CENTERS FOR DISEASE CONTROL AND PREVENTION

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

ADVISORY BOARD ON RADIATION AND WORKER HEALTH

MEETING #159

THURSDAY, AUGUST 8, 2024

The meeting convened at 11:00 a.m. EDT

via teleconference/videoconference,

Dr. Henry Anderson, Chair, presiding.

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Members Present:

Henry Anderson, Chair

Josie Beach, Member

Bradley Clawson, Member

Arthur Frank, Member

David Kotelchuck, Member

James Lockey, Member

Nicole Martinez, Member

David Pompa, Member

Paul L. Ziemer, Member

Registered and/or Public Comment Participants:

Rashaun Roberts, Designated Federal Official

Nancy Adams, NIOSH contractor

Bob Barton, SC&A

Kathy Behling, SC&A

Ron Buchanan, SC&A

Grady Calhoun, NIOSH

John Cardarelli II, NIOSH

Madeline Cook

Brian Gleckler

Rose Gogliotti, SC&A

John Hawkinson

Malia Holzberger, HHS

L. Hughes, NIOSH

Registered and/or Public Comment Participants Continued:

Amy Mangel

Lori Marlon-Moss, SC&A

Pat McCloskey

Shawnda Newkirk

Nhung Nguyen

Steve Ostrow

Angie Palau

Susan Powell

Michael Rafkey, HHS

Mutty Sharfi

Matthew Smith

Tim Taulbee, NIOSH

Zachariah Tribbett

Tosh Ushino

Registered Members of the Public:

Donna DeGarmo

Donna Hand

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PROCEEDINGS

(11:00 EDT)

WELCOME AND ROLL CALL

DR. ROBERTS: Okay. So, my clock is showing 11:00 a.m. Eastern Time, so it is time to officially open the meeting. I'd like to wish everyone a good morning. I'm Rashaun Roberts. I'm the designated federal officer for the Advisory Board on Radiation and Worker Health, and I'd like to welcome you to day two of the Board Meeting number 159. As you may know, all of the materials for today, including the agenda, presentations, and other documents for today are posted on the NIOSH website under the schedule of public meetings. You can go to calendar year 2024 and click the tab for August to find them.

If you are participating by telephone only, you can go to the website to access all the materials, and you can follow along with the presentations. The materials were provided to Board Members and to staff prior to this meeting. The meeting is being conducted by telephone and by Zoom. On the website, there's a Zoom link which will enable you to hear and watch the presentation all through Zoom. If you have chosen to receive audio through Zoom, you should be able to speak to the group and also to hear the presentations.

If you are not speaking, please be sure that you're -- you select and that you stay on mute by muting the microphone on your screen. And typically, this is in the lower left-hand corner, but it could be somewhere else. Also, if you're a board member or staff member on Zoom, please

make sure -- I'm sorry, I'm hearing some interference. If people can, make sure they're on mute. Thank you. So, if you're a Board Member or staff member on Zoom, please make sure that your name is showing rather than your user ID or some other label so that you can be identified. Also, please be sure to identify yourself before speaking if you are off-camera.

If you've dialed in by telephone today, you'll only be able to speak and hear the presentations through the telephone line. Please make sure that your phone stays muted unless you're speaking. If you don't have a mute button, press star six to mute. If you need to take yourself off, press star six again. Also, if you are only participating by phone, we're unable to see your name, so please identify yourself before providing comments or questions.

Before I move into a roll call, I wanted to remind the Board and also staff members that they should state any conflicts of interest that they might have as they register their attendance. I will note that there are presentations and discussions on the agenda for Pinellas Plant today. So, if you're conflicted for that site, please make sure the conflict is known during -- is made known during the roll call and when the time comes, rescue yourself from those particular discussions.

So, let me start with the roll call, and I will begin with the Board. Anderson?

MEMBER CLAWSON: You're on mute, Andy -- Henry.

CHAIR ANDERSON: There we go. Now I'm off. Yes, I'm here.

DR. ROBERTS: Beach?

CHAIR ANDERSON: No conflict. No conflict.

MEMBER BEACH: I'm here, and I'm conflicted at Hanford.

DR. ROBERTS: Thank you. Clawson?

MEMBER BEACH: I'm here and I'm conflicted at INL.

DR. ROBERTS: Frank?

MEMBER FRANK: Here and conflicted at Pantex.

DR. ROBERTS: Kotelchuck?

MEMBER KOTELCHUCK: Here, no conflicts.

DR. ROBERTS: Lockey?

MEMBER LOCKEY: Here, conflicted at Fernald, Oak Ridge, and Portsmouth.

DR. ROBERTS: Okay, great. Martinez?

MEMBER MARTINEZ: I'm here, I'm conflicted at Savannah River Site and Oak Ridge X-10.

DR. ROBERTS: Pompa? I'm not hearing Pompa. Valerio? Ziemer?

MEMBER ZIEMER: I'm here. Conflicted at Oak Ridge X-10.

DR. ROBERTS: Okay. Thank you. And so, we do have a quorum. I do want to note again that Nicole Martinez, Arthur Frank, and David Pompa are joining the meeting today and listening -- in listen-only mode for as long as possible. So, let's move on to NIOSH/DCAS.

MR. CALHOUN: This is Grady Calhoun. I'm conflicted at Fernald Site.

DR. TAULBEE: This is Tim Taulbee. I'm conflicted at the Mound Site.

MS. COOK: This is Madeline Cook. No conflicts.

DR. ROBERTS: Anyone else for NIOSH/DCAS?

DR. CARDARELLI: This is John Cardarelli. I'm conflicted at Fernald.

DR. ROBERTS: Anyone else for NIOSH/DCAS? Let's move on to

SC&A.

MR. BARTON: Bob Barnett, SC&A, no conflicts.

MS. BEHLING: Kathy Behling, SC&A, no conflicts.

DR. BUCHANAN: Ron Buchanan, SC&A. I'm conflicted at Los Alamos.

MS. GOGLIOTTI: Rose Gogliotti, SC&A, no conflicts.

MS. MANGEL: Amy Mangel, SC&A, conflicted at Pacific Northwest National Lab.

DR. OSTROW: Steve Ostrow, no conflicts.

DR. ROBERTS: Okay. Anyone else for SC&A? Okay. Let's move on to HHS and contractors.

MR. RAFKEY: Michael Rafkey, HHS, no conflicts.

MS. HOLZBERGER: Malia Holzberger, HHS, no conflicts.

DR. ROBERTS: Any other folks from HHS or contractors? How about the departments, DOL, DOE, other departments? Okay. Are there members of the public who'd like to register their attendance today?

MS. HAND: Donna Hand. Donna Hand.

DR. ROBERTS: Okay, welcome.

DR. DEGARMO: Denise DeGarmo, author and petition representative for Pinellas.

DR. ROBERTS: Okay. Good morning and welcome. Any other members of the public that would like to register attendance at this time? Okay. Well, thanks everyone. Again, if you're participating by phone, please check your phone and mute it. If you don't have that mute button, press star six and press star six again if you need to take yourself off. So, I think with that, I will turn the agenda over to Dr. Henry Anderson, Board

Chair, for the official welcome. Andy?

CHAIR ANDERSON: Oh, thank you very much, Rashaun. I want to welcome everybody as we get near the weekend here. But today we're going to have a series of interesting presentations to get us all up to speed on the SEC-256 at Pinellas Plant. So, with that, I'll pass it over to Brad to --

MEMBER CLAWSON: (Indiscernible) --

CHAIR ANDERSON: -- say a few words. Go ahead, Brad.

MEMBER CLAWSON: Well, --

CHAIR ANDERSON: -- program.

SEC-256 PINELLAS PLANT, CLEARWATER, FL (AUGUST 1, 1957 - DECEMBER 31, 1997)

MEMBER CLAWSON: Okay. Everybody, I'd like to -- I'd like to thank everybody for being here, and I want to give just a little bit of a background. This is a little bit different than what we've -- what we've done before. We were supposed to have a work group before this, but what we're trying to do is Dr. DeGarmo has brought out a lot of information about the Pinellas Plant that we feel is -- is important. And to be able to do this, we're going to kind of go back over Pinellas a little bit to kind of refresh everybody because it's been a lot of years. So, with that being said, I'll turn it over to the first presenter, and we'll get started with this. Which is -- which one decided to go first, was it NIOSH or SC&A? I thought it was NIOSH.

MS. COOK: Yeah, it's me. Okay. Sorry, Maddie. I -- I know there was some talks back and forth, so okay, I'll turn it.

MS. COOK: Okay. Can you all see my slides?

MEMBER BEACH: Yes.

MS. COOK: Perfect. Okay, hello everyone. My name is Maddie Cook. I'm the NIOSH health physics Pinellas Plant Site lead, and today I will be presenting the SEC-256 Pinellas Plant technical overview. However, I do want to point out that although this says SEC-256 in the title, this is actually not going to be specific to that petition, nor will I be going into our ability to reconstruct dose. This is actually just going to be a condensed version of the information that we already have available in the Pinellas Plant technical basis documents. It was mentioned a few times during our November work group meeting that with there being some new work group members, that some historical context and a review of the plant's products and manufacturing processes would be helpful. So, I would like to thank my ORAUT counterparts, Pat McCloskey, Joe Guido, and Angie Palau for helping me put this together, and we will get started.

A brief overview. I will be going over the technical basis documents, or TBDs, that we have for Pinellas and then get into the site's activities, products, which include neutron generator production and testing, RTG production and testing, as well as some other products manufactured by the site. And then I'll get into the specifics on the radiation sources present at Pinellas, including radioactive materials and radiation-generating devices. Technical basis documents.

We have this table here for your convenience with the far-right column having links to our website for each respective TBD for Pinellas. There are six in total, an intro, a site description, occupational medical, environmental, internal and external dose TBDs. Those were all revised in 2011, with these

last two, internal and external, being revised in 2016 and 2017, respectively.

Site activities and products. For the first 10 years of its operation, the Pinellas Plant produced neutron generators. That was its main product. I have a picture on the right here of a map of the site with neutron generator production happening here in this large facility, building 100. Testing of neutron generators occurred in building 200. And then after the first 10 years, the site expanded its mission to include additional products starting in 1975, one of those being RTGs, radioisotope thermoelectric generators. And both production and testing of RTGs occurred here in building 400. Later in the presentation, I will be going over some additional products manufactured by Pinellas, those being nonradiological products.

So, starting with neutron generators. These provide high-energy neutrons to initiate nuclear weapons and test devices. I have a schematic of a neutron generator here on the right. They are essentially miniaturized linear ion accelerators with a pulse electric power supply, accelerating deuterium nuclei into either a tritium or deuterium target, resulting in a controlled fusion reaction producing neutrons. Some further information about neutron generator production. It actually involves loading metal films with deuterium and tritium under backing conditions to form metal hydrides. Metal tritides, or MTs, are metal hydrides used for capturing or storing tritium gas. I have a picture of a cutout of a neutron tube on the right of this slide, where I note that neutron generators contain a metal tritide target here on the right in yellow and a metal hydride deuterium gas reservoir here on the left in yellow.

Metal tritides were formed at Pinellas by reacting tritium gas with

metal surfaces, thin metal coatings, and metal powders. The primary metal tritides at Pinellas were scandium, erbium, and titanium tritide. This is the early neutron generator production, that being in 1957 going through 1967, where a target material, typically erbium, scandium, or titanium, was deposited as vapor onto ceramic or a metal target substrate. Targets were loaded in the neutron tubes, then neutron tubes were attached to a glass manifold vacuum system under an exhaust hood. Once the system reached vacuum, the storage beds were heated to flood the system with deuterium or tritium gas, and then a torch was used to melt the glass manifold connection, seal the neutron tubes, and cut them free of the manifold. So, I have a picture here on the right of that glass manifold system.

If you look close, you can see there were typically two neutron generator tubes per glass manifold, with four manifolds located in one exhaust hood and about 20 exhaust hoods in Area 108.

Later neutron generator production, beginning in 1968. With that glass manifold system, there came some breakage and contamination issues. So, in order to address that, a metal system replaced the glass system. So here, a stainless steel-encased depleted uranium bed replaced those glass-enclosed titanium beds. In this process, metal targets hydrided -- were hydrided in a glove box prior to being installed in the neutron generator tubes. And then once that uranium hydride storage bed was no longer useful as process beds, they would be stabilized by converting the powerful metal powder to a more stable uranium oxide for proper disposal.

And this was done by connecting those storage beds to the uranium bed oxidation system, which was located in Room 21 of Area 108C.

Some information about the two basic types of neutron generators. There's electronic and ferroelectric. Electronic store electrical energy in electronic capacitors, whereas ferroelectric store energy in a metal or ceramic component called a ferroelectric. Electronic neutron generators release energy by a switch, whereas ferroelectric energy neutron generators' energy is released by shattering that ferroelectric component with a small detonator.

