 1994. And that could be verified by the collective bargaining agreement because the only person on the bargaining agreement for Yucca Mountain was Peter Kiewit, Kiewit Underground.

MR. HINNEFELD: This is Stu Hinnefeld again. You are very clear in your description. I do understand the situation you are describing, and I do understand the possible ramification.

I think it is a facility designation and an employment verification issue that would occur with the other agencies. But we will certainly pass the information along to them.

CHAIRMAN MELIUS: We will follow up with Department of Labor on that, clarify that.

Anybody else on the phone who would like to make public comments?

MR. DOLL: Yes, I would.

CHAIRMAN MELIUS: Okay. Can you identify yourself?

MR. DOLL: Yes. My name is Lou Doll. I am a retired pipefitter in Cincinnati. I was at the recent SEC meeting in Cincinnati for Fernald.

I worked construction at the Fernald Site from 1983 to 2004: from 1983 to 1986 under National Lead of Ohio, 1986 to 1992 under Westinghouse, 1993 to 2004 under Fluor.

Under National Lead of Ohio, construction worker subs were treated much differently than the in-house National Lead workers. We were not provided the same levels of PPE and were not given urinalysis and other monitoring equipment in our work areas. We were called intermittent workers, who would be gone when the job ended. However, many of us spent years at the plant.

Urinalysis and other tests were gradually phased in under Westinghouse when they took over. The years National Lead of

Ohio, '51 through '81, were in the plant, construction workers were seen as expendable.

Much of the work we did in the demolition and reconstruction of existing equipment buildings were tasks no one else wanted to do. We were never told of the dangerous chemicals and radioactive materials we were exposed to doing this work.

In 1982 through 1986, we installed and then reworked the uranium enrichment process, the green salt process in the pilot plant 13A. We worked without respirators and green salt, hex, hydrofluoric acid, and anhydrous ammonia. We were only provided a TLD dosimeter for beta/gamma, not alpha. No urinalyses were taken. We couldn't even get a rad tech to survey the work area.

We were threatened with firing when we borrowed a frisker to check the area and found out everything was hot. This was the norm for construction. And we had projects in all areas of the plant: One, two,

three, four, five, seven, eight, nine silos, general sump.

We were in these areas for extended periods of time; whereas, most of the plant workers were only in certain areas of the plant, knew their exposures, and were provided a higher level of PPE in testing.

To say during the period of 1951 through 1981 that you can do dose reconstruction on construction workers without data and using the data from plant workers is questionable at best. Lumping these workers in using plant workers' data is wrong.

I thank you very much.

CHAIRMAN MELIUS: Thank you.

Is there anybody else on the phone who wishes to make public comments?

(No response.)

CHAIRMAN MELIUS: Okay. In that case, if there is no one else who wishes to make public comments, we will close the session. And we will reconvene tomorrow

morning at 9:00 a.m. Thank you.

(Whereupon, the above-entitled matter went off the record at 6:22 p.m.)