The benefit of ferroelectric neutron generators being that they are small, so that's what was used in missile warheads. However, they are destroyed during function tests with the shattering of that ferroelectric component. Electronic neutron generators were large and used in bomb warheads. However, the benefit of those being that they could be reused after function tests as energy was just released with a switch.

Neutron generator testing. Neutron generators were leak tested using Krypton-85 gas systems, RadiFlo and TracerFlo. They were also functionally and environmentally tested, including vibration, acceleration, temperature, and pressure cycling, and mechanical shock testing. Neutron generators also underwent destructive testing, after which debris was sorted, examined, and disposed of. And this destructive testing consisted of spin and boom box testing.

Neutron generator spin testing. I have a picture of what that setup looked like here on the right of the slide, with the spin testing unit looking like a large top-loading washer. The neutron generators were wired and assembled in a hard plastic material fixture and then inserted into the heavy aluminum fixture, with the very heavy lid on top of the equipment then

being closed. The workers would leave the secured room and then detonate the neutron generator. And there was no direct vent for this equipment other than the room's ventilation.

Boom box testing. I have a picture here on the right of what that setup looked like, with the neutron generator being wired and assembled in a urethane foam fixture and inserted into the firing tube. That firing tube was then closed, personnel exited the area, and then the neutron generator was detonated. After detonation, a debris collection can was placed under the boom box, and that is what is shown here in this black-and-white photo in the center of my slide.

Next product is RTGs. These are used to provide a long-life source of relatively low-energy electric power. I have a picture here of a cutout of an RTG on the right, which consisted of a sealed heat source containing a small amount of plutonium dioxide there in the center. That was manufactured off-site and then sent to Pinellas. RTGs also consist of a thermal pile that was manufactured at Pinellas, and then they are enclosed in thermal insulation and packaged in a welded steel case.

RTG production occurred starting in 1975 through 1990, and the plant produced about 50 units per month. Those plutonium heat sources were delivered directly to Building 400, where the packages were opened in fume hoods and surveyed for contamination. If the unpacking survey showed contamination levels greater than 200 dpm, then the source was immediately repackaged and sent back to its manufacturer. However, this level of contamination was never detected at Pinellas, and nothing was ever sent back. If the survey showed detectable contamination less than that

rejection limit, then the source was decontaminated in accordance with site procedures.

When the RTG heat sources were pulled from storage for use, they would be transferred to an inspection hood where they were surveyed, cleaned with alcohol, then transferred to an assembly glove box where assembly was performed, and then that final assembly was welded with an electron beam welder. Once assembly was complete, the RTG units were leak checked and contamination surveyed before being removed from the glove box, and testing of a completed assembly included dimensioning, electrical input, temperature, vibration, and shock testing. Once testing was complete, RTG units were stored in a vault room where they awaited shipment.

Here I have a list of additional products manufactured by Pinellas. These are all nonradiological, though they had neutron detectors, vacuum switch tubes, specialty capacitors, thermal batteries, electromagnetic devices, lithium ambient batteries, frequency control devices, quartz digital accelerometers, optoelectronics, lightning arrest connectors, mechanical ceramics, ferroelectric ceramics, and foam support pads.

Neutron detectors are small electronic assemblies used to verify neutron generator output. These are used in joint test assemblies, or JTAs. A joint test assembly is where the nuclear material is removed from a weapon and censoring and (audio break) devices are used to verify the performance of a weapon without having to do a nuclear detonation.

Vacuum switch tubes. High vacuum gaps capable of holding off 10,000 volts, placed in conducting condition by a small amount of energy.

These conduct 200 amperes for about 10 microseconds.

Specialty capacitors produced at Pinellas were used to store electrical energy, and the plant produced more than a dozen designs of specialty capacitors.

Thermal batteries. These are inactive at room temperature and then activated by ignition of an exothermic reaction, and these have very long, nondeteriorating shelf lives. Electromagnetic devices produced at Pinellas were used to perform various functions, such as pulse shaping, filtering, voltage and current conversion, current monitoring, and activation of mechanical devices. Frequency control devices, including quartz crystal resonators and clock oscillators made for various -- were made at Pinellas for various weapon -- weapons applications. And the Pinellas Plant was selected for the manufacture of frequency control devices due to the existence of their high vacuum cleanliness control and ceramic production equipment.

Lightning arrester connectors. These are used to protect weapons against accidental detonation in the event of a lightning strike, and the Pinellas Plant produced more than 15 models of lightning arrester connectors.

Okay. Moving on to radiation sources. There were several uses for radiation sources at Pinellas, the first being as part of a product with tritium in the neutron generators, plutonium in the RTGs, and uranium in certain borosilicate glass products. Radiation sources were also present for leak testing using that Krypton-85, also for tritium storage with depleted uranium in the sealed stainless steel canisters, as well as for instrument and

dosimeter calibrations and checks and analytical standards.

Dispersible versus nondispersible radiation sources. Those sources considered dispersible at Pinellas include tritium, Carbon-14, Krypton-85, and analytical standards. Not considered dispersible are those sources that are plated, containerized, encapsulated, or solid metal sources. Those radiation sources at Pinellas considered to be internal dose concerns were all forms of tritium, so tritiated water, tritium gas, organically bound tritium compounds, and metal tritides.

Not considered internal dose concerns were Krypton-85, as it is a noble gas. The plutonium was encapsulated. Uranium was contained either in the storage beds or within glass. Carbon-14 was present in negligible quantities, as was Nickel-63, and it was contained in vacuum switch tubes. The site also had other sealed sources, including Cesium-137, as well as radiation-generating devices, all not considered internal dose concerns. Radiation sources considered to be external dose concerns at Pinellas include Krypton-85, plutonium, the sealed sources, and radiation-generating devices. Not external dose concerns were all forms of tritium, the uranium as it was contained, the Carbon-14 was in negligible quantities, and the Nickel-63 was contained.

Some details about tritium. It has a half-life of 12.28 years. It is a low-energy beta emitter with an average beta particle energy of 5.7 keV and a max of 18.6 keV. The reason tritium is not considered an external radiation dose concern is because those beta particles don't have high enough energies to penetrate the outer layer of human skin. Between 1957 and 1993, the annual inventories at Pinellas ranged from 5.44 to 53.26 -- 27

grams or 52,400 to 514,000 curies. The primary source of tritium at the Pinellas Plant that was a hazard (audio break) to have been in the form of tritiated water or tritium gas. However, there were some circumstances where workers could have been exposed to organically bound tritium or metal tritides.

Organically bound tritium was present at Pinellas either in the form of contaminated pump oils or organic solvents. For the case of contaminated pump oils, this would have occurred with those turbo and vacuum pumps requiring periodic maintenance, including changing of the oil. In tritium areas, this could contaminate the pump oil for small liberations during process operations. And one of -- and this was one of the most common sources of organically bound tritium at the site. In the case of organic solvents such as alcohol, toluene, or acetone, if this was used for cleaning and degreasing of contaminated components in the tritium areas, that would have also led to organically bound tritium.

Metal tritides. These could have been released in the work environment as particulate aerosols during production processes. However, only a small portion of the worker population at Pinellas had an exposure potential to a dispersible form of metal tritide, and this was typically limited to accidents involving the metal tritides.

Plutonium. Pu-238 and Pu-239 are alpha and X-ray emitters. Pu-238 has a half-life of 87.75 years, and Pu-239 has a half-life of 24,131 years. In terms of an internal dose concern for plutonium, that would be due to alpha particle emissions.

The first plutonium to arrive at Pinellas was in January 1957. It was a

7-gram Pu-239 encapsulated plutonium beryllium source that was used for calibrating health physics monitoring equipment. The Pinellas Plant also had some additional smaller plutonium sources used as alpha check sources for instruments. And then starting in 1975 with the startup of that RTG program, the site began receiving the plutonium Pu-238 heat sources.

Those heat sources came in two different types, 8.75 and 10-gram plutonium dioxide. The configuration for both types was the same. I have that pictured here on the right. They were triply encapsulated with the outer layer being a nickel alloy and the two inner layers being a tantalum alloy. The source was predominantly composed of Pu-238 with significantly smaller percentages of other plutonium isotopes, decay products, and radioactive impurities.

Krypton-85 is a noble gas. It is a beta emitter with a half-life of 10.72 years and an average beta particle energy of 251.4 KeV and a max of 687 KeV. The Krypton-85 was present at the Pinellas in relatively small quantities where it was used in those two leak detection systems, RadiFlo and TracerFlo, from 1963 to 1996. The leak detection systems were housed in separate rooms in Area 109 and surrounded by ventilation shrouds, with each shroud being connected to ductwork that exhausted to the east main exhaust stack. In 1996, this equipment was decontaminated and relocated to Building 800, along with any unused stored containers of Krypton-85 gas. And by the end of that year, all of that equipment and unused gas cylinders were sent back to their manufacturers.

Uranium. Uranium was present at Pinellas in the form of depleted and natural uranium. These consist of primarily U-238, as well as U-234 and

U-235, and some progeny. Uranium is an alpha and X-ray emitter, with progeny being beta and gamma emitters.

The depleted uranium present at Pinellas was seal -- sealed in those stainless-steel canisters for the iridium beds. If you'll recall during my neutron generator production slides, this was first used in 1968. There was no indication that uranium ever leaked from those containerized storage beds, as none of the reported incidents for the plant were uranium releases or uranium fire incidents.

Natural uranium was primarily present at Pinellas within borosilicate glass that was doped with natural uranium, 1.5 percent by weight, in the form of triuranium oxide. This was encapsulated in the glass at the manufacturer prior to arriving at Pinellas, so this is considered a sealed source upon arrival and therefore, posed little to no internal dose hazard to Pinellas' workers.

Nickel-63 is a low-energy beta emitter with a half-life of 100.1 years and an average beta particle energy of 17.13 keV, a max beta particle energy of 65.87 keV. Nickel-63 was used at Pinellas in cold cathode gas-filled tubes called krytrons, used as very high-speed switches. The electroplating of Nickel-63 onto a nickel mesh was done by U.S. radium, averaging 0.3 microcuries per spark gap. Pinellas was not likely involved in the electroplating process. It likely sealed the electroplated Nickel-63 electrodes into the glass tubes to create the krytron as the plant's -- one of their areas of expertise was glass formulation.

Carbon-14 is a low-energy beta emitter with a half-life of 5,730 years, an average beta particle energy of 49.47 keV, and a max of 156.48 keV.

Use of Carbon-14 was only indicated in the gaseous effluent release reports and an environmental assessment for Pinellas. In 1983, an environmental assessment indicated that small quantities of Carbon-14 labeled solvents had been used in a lab testing operation.

Radiation-generating devices, the first being neutron generators. It was the most common type, being the plant's primary product, at least for the first 10 years. These obviously produced neutrons as well as some X-rays by other interactions within the miniature accelerator.

Pinellas also had an ion accelerator. It was manufactured by Accelerator, Inc., and first installed in 1975 in Area 161 of Building 100, where it was used by the chemistry laboratory. The original purpose for the ion accelerator was for ion implantation and then later for target assessment.

However, it was relocated in 1979 to Building 800, where it was used for a larger variety of activities, such as target assessment, material analysis,, low-energy nuclear solid-state and atomic physics, and material science. And all personnel who were working with the ion accelerator were required to wear dosimeters.

Additional radiation-generating devices at Pinellas include the electron beam welder, electron microscope, a sedigraph used for particle size analysis using X-rays, and other equipment containing X-ray generators, such as X-ray diffraction, cabinet X-ray machines, thickness gauges, etc.

And that's all I have. What questions can I answer for you guys?

CHAIR ANDERSON: You got a question, unmute.

MEMBER BEACH: Yeah, thanks. That was a great summary of what's

out there that -- I have a question, and I know you talked about not really getting into the doses, but do you guys have any -- any -- oh, gosh, let me -- let me get back to my question.

MS. COOK: Okay.

MEMBER CLAWSON: Megan (sic), that was a fine job. I appreciate you bringing that up. You mentioned that none of the plutonium capsules were ever returned.

MS. COOK: Correct.

MEMBER CLAWSON: What -- on what -- how do you know that?

MS. COOK: Because we would have had records of Pinellas rejecting samples and sending them back to their manufacturers. The highest contamination, I believe, that was found on those was less than 20 dpm.

MEMBER CLAWSON: So, you've got the monitoring of the capsules as they came in?

MS. COOK: Yeah.

MEMBER CLAWSON: You have all that data? Okay. Because I hadn't been able to find that, but okay. That sounds good. Is there any other questions that anybody would like to ask?

MEMBER ZIEMER: Yeah, --

MEMBER BEACH: I was curious about -- sorry.

MEMBER CLAWSON: Josie, you're on mute.

MEMBER BEACH: Yes, I am. Thank you. I'm sorry I got tongue-tied earlier. I was just wondering about dose records. Are -- are there any dose records at all associated with plutonium or -- or any of these sources that you were talking about? I know there's been -- there was a few incidents of

leaking. So, just curious.

MS. COOK: So, there were no incidents of leaking of the plutonium sources. The workers would have been badged. There was area monitoring, and the site also performed pre-employment and some plutonium bioassay samples, but those were always negative.

MEMBER BEACH: How about any air sampling, room sample, any of that type of monitoring?

MS. COOK: Yes. There was -- there were CAMs in the RTG area.

MEMBER BEACH: Okay. Thanks.

MEMBER CLAWSON: Okay.

MEMBER ZIEMER: This is Paul. I -- just a comment. First of all, Maddie, very excellent summary of what has been the -- asked and up to the present at Pinellas. One thing I did want to mention, when you talk about the radiant beryllium sources, just I don't think you mentioned, but they actually produce neutrons. So, they were used, I think you said, for calibration, probably for the neutron detection devices. So, that's an additional. It may -- I may have missed it, but just to point out that's another neutron (indiscernible) radium-beryllium source. Thank you.

MEMBER CLAWSON: Okay, thanks Maddie. I appreciate that. Is there anybody else that has any questions?

CHAIR ANDERSON: What was the size of the workforce?

MS. COOK: I believe at its peak, Pinellas employed 2,000 employees.

CHAIR ANDERSON: Okay. Thanks.

MEMBER CLAWSON: Okay. So, with that being said, thank you, Maddie. We'll turn it over to Bob. He's going to give us a little bit of

background on some information, and we'll go from there. Oh, it's Steve. I'm sorry, Steve. You're -- there you go.

DR. OSTROW: Good morning, everyone. First, I'd like to thank Maddie. That was a great introduction. At least I enjoyed it and kept track of it and all that. It saves me the trouble of going back to the beginning. I'm going to be talking about -- let me get the slides up first here. Let's see, share screen. Okay. Can everybody see the screen?

MEMBER BEACH: Yes, Steve, I can.

DR. OSTROW: Great. Okay. The -- as I mentioned before today and also yesterday, this was one of the presentations that was originally intended for a work group meeting. So, the presentation is short because I jumped into the -- I skipped all the preliminary stuff that Maddie thankfully did today. I just got into the status of the -- SC&A's environmental report review. So, that's what we're going to be discussing today.

Okay. I put a little bit of history here. The -- it just shows the -- for the environmental reviews. The -- just before we begin this, I just want to mention that we first started looking at the Pinellas Plant in 2005 and 2006 when NIOSH produced the first set of TBDs. SC&A issued its first review of the TBDs in 2006. So, there's a long history to this. A lot of issues that we raised, that NIOSH responded to, etc., etc., etc., until it finally converged or -- just as far as the petition evaluation report review, NIOSH issued the PER in October of 2021. There was a Board Meeting in December of 2021. NIOSH presented the ER and SC&A was tasked to review it.

The -- also at the -- exactly one year later, December 2022, a full Board Meeting, we presented the status of the ER review and issued our

interim review report in -- June 16, 2023. The reason we called it interim is that it was decided in the work group that although it -- this was a work in progress, like all these SEC reviews are, at some point SC&A should put down what it's found to date. So, we had the interim review report.

That's why it's called interim.

The work group meeting in November 2022 was a major meeting. NIOSH presented the ER. We presented our interim review report, and NIOSH presented its response to our interim review report. It was very neatly packaged there. And then finally, the last action was December 7th of last year that -- at the full Board Meeting, SC&A presented the interim review report that we did.

Okay. What's SC -- what's SC&A's tasking? That first of all, the work group has stated several times and recognizes that the review process is ongoing. Assessments are subject to revision. So, nothing's chiseled in stone because new information continues to come in from things that we discover, from -- from items the Board brings up, and our authorized petitioner representative brings new material for us to review. So, the assessments are subject to revision right now.

The -- so, we were tasked December 2021 to review the ER. And the November 2023 meeting set several tasks. And I'll discuss these briefly following this slide. First is to develop a comments matrix to facilitate tracking status. In our interim review report, we came up with findings, observations, and so forth. And this is the common -- it's done on all the different sites where we have a matrix to track the findings and how they're resolved. Eventually it may end up in the BRS, the board review system,

which apparently works now. We have access to it. That's one thing.

The other one is the ongoing part. We assess new reports that come in or that we find, claimant interviews, new ones, and all the petitioner submittals. We see if there's anything in any of these that are relevant to the review. And if so, we note it, comment on it, look at it. The -- we're -- we're in the process of evaluating all new information from data collection activities after our June 2023 interim review report closing, which was around March 2023. That's -- it takes -- as you all know, it takes a long time after you finish a report before it's actually released. There's various processes.

We're supposed to identify any new areas of concern for dose reconstruction, (indiscernible) we find anything, and eventually to supplement our interim review report with a follow-up report. So, it's just an update where we write down everything that we found.

So, going over some of the items. Comments matrix. This was very ably done by two of our team members, Rose Gogliotti and Amy Mangel, worked on this. And they took the -- our interim review report, collected all the observations, the section on the petitioner issues, the NIOSH and the ER addressed nine petitioner issues. We identified 12. There weren't different issues. We've classified it differently than NIOSH did. It was the same set of issues. We also have in the matrix petitioner comments that were made -- we had some time for this after we closed most of the report, but before the November 20, 2023, meeting, we collected the petitioner comments also and put them into this matrix. So, the matrix status -- we have an update to the matrix status. When we originally wrote the -- did

these slides, we were finalizing its review of the matrix, but happily, it's actually been sent out to the work group and NIOSH on July 15, 2024. So, in the time that we're waiting to deliver this, it's actually been out there.

And the next step is that the board and NIOSH should review it. And we'll probably discuss it at the following Board Meeting. And as I mentioned before, the next step may be to enter all this information to the board review system, the BRS, which we have -- apparently we have access to now. And last I checked, which was a couple of days ago, it's -- for Pinellas, there's no entries. Pinellas is listed, but there's no entries for Pinellas.

Another one of our tasks.

Since we issued our interim review report, there have been no other reports produced by NIOSH or claimant interviews since we issued that. So, just a commitment that we'll participate in any interview activities initiated by NIOSH in the future.

We are currently identifying, collecting, summarizing, and commenting -- and commenting on all transmittals made by claimants or their representatives from 2022 to the present with the goals are -- of gathering all submittals in one convenient table, ensuring all relevant petitioner concerns are adequately addressed, and identify any high -- identify and highlight those that weren't adequately addressed, and serving as a resource, an internal resource, for any areas requiring further investigation. I've been doing that. So, I've basically read all the petitioner submittals and organized them in a nice, fashionable table, plus all the attachments and so forth, so we can find -- it's also cross -- cross-referenced by subject. I've got some slides on this.

This is just a petitioner document submitted. It has to be updated slightly. These are submittals to the -- to Rashaun, and then when she sends it out to us and the Board and NIOSH. And some of the submittals have more than one document, so the represent -- the petitioner or representative can send an email that has five different documents attached to it. The slide update is that we just received two days ago. Dr. DeGarmo, who is going to be speaking after I finish, submitted her slide presentation for this meeting, so this should be eight over here, 2024, going up to eight over here. 21 and 57, so a little bit ahead of that. So, a lot of material, but we -- we're keeping up on it.

One more slide on this. This is just a format of this, which turned into a really large table, humongous table, and this is the format of it. These are the dates that the DFO submitted to the work group and to NIOSH and to SC&A, so Rashaun sends us something. And there might be multiple documents contained in that transmittal, so for each individual document for a particular submittal date, we would have a -- it would be numbered. We list them all, and the name of the file, the actual computer file, so you can find it, and then we assign the number just for our own convenience. For example, document 23-7 would be the seventh document that we received in 2023. That's just a way of keeping track of things. We'd summarize the content of each document, and if SC&A has any comments on it, or -- or in some cases, we did further research, it would be here. And in addition to looking at the actual documents that were sent, we also looked at references that are given in that, you know, the underlying data, and sometimes even things that weren't -- we did some independent research on some of the

subjects.

The table itself is not ready for prime time. One thing, it's not 508 compliant, because these -- it's a bad format. These are long, skinny columns that run over multiple pages in some cases. So, if we ever want to make it look better, we'd probably get out of the table format and make it just a linear layout, where it'd just had one document after the other. And we put them all in a common file, all the documents that were transmitted, so it's easy for us to find them.

We -- this -- I just called them topics of special interest. As a result of the petitioner work group and SC&A interests, we've been investigating several subjects in more detail including, this is not exclusive, but just some of the top -- top hitters. One of them is plutonium, and several aspects of plutonium, handling operations, and how is plutonium handled from the time it got onto the site to all the different processes and so forth. The possibility of the presence of encapsulated plutonium, did it ever become encapsulated for any reason, disassembled accidents, and so forth. And importantly, the adequacy of the bioassay information. There is some plutonium bioassay information, and the question is how adequate is it, is it -- is it enough. And under the bioassay information, I don't want to write a million things on the slide, but we were looking at things that -- monitoring, air monitoring for plutonium, environmental monitoring, and fallout data.

Fallout data is interesting. I think Dr. Degamo probably mentioned this in her slides, but the environmental monitoring, it was done for air monitoring, off-site also soil monitoring, and so forth. And there was testing for plutonium. So, the question is, is the measured plutonium that came, is

it above background level? So, that -- that raises the question, what is the background of plutonium in the environment? And that comes from two sources. It comes from natural U-238 that's in the soil and so forth, that captures a neutron, and you can get plutonium-239. That's usually small. Plus, as everyone knows, from the airborne atmospheric nuclear tests, there's still contamination from fallout. So, that -- that raises the question, what is the background level due to a fallout? And that's sort of a complex issue. So, what is the background level, and are any of the measurements of plutonium significant? So, that's one of the things we're looking at right now. I find that interesting anyway.

Uranium bioassay, is that sufficient? Tritium inventories, it would be nice if we could correlate tritium inventories with device production records to see if there's a correlation to dosimetry records. The -- any other radioactive contamination not accounted for in the ER.

NIOSH has presented a lot -- sorry -- NIOSH presented information, Maddie just did, on neutron generator data -- details and also looking to neutron generator exposure data, wherever they were. The RTG details and exposure data. Early plant operations and monitoring practices. There's less data information, I think, about the early operations and monitoring, whether that's important.

Interesting subject, the Heather project, which has been mentioned several times in workgroup meetings and some correspondence. I'm not going to go into details of Heather. It's a classified project that began a long time ago.

And suffice it to say, it's part of the tritium delivery systems for filling

neutron generators, and it's called Heather, and it involves glassblowing and other things that was done at Pinellas. So, we're looking into that, whether any of that is significant.

And finally, the last one. That Pinellas did a lot of research and development operations, and these aren't accounted for at all, as far as I know, in the ER. Pinellas had contracts with the Albuquerque operations office of the DOE or the AEC, DOE, etc., to put -- to participate in many nuclear weapons program R&D activities. We have a list of it, of the different contracts, and it's not immediately clear which could have had a radiological consequence because not all the R&D had to actually produce radiation. It could be to develop some widget or another that didn't involve radiation. So, we have a list of contract numbers, which sometimes are accompanied by a brief sentence or two, and it's difficult to tell from reading that what the research really was. So, we have to dig deeper than that. But that's an area that I don't think the ER covered at all.

Okay, new documents. This is an ongoing activity. The -- we had stopped looking at the documents in the SRDB about the fall of 2023. There were, since then, some new documents that were placed in the SRDB from, I think it was two data captures that NIOSH did, and we -- we've only recently begun following -- following this -- doing this, following improved access to and search capabilities of SRDB, which was not very user-friendly until recently. So, that's an ongoing activity.

And finally, a supplemental review report. I mean, this process of SEC evaluations, as you know from all our other nuclear sites that we do work on and NIOSH does, this can go on and on and on. At some point, we're going

to collect enough interesting new material or observations, findings, that it should be written down somewhere. So, this would give NIOSH a chance to respond to it and the work group a chance to review everything, so we can move on from there.

Just a summary of the path forward, as we see it. We're updating comments matrix, as received responses to the items. So, as the work group and NIOSH respond to what we just put out a couple of weeks ago, we can update it and possibly put it in the BRS. Either we put it in the BRS or NIOSH puts it in the BRS. Somebody does. Continue all the investigations into things, like highlighting data completeness, sources of exposure not included in the ER. As we get new information from data collection and petitioner submittals, we'll continue to identify and pursue areas warranting further identification. As we're doing our research, we may find areas that look like they're promising that should be addressed further. And as they become available, we'll go -- have a plan to look at the NOCTS system, which is the NIOSH/DCAS claims tracking system. That was unavailable. I think it still was unavailable. BRS we have now, and the CATI system, which is the interview report to determine any additional issues. And finally issue a supplemental report on our findings.

And -- and I just have one closing note. Here's a good question, at least I thought, why are we even -- why are we conducting this review to begin with? What's the purpose of this all? We shouldn't lose sight of that. And I think the main purpose is there adequate information and approved methodologies to perform the required dose reconstruction with sufficient accuracy for the population that we're looking at of people over the time

period we're looking at. I think that's the fundamental thing. The -- we're not trying to do an encyclopedic study of everything that happened in Pinellas. That's more of a history book. So, we want to focus on things that matter to the actual dose reconstruction. And if -- if we don't have adequate information, what is missing? And with that thought, I'll conclude. And any questions on this?

MEMBER CLAWSON: Thanks, Steve. Any questions from any Board Members?

MEMBER BEACH: Well, this is Josie. I have a question, Steve.

DR. OSTROW: Uh-huh.

MEMBER BEACH: On your slide nine, you talked about the status of that was ongoing, and then the supplemental review report has not yet -- it's not begun.

DR. OSTROW: No, --

MEMBER BEACH: But you mentioned your path forward that you were going to issue the supplemental report. And my question is, where -- where are you now? I know there's a lot of data that came in here recently. You just got the slides from Denise, so that's more information. Are you moving forward with your reviews or -- in order to put the supplemental report together, or are you waiting for a workgroup meeting? I'm just curious of your status and on -- going forward.

DR. OSTROW: No, I (indiscernible). Okay. Josie, I don't know if Barton can weigh in here. But I think this is part of our initial tasking by NIOSH to do this -- by the Board to do this sort of investigation. Right now, we've looked into a lot of areas. We have different subjects. We have lots

and lots and lots of notes and pieces, but we're not at the point yet where we can put things together into a coherent report. Plus, we have a lot of stuff to continue to look at, especially now that we have more access to the SRDB and can actually do some searching. So, the answer is it's not ready for prime time yet. And we hope maybe by the time we have the next Board Meeting, we can give you a better idea -- not Board -- work group meeting, and give you a better idea of what sort of the schedule we'll be working on. Bob, do you --

MEMBER BEACH: Okay.

DR. OSTROW: -- have anything to add to that?

MEMBER BEACH: Okay. So, you're still working at this point? You're not at a stop?

DR. OSTROW: No, definitely not. We're going --

MEMBER BEACH: Okay.

DR. OSTROW: We're chugging along here.

MEMBER BEACH: Okay, thank you. I know there's a lot to wade through. And I appreciate your comments on focusing on what is important, and I think that's -- that's a good note and important to remember, so thank you for that.

DR. OSTROW: Welcome, Josie.

MEMBER CLAWSON: Steve, I'd like to tell you, I appreciate what you've done there. One of my questions is, as -- as this new information and stuff comes in, do we need -- and this is a question for Bob -- do we need to task you as SC&A as it comes in, or do you feel that you're already tasked with evaluating the information, Bob?

MR. BARTON: Well, certainly we ask for clarification from -- from Rashaun here, but basically at the last work group meeting, you know, it was pretty apparent that, you know, continue new information, new submittals of -- from Dr. DeGarmo and also data captures were not obviously reflected in our interim report. So, the tasking at that time was to continue to monitor the new documents that aren't contained as part of our interim analysis going forward. So, I mean, when we say issue a supplemental report, I mean, that would just be simply to document what we found in all these new data sources and reports that continue to come in. But again, at some point, we can't just do this in perpetuity. So, we'd have to document, you know, what's available and what we found that's possibly different or simply backs up what we've already said in the initial SEC evaluation review.

MEMBER CLAWSON: Okay. Thank you. Something else that I -- I failed to do as we started into this, and I apologize for it. Over the years, I want the full Board to understand, when Pinellas work group started, it was chaired by Phil, and NIOSH had Pete Darnell (ph) was their person on that. Since that time, both of these have left and are no longer with us. And so, we've got a new work group chair, which is me, and we have Maddie that has come on to NIOSH. And this is -- this is kind of why we're going back and looking at what -- what already we have and what we're going forward with. I just want to make sure that everybody understood that. And this is -- this site has -- has opened up to me over the last little while with some of the information that's came into it. And we may not have the best understanding of it. So, this is why we're pushing this direction with that.

With that being said, --

MEMBER ZIEMER: Question, Brad?

MEMBER CLAWSON: Sure.

MEMBER ZIEMER: Yeah, this is Paul. I have kind of a process question. Maybe --

MEMBER CLAWSON: Okay.

MEMBER ZIEMER: -- I'll address it to Maddie. I assume that all of these things that have been identified by Steve are the same things that are being looked at by NIOSH. So, I'm -- I'm wondering procedure-wise or process-wise, what comes first, a report from SC&A or a report on these things from NIOSH for SC&A to review? From what Steve said, it sounds like SC&A is in a position where they are initiating the information, sort of, review as kind of -- it seemed to me that NIOSH is the one that should initiate that, and SC&A would -- would review that. Can somebody clarify how this is working out between SC&A and NIOSH, assuming that everybody's looking at this information?

DR. OSTROW: This is Steve. Excuse me, Maddie. This is Steve. I'll presume to speak to SC&A about -- you know, on this for SC&A. The way we're looking at this is that we're still reviewing the ER, but we're looking at more material that's come in recently and in-depth at some of the material was there before. And the idea is for us to continue to review the ER. We reviewed the ER in our interview report, but we want to -- at least we're intending to, continue to review the ER with this additional information.

So, I think at least partly it's still -- the ball's still in our court. We haven't actually asked NI -- we haven't actually asked NIOSH to review -- to

do anything at this point.

MEMBER ZIEMER: Well, I'm kind of wondering if NIOSH is thinking about an addendum or a revision of the ER that you --

MS. COOK: Bob, --

MEMBER ZIEMER: -- would react to. That's sort of thinking -- the thinking I had. As a matter --

MS. COOK: Yeah, great question, Dr. Ziemer. So, I'd like to speak from our perspective. We have been investigating these issues as they come in. Our expectation was that we would be tracking these issues with that matrix, where we would be tracking those issues that required maybe a little bit more back-and-forth discussion. And that's where we're at with that, is we've looked at it. If the work group wants to take up some issues and have a more formal response from us, we can do that. And on that topic of still continuing to receive information, Steve, did you say that you received Dr. DeGarmo's slides? Because we didn't receive those, and I don't see them on the web.

DR. OSTROW: Well, it's not on the web for sure, as of yesterday. I don't remember quite how I got it. But I could (indiscernible) I got an email --

DR. ROBERTS: Can I step in here and just clarify that the reason the slides were provided to SC&A is because Dr. DeGarmo needed assistance with running the slides today. So, it wasn't official distribution.

DR. OSTROW: Oh, okay. Yeah, I didn't do anything with them. I just looked through them quickly, so I know what's coming. That was it. You'll get the full presentation soon.

MR. CALHOUN: Yeah, this is Grady. I just want to add a couple things here. I think, number one, for sure we got to make sure that we get all the information that you guys have. And to me, Dr. Ziemer's question makes a lot of sense in that it -- it -- to follow past operations, it seems that we should get that information and provide our analysis of that information. If it's new, how we would deal with it, and how it would affect our current approach. And then SC&A would look at that and determine whether or not they believe that -- that that's appropriate. But the first step certainly is to make sure that we have all that information that is available out there. I think we shouldn't probably be evaluating an ER if you're considering information that wasn't available for that ER. So, I think Dr. Ziemer is correct in asking the question, and I think that the flow path should be that we provide the products on -- based on if we believe there's new information, and then we'll alter our conclusions based on that. I -- I -- that's my opinion on this, and I think that's how it should probably go.

MEMBER ZIEMER: Well, if I --

DR. TAULBEE: This is Tim. If I could --

MEMBER ZIEMER: Go ahead, Tim.

DR. TAULBEE: Okay. This is where the issues matrix that Steve mentioned comes into play is that we had issued the ER, SC&A had issued an interim report review of our ER, and they're continuing to review our ER, so we don't have a final answer on that ER. During this whole process, we've been getting additional information and new information that Steve has begun to add into this issues matrix. And this is where the work group needs to meet and -- and come to a discussion of what -- which of these

issues need to be further followed up. And as Grady is pointing to, that's where we would issue an additional white paper or report or something that would be a response to one of those that then we would -- that then SC&A could review.

So, we're kind of at that beginning phase here of which of these are -- have not been addressed in the ER and -- and which ones have and which ones are of interest to the work group. So, that -- that's where we're at in this process, if that makes sense.

MEMBER CLAWSON: It actually does, Tim, because if you think about this, if we would have had the work group, this probably would have been done a little bit differently, correct? And part of the thing is, is that we have -- this has been something new because we haven't really got any new information about Pinellas for quite a long time. And then for Dr. DeGarmo to start bringing in new information. And I agree, the path forward, this is -- you're correct in how we need to be able to go.

One of the things we need to be able to do is evaluate the information that is coming in. We need to sit down as a work group and be able to proceed forward with this. This -- this one I think is -- is a little different because we didn't get to have the work group, but we've got all this information coming in. We need to get started on it. We need to have a path forward. And so I think this is what we felt like the best way we'd be able to do this. So, are there any other questions on that, or anything else that we want to put forth before I turn it over to Dr. DeGarmo?

MEMBER BEACH: No, I'm just curious. So, -- this is Josie. So, this information is available to be given to NIOSH. I know all the documents that

have been submit -- submitted have gone to Rashaun, except for these slides, which are being presented now. And so, that would be the path forward, I'm assuming, for NIOSH to take this on. Is that correct?

MEMBER CLAWSON: That would --

MS. COOK: That's true. We've been receiving them as they've been coming in and looking into them if they have any new information that we haven't considered before or any impact on our ability to reconstruct dose.

MEMBER BEACH: Okay. So, this stuff is not new to you at this point?

MS. COOK: No.

MEMBER BEACH: Okay. All right. So, that's all I have. Thanks.

MEMBER CLAWSON: Okay.

MEMBER LOCKEY: Josie? Josie?

MEMBER CLAWSON: Go ahead, Lockey.

MEMBER LOCKEY: Josie?

MEMBER BEACH: Yes.

MEMBER LOCKEY: Yeah, from what you say, I would expect all the information would go to Rashaun, and then she would distribute it. That's --that's the path that's in place.

MEMBER BEACH: Correct.

MEMBER LOCKEY: Okay.

MEMBER BEACH: And as Maddie indicated that is happening, so.

MEMBER LOCKEY: That's perfect.

MEMBER BEACH: Yeah, exactly.

MEMBER LOCKEY: Okay.

MEMBER CLAWSON: Okay. With that being said, I'll turn it over to

Dr. DeGarmo.

DR. DEGARMO: Can you hear me okay, or?

MEMBER CLAWSON: Yes.

CHAIR ANDERSON: Now we do.

MEMBER BEACH: Yeah.

MEMBER CLAWSON: Now -- now we hear you.

DR. DEGARMO: Okay. I'm fighting with how to get seen, so.

CHAIR ANDERSON: We see your --

DR. DEGARMO: Okay.

CHAIR ANDERSON: We see your slides, but.

DR. DEGARMO: Okay.

(Whereupon, Dr. Anderson and multiple others speak simultaneously.)

DR. OSTROW: This is Steve. Bob Barton, you're running it, right? So, I think you should go into view.

CHAIR ANDERSON: Yes.

DR. OSTROW: And do full-screen mode. Okay. Go click on view and go to full screen. Nope, lower than that. No, under -- okay. Where it says file, home, insert, draw, that line, go where it says view, and then click on -- there's a full screen somewhere there.

CHAIR ANDERSON: Click on view.

DR. OSTROW: Yeah, click on the view.

MS. GOGLIOTTI: You can just click on the orange bar. There's the play symbol at the top.

MR. BARTON: Did the slides not appear? Because...

MEMBER CLAWSON: No, they disappeared.

MR. BARTON: And I just need to get it to where I can get it to full screen, but I did not see that in view, Steve, so...

DR. OSTROW: I'm looking.

MR. BARTON: See, it's on view.

DR. OSTROW: Yeah.

DR. DEGARMO: I'm happy to work with whatever works for everybody else.

MR. BARTON: I mean, usually slideshow --

MS. GOGLIOTTI: From the beginning.

MR. BARTON: Yeah, I know. That's... Can someone let me know what they're seeing right now?

DR. OSTROW: Yeah, they're seeing the slide, but with the preview slides on the left.

MR. BARTON: Yeah. Okay.

MS. BEHLING: Bob, this is Kathy.

MR. BARTON: Yeah.

MS. BEHLING: If you go to the bottom of the screen where you see notes and you go to the right, the fourth symbol should open up to full screen. You see notes at the bottom?

MR. BARTON: That's not what's appearing on my screen, unfortunately.

MS. BEHLING: Okay. Or as Rose said, if you go to the top, the same symbol is there. It's the fourth or fifth symbol. You're getting close, right there. That's it.

MR. BARTON: Yeah, but I mean, it's not getting rid of the sidebar

there. I usually don't work with PowerPoint, but that's all they had for this one, so. Let's see what we got here.

MEMBER ZIEMER: It's a slideshow in the middle of the --

MEMBER CLAWSON: Yeah, there you go.

MS. BEHLING: Okay. There you go.

MR. BARTON: Okay. Sorry about that, folks.

DR. DEGARMO: Well, thank you, Bob, for -- for helping me with this. I really appreciate it. And before I forget, I just want to make a couple of mentions. First of all, I really appreciate Dr. Roberts providing me with the assistance of being able to get the slides shown and support on to the appropriate procedures as how to make a presentation like this. I'd also like to thank Dr. Anderson for providing me with an invitation to be able, for once and all, represent the Pinellas folks who have sat patiently for years and years and years, hoping that their voices would be heard at some point in the future. Bob, again, thank you. And if it wasn't unethical, I would give you a wrist guard because of all the slides that you're going to have to help me with. And I want to thank all the people at Pinellas for having the trust in me to be able to represent them in an appropriate way.

If you want to go on to the next slide, that would be great, Bob.

Okay. The other thing I want to mention is I do have and submitted to Dr. Roberts, I think it's, a 34-page bibliography. The reason that I wanted her to provide that to everyone is so that you could have a listing of all the documents that I have used to inform this particular presentation. I also want you to know that those documents, I think I have 99 percent of those documents, and at some point, if they should be transferred over to SC&A,

that's going to be -- we're going to have to discuss that, because I have over 194 contracts for Pinellas research and development and testing contracts alone. So, it's not going to be an easy transmittal, but I'm happy to do that.

Something DOE said yesterday was that if you know where the mission is going in terms of a particular facility, that will help you identify where to find the documents. So, I wanted to start a little bit with the context of things, because it really helps us better understand not only what the missions are -- and the missions have been mischaracterized for years and years and years and years. Pinellas did a lot more and was more involved in nuclear weapons production and with radiological materials that had been -- than has been previously illustrated or discussed.

I don't mean this to be a historical overview. What I mean to do, or what I'm hoping that you'll take away from this, is we have a lot of holes. We have a lot of concerns. We have a lot of issues with the way in which the TBDs have been done, partly because the information hasn't been there. Again, I use DOE's method of finding materials. So, I have been very fortunate in working with a lot of the national labs and other places in getting the materials that we need.

So, hopefully by going through this entire presentation, you'll have a better sense of what Pinellas was, what Pinellas did, and how they managed their radiologic concerns.

Okay, Bob.

Okay. Quick review. The basic mission of the Department of Energy was threefold in the production of nuclear material, manufacture of nuclear

weapons and components, and engaging in research, development, and testing programs for the nuclear weapons programs. And what we do know is in the '60s, as was mentioned previously, DOE in Albuquerque, its predecessors, oversaw the primary part of the nuclear weapons production facilities, their security, and budget. And as you can see, Pinellas is included in this initial oversight under Albuquerque.

Next slide.

One thing that seems to have been missed is that DOE did not think it was responsible to provide the day-to-day management of facilities. So, what they did, in terms of them and their predecessor agencies, was to contract with private companies. Those private companies and corporations would be the principal responsibility of whatever these facilities were. In our case, in Pinellas, we're talking about General Electric. If you go back and look at some of these original agreements and some of the original contracts, many of these facilities or multiple facilities would be operated by the same company or corporation. So, if you look at the history of GE, you notice that it was involved in the oversight of several different facilities across the United States. With DOE only providing oversight for private contractors' performance and in return for having this kind of hands -- hands-off attitude, most of the companies involved received a fee or other compensation while DOE ignored any transgressions that was committed by that particular company.

Next slide.

So, what we're looking at here is the history of award-fee contracts which provide additional profits or a fee to the company based on these

periodic evaluations of the contractor performance. And what we see throughout the history of Albuquerque operations with their particular companies is the amount of fee focused on production and increasing number of units and paid less attention to the health and safety of the workers. Another benefit that these corporations and companies had was they had the ability to shroud themselves and their contractors in secrecy. And so, by doing this shroud of secrecy, a lot of the companies and contractors were exempt for any liability for violation of health, safety, and environmental regulations. Contractors were further protected against financial risk, and they pretty much were able to do whatever they wanted to do when they wanted to do it and never being held accountable.

Again, the perfect example would be GE. And in this particular case, GE Nuclear Devices, or Pinellas, to monitor and report its own radioactive releases and radioactive exposures throughout the entirety of its contract. And the different citations are provided in parentheses if you're wondering why those numbers are there. So, once again, it is unclear whether or not the records of these exposures are even accurate or whether they were ever even reported. And that is something that has to be taken into context. If you don't have a full record, how are you assuring that you have the highest available dose for any one individual? How do you know that they're not under represented? So, it leads to a lot of issues. And we've experienced this across the United States in a lot of these facilities where the contractor was responsible, did its own recording, either lied about it, didn't do it because it wasn't relative to the fee-based award.

Next slide.

The other important thing that was mentioned is on behalf of the Department of Energy and the predecessor agencies, Albuquerque also had a special contract arrangement that specifically covered research, development, and testing. And in my opinion, based on years of reading the materials available, this is really overlooked and misunderstood. Because Pinellas, its central and critical role was really in conducting research, development, and testing, far beyond just neutron generation -- generators and RTGs.

To one individual that I spoke with at Los Alamos, GEND was considered the think tank of the complex, that when there were difficult problems that emerged throughout the Albuquerque oversight, it was GEND who was tasked with trying to figure out how do you remedy those issues and problems. So, in general, what we seem to have learned from the various contracts is that there's applied research necessary for extensive production and development work, there's the receipt of basic product designs from Sandia, with the construction of a sufficient number of those products at GEND to determine the factors and parameters whose variations could cause production difficulties, and GEND did much more extensive testing than has been identified previously.

Next slide, please.

Okay. So, not only did I uncover to this point, there are more out there, and I haven't received them yet, but I expect the data drop any time, is I uncovered 194 contracts through Albuquerque. But it's important to know that GEND had additional and independent contractors with -- or contracts, excuse me, with all of the following facilities. That means that if

we are following the missions and where the missions went once GE closed, or missions sent to GEND, we have to look at all of these additional places. Mound, University of South Carolina, Hanford, Los Alamos, the SNAP Project, "Top Hat," Holmes & Narver, Navy, Army Electronic Technology and Devices Lab, GEXF, Eagle-Picher, Bendix, Hazleton Nuclear Science, U.S. Army Missile Command, and the Catalyst Research Corporation. To the best of my knowledge and my search for data, most of these facilities have not been contacted up until this point about any of the exchanges that they had with Pinellas. So, one of the things that might need to be uncovered is some additional work in these areas, although I do have some of this material.

Next.

Just to kind of give you an idea, I wanted to share this. This was given to me by Sandia National Labs to kind of under -- understand the Sandia DOE, DOD interfaces and weapons programs. And as you can see, Pinellas is certainly listed in this chart on the left-hand side. So, I don't know if you want to take a minute and look at this, but I think it's important. We also have some interface between Los Alamos, obviously, and Lawrence Livermore that deserve to have more attention in uncovering Pinellas' information.

Next.

The other interesting fact is if you look across the employment of who actually worked at these facilities, at the height of the Pinellas Plant operation, there were approximately 2,500 people that were employed there. And interestingly enough, in a comparative analysis between GEND and other facilities, we have a large list of scientists and engineers employed

by Pinellas for the size of the plant that would extend far beyond just work in nuclear generators and RTGs. There were 42 scientists, 203 engineers, 492 other professionals, 10 Ph.D.s, 84 MS degrees, and 393 bachelor's degrees. And again, this is very comparable to some of the numbers that came up in the research to larger facilities in the ALBO (ph) district.

Next.

It is important to recognize, again, when we're questioning some of the -- or the lack of responsibility of GEND, it's interesting to look at some of the special relationships and why there might be less focus on health, safety, and environment than there was on other things. Again, they were allowed the assembly of a cadre of technical personnel whose experience and product knowledge to solve production problems was extremely important to the success of the DOE's mission. By virtue of GEND's range of work from basic scientific research through technology development and testing, GEND served as a major intermediary between the scientific community, their ideas and knowledge, and the private sector's ability to translate that knowledge into nuclear weapon products. As a result of the work, its extensive work, their ability to do the kind of work that other facilities could not, they became a key part of the national security enterprise under the auspices of the NS -- NNSA.

Lots of interviews in the reading I have done and in the materials I have received always mentioned that GEND served as a think tank, a tester of ideas, we were told, and products while addressing some of the toughest issues. The other thing that is noted in some of the more public work is that I was not only told by someone who worked at the facility through an

interview, but one of Adam Weaver's earlier interviews with you-all stated that Pinellas established a research and development lab located within the building that was not readily identifiable to workers not assigned there. In other words, Building 100 was a building within a larger building. And GEND was not encumbered with concerns regarding monitoring or radioactive exposures until it was called out by the Tiger Team.

GEND was not required or -- I'm sorry, not DOELAP accredited. That -- one of the things that were drawn out through the interviews and through the Tiger Team reports is that it was often the case that Pinellas couldn't get this DOELAP accreditation, but they managed to do their work under the voluntary laboratory accreditation program. And they were never held to the higher standard of the DOE.

Next.

We also -- through a series of interviews, the ALARA goals were not implemented prior to the Tiger Team. And the only way the Tiger Team was able to incentivize this kind of 80 percent bioassay participation goal was to use the cost-plus award fee to encourage Pinellas to comply. And this is inter -- this is from an interview in which the person said, I remember it coming in as a response to the Tiger Team. Numerical number was to be used. It was incentivized in the cost-plus award fee structure.

Next.

So, what we need to take into consideration in -- in putting together any kind of dose reconstruction is exactly what is being reported in the period where GE was doing their own monitoring of releases and exposures. They were able to do what they wanted, how they wanted, when they

wanted. GE was also known to bring in projects from their other facilities without necessarily going through any kind of formal permission to do so. And when the Tiger Team came to be and found so many issues throughout the GEND plant, and one of the major contractual changes that was going to be made in which GE would have to respond to was that there would be no more immunity from liability. GE notified the that it would terminate its contract to operate the facility in May -- on May 31, 1992.

A couple of things that I thought were important -- as examples of the specialized research they did, and by looking at these quickly, we get a better sense of kind of the range of work that they were able to conduct from the research, technological development, and testing. And things that have not been discussed thoroughly, or just mentioned briefly, that have had a significant impact not only on the workers, but on future work being conducted by General Electric.

Next slide.

So, I was able to retrieve this diagram from the Department of Energy. And this is the Heather project that we were discussing previously. The Heather project -- again, just to give you the schematics, this is one of the buildings that it was, or one of the areas that it was assigned to. And I want you to remember, as we talk about this and look at this, interview after interview after interview of individuals who worked in this area have always said, excuse me, the major problem of working in the Heather project was that there were no -- or the walls did not go from the floor to the ceiling; they were only partial walls. And this becomes important as we move forward.

Heather does remain classified. However, data that I obtained -- and I obtained it legally, I didn't break any laws in getting it -- reveals that one aspect of Heather involved an early model of a gas transfer system for nuclear warheads. The GTS feeds tritium into the primary shortly before it's detonated. The boost -- this boosts the yield from the fission reactor by facilitating the fusion of hydrogen isotopes. This data has been supported through multiple employee interviews.

We know that over 3,000 gas transfer systems were made specifically for the W76 warhead between 1971 and 1988, which is one of the products of GEND. Excuse me while I get a drink of water. They were also used in other weapons systems produced at GE, which is the W68 Poseidon, as mentioned, W76 until '87 when it -- the Trident I, the W88, the SRAM2, the SRAM T, and it was also sent over to the United Kingdom for their Trident program.

Next.

And this was retrieved. It's a hand drawing, of what the gas transfer system looked like that was in -- that was put into the W76 warhead that I was able to retrieve from the Sandia.

Next.

The Heather glassing shop was assigned to several different areas. One of them was -- and these are just some overviews of what building it was located in, the area that it was assigned to, and some of the operations and radiologic materials that were also involved in those particular operations of the area. So, here we have Area 327. They did a lot of glass blowing in here, parts, development, and production and soldering. We

have Americium-241 and 243. We have Californium-252, including transuranic tritium and uranium.

Next.

In Building 100, Area 300, we had more soldering, more development and production, and more glass blowing. In this area, the only radiologic reported is uranium. The electronic beam welding shop for Heather was in Area 331. We have more development and production in electron beam welding shop for fabricating parts and subassemblies in support of classified components and neutron generation -- generator production. There was a glass cutting station using wire saw, and here we have uranium and uranium dioxide.

And then we have Area 336, where they did X-rays, test cell operations, classified component testing and inspection, Heather testing, and here we have uranium.

Now, before I forget to mention this, some of the interviews, and I may go -- I may have already put it in here, but some of the interviews we conducted approached -- or tell us a few things. That the uranium-doped glass was done by glass blowers at Pinellas. This has been disputed for a very long time, but a couple of the glass blowers that I was able to interview several years ago talk about the -- the -- their -- their assignment of taking the borosilicate glass and then being able to blow however they do it. I can't tell you how they do it, but that they were the ones who often added the uranium to the context of that.

We also have several folks who are glass blowers who said they would take the uranium-doped glass and actually at Christmas and birthdays and

other celebrations would take the glass and blow it into different kind of, like, animals, dogs, and cats and whatever else that people wanted. So, this is an area that we really need to look at more because there does seem to be a lot of reporting about the glass being doped at Pinellas in the Heather area rather than always coming in already doped.

But in 1998 (sic), there was an unusual occurrence report, and all of the information is up there for your info -- for your -- for view. It occurred in the E-beam welding shop where the glass development and production occurred. It occurred on March 7, 1988, when there was the failure of an X-ray shield on an E-beam welding. Initially the E-beam welder restarted because identification of the backfire noise was not made. On April 14th in 1988, it was discovered that the lead glass plate positioned in the window opening was lying on its edge. The cause, the E-beam backfire of welding of the final assembly and failure due to equipment design.

They also determined when reviewing this incident that the other E-beam welders that were used across the plant had the same structural flaw. The regular and preventative maintenance on the E-beam welders had not been previously included. In other words, they hadn't checked for the tightness of the window support bracket screws, which could have prevented this occurrence. Eleven employees were exposed, but because there were inaccurate, uncertain, or no dose readings that resulted from these exposures, someone determined that they would assume that the exposures were under 400 millirem. So, we don't really know what that exposure was.

Additionally, two MC3321A Heather assemblies were scrapped due to excessive weld penetration of the electron beam weld of the header to the

cap assembly, and the subsequent investigation of these failures revealed that over-penetration conditions were caused by equipment electrical malfunctions. DOE has acknowledged this incident. I have not seen it acknowledged by DCAS or available for consideration by them in any of the TBDs.

Next slide.

Okay. So, we have some additional problems that were not reported with Heather. They were unable to conduct appropriate shock and vibration tests. Again, Heather was consistently plagued by X-ray shield failures, excessive weld penetration of the electron beams to the header -- of the header to the cap assembly continued to be a problem, and there were differences between the component production specifications, and the weld specifications were also noted as being a problem with the gas transfer system.

It was not until 1994 in response to Tiger Team findings that Martin Marietta actually acknowledged the problems with Heather, and they determined that two air handlers serving Heather test cells in cleanroom, Areas 116 and 330 would be replaced. However, there is no mention in the TBDs and site profile and so forth of Area 116 ever being identified by DCAS or ORAU as part of the Heather project, which leads to a lot of questions about why wasn't this being done in the Heather section of the facility, what was in 116 that would have allowed for these gas transfer systems to have been done in the -- the Building 100.

They noted that the present units were 30-plus years old and had reached the end of their useful life. The maintenance time and costs

escalated, and equipment reliability and production areas had been deteriorated. The equipment did not -- the existing equipment did not meet the American Society of Heating Refrigerating and Air Conditioning Engineers requirements for outdoor air and temperature humidity and cleanliness parameters. They also determined that the existing units were less than desired for the production area. The continued maintenance and use of the existing equipment was only feasible alternative to replacement, and reliability decreased in terms of Heather with disruption to production schedules and maintenance costs that increased.

Next slide.

So, the evidence reveals that Heather is not mentioned in the -- the TBDs and site profile and it could be a result of it being classified. It's not fully characterized. Uranium exposures to employees occurred but were not acknowledged by DCAS. There's no acknowledgment and discussion investigation into the glass blowers who claim to have doped the glass with uranium themselves. And again, if there was an exposure to workers and there are no walls that extend to the ceiling, uranium contamination could've occur site-wide.

The ion accelerator is the second product, if you will, that comes under the contracts, and of course this was Building 800, as was discussed by Ms. Cook earlier.

Next.

Okay. Again, she already went over some of this. So, where I would pick up is that, again, it was used for ion implantation work. It was relocated to 800 in 1979. Not only was it involved in target assessment, but

it was used for material analysis work and setup used in scatter chamber for nuclear reaction and Rutherford backscattered analysis of materials. It was known for its ultra-high -- ultra-high vacuum beam that was eventually added so that this particular ion accelerator had the ability to work in a lot of unique areas.

What we do know is that the following radioactive materials were used with the ion accelerator: plutonium, tritium and tritium oxide. Plutonium has not been readily acknowledged as being in the ion accelerator, Building 800. Next.

This is just an overview that I thought I should include just to give you a sense of some of the work that was actually done in Building 800, so you could look at not only some of the methods that were used in measurements but also the limitations, what could and could not be determined as a result of the use of the ion accelerator.

Next.

So, a comprehensive overview. The evidence suggests a comprehensive overview. The ion accelerator is missing. There is an overwhelming lack of environmental, health, and safety information. The presence of plutonium in Building 800 has not been acknowledged by DCAS or ORAU. It's not mentioned in the site profiles, TBDs. And more attention needs to be paid in respect to the ion accelerator and its implications for worker exposures.

And I just -- yeah, thank you. Those are the two sites -- two slides for the references that I took information from.

Okay. On we go. Next slide. Okay.

I thought this was important. And it has to do with the available maps of the Pinellas facility, GEND. Again, the importance of maps are -- is they provide us windows into information that help us visualize the data while providing these insights into that data. And they can illustrate something way beyond mere statistics. And it also helps us determine whether the doses that are being reconstructed make sense against these backdrops. Next slide.

So, this is the map that has been historically used by DCAS and NIOSH to illustrate the (audio break).

Next slide.

This is the slide that came from the -- or from the Department of Energy that was actually required as one of the conditions to the Tiger train (sic). And what you can see here is really a great differential in what that first floor actually looked at -- like, because we're beginning to see all of the little areas within areas. What I have been told is a lot of the research occurred over to what would be the left side of the screen, some of those. So, by relying on the typical map, we're not getting a full understanding of the variety of tasks, research, development, testing, and so forth, and the location of radiological materials in a comprehensive and accurate way.

Next slide.

I also wanted to include the outer buildings, so you'd get a better sense. Building 400, which is in the middle there, is the RTG building. These two were required by the Tiger Team.

Next.

This is a picture of Building 400 after its expansion to accommodate

the milliwatt generator RTG program. And remember what is important here, again, is that the walls do not extend to the ceiling in Building 400.

Okay. So, the evidence suggests that the Pinellas Plant accidental discharge protection slug control plan was written in response to many of the environmental, safety, and health issues identified in the 1990 Tiger Team report. And as part of correcting these deficits so the Tiger Team could finally come to some conclusions about what happened, when it happened, how it happened, how extensive were the breaches, they went and demanded that Martin Marietta go through the process of actually updating the maps. We've never seen such a detailed map. I've never seen one. I haven't seen one in any of the TBDs, nor have we been ever presented with pertinent information for all of these different areas. I don't know if they're overlooked. I don't know if they've been ignored. I have no -- you know, I have no understanding of why so much of this information has not been included, because it does bring into the question the adequacy and accuracy of dose reconstructions, which I will also get to further in this presentation.

It has also had a negative impact on those of us who work with workers and the workers overall to analyze the potential exposures because our claimants and our former workers will report working in a particular area, and people will say, well, that doesn't exist so we can't -- you know, we're not including that whereby, this second map actually shows, wow, that did exist. And somebody needs to look at that, and that has not been incorporated into the doses as far as I know, and it has not been incorporated into the DOL prior to those things coming in for dose

reconstruction.

Okay. And these are the references.

One of the things that I consistently hear over and over and over again is that none of the information that I have been presenting or providing is relevant. Again, I've been accused of doing a historical analysis and not a methodological analysis, but the way that I learned methods at the University of Michigan, it's all a very important dance of, you know, understanding context, understanding where things are located, listening to what people have to say, that all of those things are important in determining any kind of statistical model that's put in front of us. So, over and over and over again I keep hearing this.

And one of the things is -- GE didn't do very much. And so, what there has been, at least in my experience in the reading of the materials, is that the vital role of research, development, processing, and testing of nuclear weapons has been mischaracterized, particularly in the case of RTGs. The assertion -- one of the assertions that has been made was GEND was not a significant actor in the nuclear security enterprise.

Next.

But the research reveals that Pinellas was considered one of the largest facilities in the NSE. And according to the Nuclear Matters Handbook, the nuclear security enterprise sites are responsible for carrying out, as we all know, work associated with providing the United States with a safe, secure, and effective stockpile. Quote, among the largest of the NSE facilities are Idaho National Engineering Laboratory, Rocky Flats Plant, Mound, Pinellas, and Hanford. Again, the importance of GEND to the entire

complex is revealed in these 194-plus nuclear weapons contracts that I was able to retrieve from Los Alamos.

Next slide.

Questionable assertion number two. GEND temporary plant was insignificant; nothing of importance happened there.

Next slide.

The temporary plant operated from 1956 to 1957. It was located at 2543 24th Street North in St. Petersburg, Florida. It was established while the actual Pinellas Park Plant was under construction. It has -- AEC recognized the work of the temporary facility in 1957, and the DOE has fully recognized it despite the fact the DOL has not acknowledged it, and we were not able to include it when we filed the original petition back in 2019.

It's also important to know that a classification appraisal of the temporary facility and the Pinellas Park Street or St. Petersburg, Florida was made on April 15th and 16th in 1957. We get a clue as to what might have been going on at the temporary facility by recognizing that GEND was also referred to as General Electric Aerospace Neutron Devices. The comprehensive environmental assessment and response program also states that the temporary facility trained employees to manufacture tubes for RTGs. It also engaged in activities to train employees with the production of neutron generators, and all the work was transferred to the permanent facility in 1957. It's interesting because this is one of the earliest acknowledgments of RTG work taking place at Pinellas prior to 1975, and it seems to challenge the existing narrative and is something that deserves to be further looked into because it is possible that more than just -- and

there's reasons for this assumption too, which we'll get to -- that RTG work actually began sooner.

Next.

GE was minimally involved in RTG work. It is one of the other assertions that I have -- I've heard.

Next slide.

They were involved in the production of two types of RTGs. The space examples are SNAP-27 and the multi-hundred-watt RTG that was used -- that was built in anticipation of NASA requiring higher power RTGs, so they contracted -- AEC contracted with GEND to conduct an effort for RTG with a power capability in the 470-to-2400-watt area. And then the second was in weapons, the milliwatt RTG with a power capability of 4 to 4.5 watts.

I want to talk about the milliwatt generator project. It was a part of the military applications that was provided oversight through Los Alamos National Lab. The congressional approval of Project 74-2A in 1974 allowed the AEC to comply with DOD requirements to incorporate weapons safeguard into nuclear weapons system. It was known as "Permissive Active Link" at an annual cost of -- wow -- two -- over two million dollars. The original sites chosen for this project included Bendix, Mound, and GEND, and eventually were expanded to Los Alamos, Sandia, Westinghouse, EG&G, Mound, and of course, General Electric. And each production operation as shown above was located in the assigned facility.

The major task was to fabricate MC2893A heat sources, or the four-point watts and the MC2730A -- for the MC2730A radioisotope thermoelectric generator, and they were to fabricate the MC3599 heat

sources, which were 4.5 watts for the MC3500 RTGs. Los Alamos fabricated the heat sources for this weapons program, and from 1981 to 1990 more than 3,000-milliwatt generator heat sources were fabricated and shipped to GEND for assembly into the milliwatt generator program. So, what this means is that we have RTGs that are being built and fabricated prior to the introduction of the milliwatt generator program in 1981.

Next.

Here are all the various things that GEND assumed responsibility for in this particular program. Production, capability (sic) testing and evaluations, destructive testing, impact testing, collection of neutron emission and thermal power emissions, vibration tests, tool made sample activities, surveillance unit feasibility, RTG shelf life and stockpile evaluations. The -- this schematic here was referenced by Ms. Cook earlier, and this was used in the ORAU TKBS-0029 second revision. However, this picture is originally from the General Electric Company's 1982 safety analysis report, expansion of Building 400 RTG facility. And this distinction is important because it illustrates one type of RTG that was introduced at GEND through the milliwatt program. However, given that we have different RTG being produced at GEND, these two things are not interchangeable. The dimensions are different, the schematics are difference -- are different between the space and the military. And I think it's important that we point out the differences.

Next.

The other curious finding in all of the materials I received was that in 1972, folks from the Pinellas area office and one of the health physicists

attended a meeting that was held complex-wide for DTPA chelation. Please don't ask me to say that big, long name, because I will never pronounce it correctly. But the series of -- it appears from the documentation and all of the materials related to this conference, if you will, there was a great concern of plutonium exposures, especially through GEND's RTG program. And as a result of attending that conference, the officials that attended decided to bring back with them the training and the chelation agents for the removal of internally contaminated radionuclides in 1972. This predates the introduction of -- the supposed introduction of the RTG program by three years.

Next.

We have the inclusion of Pinellas -- I wish this had been a little clearer -- that they were part of the plutonium studies that were being conducted by the DOE health and mortality studies program. Interestingly enough, talking about where things are found, this actually came out of a file that I retrieved from NARA in Atlanta on Mallinckrodt Chemical Works. It was in their archival materials. It was the first clue that I had that Pinellas was part of this plutonium study project.

Next.

Interviews that have been conducted stated that RTG work actually took place in Building 100 before being moved into Building 400 in approximately 1980. There has been this historical assumption that everything to do with RTGs was in Building 400. So, this interview -- this person says that Building 100 had another building located within it that was dedicated to specialized research, development, and testing, which confirms

Adam Weaver's interview. And a minor reference is made again to Building 100/Area 176 as an RTG lab. And this was retrieved -- and was retrieved not only through an interview, but I also went through the Department of Labor site exposure matrix to find that this was actually verified within that. There is no information other than these two references that have been discussed by DCAS or ORAU that mentions the -- the -- the RTG program actually occurring for several years prior to it being moved to Building 400. Questionable assertion number four: No plutonium ever released.

Next.

We have heard the claims of global fallout levels, and unfortunately for those of us interested in exploring this further, there is no reference material that can substantiate this. Experts that study global fallout have said that in order to produce an accurate baseline or whatever background level or whether or not an area even received global fallout, you have to monitor, in addition to plutonium, Cesium-137, Strontium-90, Iodine-131, tritium, and Plutonium-239, and Carbon-14. And so, we are left in accepting this assertion without having any available documentation to actually determine whether this is a reasonable assertion or not. We don't have monitoring data for these additional elements, at least I have not seen it, and I've not seen it available in the existing data.

The other thing that I find very interesting is that if you are dealing with a global fallout level, the plutonium levels, according to this same -- these same individuals, would not increase over time. And as evidence has shown, they have done so at GEND.

Next.

So, this is one of the early monitoring reports where we have some summary of water monitoring for plutonium, and we see that in '76, things are below the maximum detectable level for both 238 and 239, and then all of a sudden in '77, 238 is BMDL, but we go up to 2.9, which is beyond minimal detection, and in '78 they go lower again.

Next.

I found this particularly interesting because I was going through the environmental monitoring reports, which there are quite a few, and the two examples that I used is of all the soil samples analyzed in 1994, the Plutonium-238 levels were below the detection limit, but the plant observed Plutonium-239 above the detection limit in five soil samples collected in 1994. We have the same kind of occurrence occur in 1995. Not sure how this is possible, given that all of the materials I have read on global fallout would say that this would be something not expected, not to mention that all the plutonium other than sources would have been removed by 1994 and 1995.

Next.

Questionable assertion number five: The whole bioassay discussion.

Next.

According to NIOSH, of the 12 recorded samples with potentially positive plutonium results, five were pre-employment samples taken before worker performed any RTG work. There was no record of follow-up sampling conducted for the pre-employment samples. These types of samples are not indicative of exposure. Rather, they are a baseline sample to be used as a reference point for a latter bioassay.

Plutonium bioassay does not include plutonium bioassay taken in 1975 because it predates the RTG program and were collected during a period when no plutonium source term was present at Pinelia -- or Pinellas. The RTG program began in 1995, but there has not been any date to support the exclusion of this particular bioassay. It goes on to say seven of the potentially positive plutonium samples analyzed contained only Plutonium239, 240, four of which were included in the group of pre-employment samples. Four of the pre-employment samples and four others were part of this group. These samples would normally be discounted because of the ratio of Plutonium-238 to Plutonium-239 and exclude -- and excludes the sample because it does not follow the 238-239 ratio.

Next.

And here is the chart that has been historically presented regarding plutonium bioassays. And I think you're all familiar with it.

Next.

So, what do the experts say about no plutonium exposures? And these are challenges to NIOSH's assertions. Okay. The Tiger Team 1989 report identified an issue with bioassay sample submission compliance stating, Compliance with the rules on providing bioassay samples at specified frequencies has not been satisfactory. In 1989 bioassay samples were not submitted in accordance with GEND procedures. 70 percent of the required monthly samples and 35 percent of the required weekly samples were not submitted.

Next.

Other Tiger Team findings regarding plutonium. Site has not

established a background plutonium soil sampling location collocated with a background ambient air moderate -- moderate -- monitoring station. Failure to have such a location could bring into question the validity of facility plutonium sampling results. The Tiger Team goes on to say plutonium and krypton source term inputs are not completely documented. A procedure for determining annual krypton release estimates provided on January 26, 1990, as a result of this observation. Site personnel also indicated initiating of plutonium analytical result reviews would take place. This is after, again, Tiger Team.

The stack sampling equipment for Building 400, which has been installed for the purpose of detecting potential releases of particulate Plutonium-238 and 239 is not of isokinetic design. The filter for collecting this particulate is more than 15 feet from the sample extraction point and is downstream of numerous abrupt direction changes in the sample line. Additionally, stack gaskets and joints are leaking in both of the exhaust stacks.

Furthermore, documentation does not exist verifying the procedure has been reviewed since November 1987. These deficiencies can lead to the sample mass not being proportional to the total mass of material exiting the stack. The air sampling rate of two plutonium samplers, one in Clearwater and one onsite sampler five exceeded the optimal sampling rate, and the plutonium filter at the civil defense station had ruptured.

The rupturing of plutonium filters was reported to be -- or to occur fairly often.

Next.

And then again some more information from the Tiger Team about the annual review of environment monitoring procedures. And what they found upon their review was that the following information for the following procedures was not available: Plutonium stack releases for Building 400.

I'm going to stick to the plutonium here in soil on and offsite environmental monitoring. Chain of custody procedures for compliance samples and environmental evaluation samples.

Next.

Even ORAU has stated there is an occurrence of contaminated 238 plutonium oxide sources with levels exceeding the LOD of one in every 70 sources or less than six per year.

In an interview, RTG plutonium sources were one of the other major sources of external radiation at the Pinellas Plant. Table two of the 1995 ALARA report for the plant confirms this because a noticeable drop in the average and highest annual external doses to the workers occurred after the RTG plutonium sources removed from the site. The RTG operations and destructive tests on RTG units occurred in Building 400. The only tests they may have done on RTG units in Building 200 would have been the shaker tests. The completed RTG unit with the plutonium source sealed inside it went through the shaker test. This was a very different plutonium handling facility than others around the country. The glove boxes were only for product quality.

Next.

Another interview. An ORAU interviewer asked when was the 80 percent participation goal developed, prior to the Tiger Team visit or after

the visit. The interviewee stated it was developed at the time of and in response to the Tiger Team finding. I don't believe there were any ALARA reports prior to the Tiger Teams. The computer has bioassay, mostly tritium data. We did some plutonium bioassay for RTG work, but it was not required. We only did it by agreement with Albuquerque.

Next.

So, despite a partial sharing of information with you, DCAS has consistently and vehemently denied the existence of plutonium releases.

Next.

Interview in 2022. Workers in Building 400 did not have to give urine samples. When it was cold, workers sometimes held the RTG encased plutonium for the heat.

Next.

Interview. Another in 2020. Bioassay was for tritium, not plutonium.

Next.

We were asked. It was not a requirement. There were no follow-up samples requested. There were requests, and no one was ordered to leave a sample.

In an interview I just did with the Department of Labor, Savannah River Site Resource Center, the person who was -- who I was represented -- representing when they were doing their occupational history had the following information to share about the RTGs. The air monitors in Building 400 would constantly go off. I was often called to Building 400 to increase the appropriate monitoring levels of the air monitors so they would not go off so much. So, here we see a tampering of the air monitoring system.

There was also an open plenum with no return on air monitors.

Next.

We also have a case -- the first case I found of a plutonium uptake by someone who worked at the facility. Again, there's an acknowledgment that from '77 through '79, he worked -- she worked/he's worked in Building 100 on the RTGs and then a description of the 1980 through 1981 400 Building experience. And I have sent this in previously, but I bring it here again to remind you that there have been plutonium uptakes.

Next.

The claimant file reveals that there were plutonium uptakes in 1983 and in 1990. And again, just to summarize, the claimant worked in Building 100 and moved to Building 400 in 1980 and worked as an RTG assembler. First uptake found in the file occurred in -- on July 20, 1983. The second uptake occurred on January -- sometime between January 1st and March 31, 1990, and suffered a plutonium exposure above 100 millirems. This uptake was measured by a dosimeter. The claimant was assigned to routine work until the next results collected. We have no record of those next results at all. And then he only received a tritium bioassay in 1993 when he left the position.

Next.

Probably the most important piece of information I've received about plutonium bioassays results from a request, a FOIA request. And this was made in -- April 17th -- on April 17th of this year, where it is said, our search records at the very bottom our -- a search of our records failed to reveal any documents pertaining to your request. The National Institute for

Occupational Safety and Health does not maintain the type of documents you requested. So, where are those bioassay records?

Questionable assertion number seven: DCAS says we've got this. I have to ask, just based on what you've seen so far, do you really? And again, the references.

So, do you want me to continue? Do people need a break?

MEMBER BEACH: No, I'm okay.

DR. DEGARMO: Okay.

MEMBER KOTELCHUCK: How much longer are you going? We have been in continuous meetings since 11:00 a.m. here at East Coast.

DR. DEGARMO: Quite a bit more. So, that's why I'm asking if people would like to take a short break.

MEMBER KOTELCHUCK: I would very much like to.

DR. DEGARMO: Okay. Is --

MEMBER CLAWSON: -- we take a 15-minute break then?

MEMBER KOTELCHUCK: That would be fine.

DR. DEGARMO: I'm fine with that. I -- I just -- I know this is a lot of information, and it's taking a long time to go through it. And I appreciate the -- having the ability to present it. So, if we need a short break, I'm perfectly okay with that as well.

So Bob, leave the --

MEMBER CLAWSON: Let's take a 15-minute break then.

DR. DEGARMO: Okay. And we'll start up with the tritium issues after that. Thank you.

(Whereupon, a break was taken from 1:29 p.m. EDT until 1:45 p.m.

EDT.)

DR. ROBERTS: My computer is showing 1:45, so I am going to go ahead and do a quick roll call. Anderson?

CHAIR ANDERSON: Here.

DR. ROBERTS: Beach?

MEMBER BEACH: I'm here.

DR. ROBERTS: Clawson?

MEMBER CLAWSON: I'm here.

DR. ROBERTS: Frank?

MEMBER FRANK: Here.

DR. ROBERTS: Kotelchuck?

MEMBER KOTELCHUCK: Here.

DR. ROBERTS: Lockey?

MEMBER LOCKEY: Here.

DR. ROBERTS: Martinez?

MEMBER MARTINEZ: Here.

DR. ROBERTS: Pompa?

MEMBER POMPA: Here.

DR. ROBERTS: Valerio? Okay. And Ziemer?

MEMBER ZIEMER: Here.

DR. ROBERTS: Okay. Meeting can resume.

DR. DEGARMO: Are you all ready for me to start again?

MEMBER CLAWSON: Yes. Denise, if you want to continue, we'd appreciate it.

DR. DEGARMO: Okay. All right. Bob, are you good?

MR. BARTON: Yep, ready to roll.

DR. DEGARMO: Okay. You don't need that wrist (sic)?

MR. BARTON: I'll be okay.

DR. DEGARMO: Okay. All right. Moving on to some other issues with Pinellas Plant. I wanted to spend a few minutes talking about the tritium issues and concerns.

Next.

I have submitted this to you all before, and it's just the comparison of what ORAU had identified as tritium locations at GEND versus what all of the evidence and data I have collected suggests those locations are. Again, you should have those, but as all the information, it will be available by request. So, I went through, again, what ORAU -- ORAU had, and then went through the various environmental baseline reports and so forth from the Department of Energy for more identification.

Next.

And it's a huge discrepancy. And by failing to identify all of these locations, in this case in terms of tritium, we're reducing the probability that all of our exposure -- exposure pathways have been accurately identified and accounted for, which, once again, raises questions about the ability to conduct accurate dose reconstructions.

Next.

I mean, it's really, really important that we have all the pathways illustrated. And in an interview, indicated that they knew where trite -- tritide contamination would likely occur, which was typically limited to two to three areas within the operation line. He thought there might be more

causes of tritium contamination in destructive testing.

Again, this individual discovered that tritide exposures were occurring in an unexpected area via the bioassay results of a worker that was off-site for a long enough period of time for any soluble tritium to be eliminated from their body. And when that worker returned to work, the urine still had tritium in it, which had -- could have only occurred from metal tritide exposure.

Next.

In a quarterly health physics report from 1959, there's this whole paragraph that states during this quarter, the salt recovery operation required very close survey. The processing of trit -- titanium tritide materials of the Pinellas Plant led to several contamination spread incidents. This material is very difficult to contain in the hood system. And it goes on to better describe some of the issues with the tritium there. I'm happy to read through it, but.

Also, according to DCAS, the first incidence of tritium release was not until 1963. However, we see that there was contamination by these statements as early as 1959.

Next.

So, in other words, we have a four-year period where potential tritium exposures were not registered. From another interview: I participated in tube disassembly for defect analysis on the neutron generators. Failed neutron generators that came with all the parts in pieces from Building 200, where they had undergone destructive testing, were opened using a small lathe to determine the cause of failure. This included the tubes that were in

the generators. The lathe had a plastic shield, and the shield had to be up to use it, so the cutting and opening was exposed to the room environment.

The substrate inside will flake off as a powder and become airborne. We called these flakers. Some of the substrate would be gone without a trace.

I don't recall seeing an air sampler nearby. The defect analysis was a daily occurrence.

Next.

I was the materials representative for the plant and had to account for all the tritium that had ever been in the plant. A gram of tritium gas inventory disappeared. It was received at the temporary location in downtown St. Petersburg. The tritium disappeared from inventory around 1957 to 1958.

Next.

And there are my references.

Discussion of Krypton-85.

Next.

Krypton-85 had been evaluated and rejected for use for leak testing in 1961 because employees' doses were too high. And despite this assessment by a GEND health physicist, Krypton-85 went on to be introduced into one of the leak detection systems on September 24, 1963.

Next.

In one of the technical bulletins, Krypton-85 was used in two leak detection systems, RadiFlo and TracerFlo, as part of Pinella's quality control program for neutron generators. During some accidents involving either of

the two leak detection systems, open area radiation fields were temporarily present in the rooms that housed those systems due to Krypton-85 gas leaks. During those incident -- incidents, nonroutine external exposures to Krypton-85 gas occurred. The only potential significant sources of electron radiation with sufficient energy -- energy, excuse me, to penetrate the skin are Krypton-85 that is used with the two leak detection systems. Electron doses were monitored but not routinely recorded.

Next.

The shortfalls and problems associated with Krypton-85 were not adequately dealt with until 1993. And this is when Martin Marietta's specialty components finally address -- addressed the complaints that were filed in the Tiger Team report. That's a pretty long report, so I have provided the citation in which you can get a copy of this particular information about Martin Marietta.

Next.

What do the experts say about Krypton-85? In an in -- interview with a process engineer, and I received this via email, RadiFlo was a leak check system. Parts to be leak checked were placed in a chamber, which may have been evacuated first, I can't remember right now. Then a gas containing some Krypton-85 was left -- let in and held at a fixed pressure for a fixed length of time. And he goes on to describe what the actual process was. One of my concerns -- midway in the paragraph: One of my concerns is that Krypton-85 was stored behind me if I was sitting at the radiation counter in front of me in the Krypton-85 workroom, and a background only count would noticeably vary whether I was in the room or not for a

background count. I was the quality engineer for Krypton-85 process for years.

Also, one woman was the manufacturing operator there at the same time, and she ate her lunch just outside the room until I started and advised her to stop. RadiFlo was in Area 109, I believe. It was a series of about four small all-stainless rooms that each had an airlock-type door, and all were negatively pressured. Some rooms were test rooms and probably one contained the tanks.

Next.

The EPA even voiced concerns about Krypton-85 involving the value judgments regarding the necessity for and stringency of control of release being based on calculations and extrapolations rather than on experimental data obtained with living systems. Until the behavior and effects of radioactive noble gases in living systems are better understood, the basis for release regulations will continue to be founded entirely on radiation dose calculations. These calculations should be subjected to the scrutiny of in vivo experimentation.

Next.

Even the Air Force -- the disadvantage of RadiFlo is its inability in detecting leak rates greater than 10-5 standard cc/second. If the hole in the seal is large allowing gross leakage, the radioactive gas can leave the package through the same detective seal and escape detection.

And here are my references.

Okay. Thorium was identified at Pinellas.

Next.

The Department of Labor site exposure matrix identifies the presence of radioactive thorium.

Next.

Interviews with GEND CHP and a tube exhaust RTG employee. Here are the two interviews. The machine shop had some concern about grinding thorium welding rods. They would grind the tips to get a better weld. This was done as a dry operation short term before they stopped that activity. Thorium was limited to the rods only. The other interview also mentions the use of thorium welding rods in a May 2024 interview.

And we have no information on thorium whatsoever. I don't even know that it was monitored for, and that is something that needs to be explored, especially given that they were grinding it in the dry surfaces.

Next.

Dismantling neutron generators. This is really interesting. Oh, go ahead. I'm sorry.

This is a diagram I came across in many of the documents that I have received that looks at and discusses, you know, how does the neutron dismantlement process occur, who's responsible for what, and how. It's pretty detailed and, you know, I thought I would include it, and you could even look at it now. Again, I think I sent this in earlier, so you may already have it. And, of course, Pinellas Plant is on the bottom right side for neutron generators.

Next.

So, the research that I went through states that during the dismantlement process, components and hardware are sent to the home

production plant for further dismantlement. Evidence indicates that neutron generators for all of the weapons below were made by GEND and, therefore, would be returned to Pinellas for further dismantlement. And as you can see, there's ICBMs, SLBMs, surface-launched missiles, air-launched missiles, anti-ballistic, atomic-demolition equipment, missile -- other missiles, surface-to-air, and anti-submarine rockets. Once dismantled, the parts -- parts can be recycled with parts that were returned to the home production plant. So to date, there's no information or monitoring data that has been provided regarding the dismantlement process.

This is another area that seems to have fallen by the wayside. And so, some of the questions that we petitioners have are what procedures were used to dismantle the neutron generators; what steps were taken by GEND to prevent radioactive exposure to employees assigned to conduct this work; what kind of shielding was provided, if any, for employees who worked with the dismantlement; are there any available employee exposure records or incident reports associated with this process; and how were the remaining radioactive components dealt with during the dismantlement process; what was done with them. So, there's this entire depth of information that seems to be lacking that could potentially identify another exposure pathway, and yet we have no information about it whatsoever.

Next.

Unusual events involving radiological protection at GEND.

Next.

This is a horrible, horrible, horrible representation of the data that I had put together. I could not -- I've mentioned this before in materials that

I have sent to the board, but what I did, based on all the new evidence that I have received, is I put together a spreadsheet, a flow sheet, if you will, and I compared all the incident records that have been identified by ORAU and DCAS versus all of the other incidents, including some of DCAS and a lot that were not, and put together a spreadsheet to show that there's over 50 incidents that were never recorded by DCAS. And again, I will be happy to forward that whole spreadsheet, but I couldn't figure out a way to -- to minimize it and put it on this slide. But this just gives you some idea of some of the incidents that have not been recorded. So, I apologize for not being able to do that, but just wanted to reemphasize that we have a lot of incidents where there were leaking and exposures that were never recorded.

Next.

Another -- an interview that was done, again, with the SRS Resource Center, I found this -- I had not known this. I was kind of shocked when I actually heard the individual discussing this procedure, if you will, in -- regarding the calibration of radiation monitoring instruments, and I think it -- it's important, again, because there is no information that even records this as a process or acknowledges the lack of safety measures that were used in the process itself.

And according to this worker, he worked with calibration of radiation monitoring instruments. There were four lead plates slid back and forth to expose the correct amount of radiation to the radiation detector. When the instrument being calibrated was placed on the tester and set for the 1 millirem scale, you flipped a switch on the calibrator, and the first lead plate was retracted and the calibrator produced 1 -- 10 millirems -- excuse me --

of radiation. You were required to lean over the protective safety barrier, which was a yellow plastic rope with a magenta-yellow marking tape, to read the meter on the instrument to ensure it read 10 on the dial, indicating 10 millirems of radiation. If you did not, you were required to take a small screwdriver -- if it did not, excuse me, you were required to take a small screwdriver and lean across the safety barrier and over the instrument, which was directly over the radiation port to adjust the meter to read 10.

This procedure was repeated for the 100-millirem scale and again for the 1,000-millirem scale. This last step bothered me and others that used the calibrator, as 1,000 millirems of radiation was being produced by a tester, and you had to lean over the open port's direct path of the radiation source to read the meter and to adjust the instrument, if needed, to read exactly 10 on the times 100-millirem scale.

Your dosimeter badge was worn on the center portion of your chest on your shirt and was not a true recording of the amount of radiation you received to your head, arms, and hands. Excuse me. One time my dosimeter badge was blasted so hard with radiation it could not be read. A report was made to health physics, but no follow-up was made with me. The exposure was dismissed.

The evidence suggests that many radiologic incidents have not been acknowledged nor recorded at GEND. Failure to acknowledge and include exposure monitoring from incidents raises serious questions regarding the ability of DCAS to conduct accurate dose reconstructions, let alone conduct them at all.

Failure to acknowledge the full set of classified areas to ensure all

radioactive materials have been included in dose estimates. Again, I've submitted this before, but I want to make sure that it's being looked at.

So, you can go to the next slide.

And again, here's a listing of all of the classified areas, how they were identified by Lockheed Martin and DOE, how DCAS identified them versus how the Department of Labor has identified them. And so, there seems to be a pretty big discrepancy in how these classified areas were looked at, identified, and the fact that there are areas where there were -- radioactive work done, radioactive equipment placed, for them to not be mentioned at all seems problematic to me because you're not getting the entire extent of the location and exposures that took place in the facility.

Next.

There's also an issue with Building 1000 where radioactive waste was stored. ORAU has said the building was used to store low-level solid radioactive waste, solidified waste oil, and used equipment. A radiologic survey completed in 1988 identified low levels of contamination in up to 75 percent of the radiologic waste storage bay. Department of Labor and site exposure matrix says as of February 23, 2024, identifies the following radioactive materials stored at this facility: plutonium, tritium, and triuranium oxide. The environmental baseline report from Pinellas in 1997 states the building is divided into three bays for storage of low-level solid radioactive waste, solidified waste oil, mixed radiologic and hazardous waste, and used equipment.

My question is, why is -- oh, thank you, Bob. Why is plutonium being stored in a radioactive -- radioactive waste storage? I think it was

mentioned earlier that plutonium was never returned, but if it's part of this waste storage, wouldn't that encompass plutonium, maybe not encapsulated, who in the heck knows at this point, but plutonium was stored until it could be returned to its appropriate waste facility.

Next.

We also have questions surrounding waste management operations of Building 1040. The environmental baseline report in 1997 says 2,000 square foot concrete block structure set on a reinforced concrete foundation, foundation slopes, the interior -- the building is divided into three bays. So, we have Bay No. 1 contains all liquid drum waste. Bay 2 used for reactive waste. Bay 3 contains miscellaneous laboratory chemicals that are stored in the area until they can be disposed. DCAS makes no mention of the fact that there were radioactive materials here. DOL identifies the presence of trirain -- tirain -- uranium oxide there as well. Why are these things not accounted for?

So, here are some more questions. There is just so much disparity in the description of this facility. It raises credibility issues about DCAS' and ORAU's assertions, especially when some of these assertions appear to be devoid of factual basis. A mischaracterization of classified and waste storage impact the ability to, again, accurately identify and assess this particular exposure pathway. Why is plutonium, super classified element, being stored in waste storage? Why was plutonium stored rather than immediately shipped to its disposal facility? So, and none of these classified areas are showing up or even being discussed in -- even though they're in the 1997 environmental record bases.

The absence of data. Interview December 2, 2020. When plant closed, everyone in every area filled boxes of information that went to a storage area, for example NARA (ph). The boxes were not well marked. There was little detail on the boxes as to what they contained and who was associated with those boxes. DOE assessments for Pinellas were on a seven-year retention schedule and were destroyed. Now, if we can stay here for just a second, a couple of pieces of information. We know for a fact that General Electric took a lot of their detailed information with them when they ended their contract with the facility. I have records that indicate that many of these materials were also taken and shipped to various locations from Lockheed Martin.

I know for a fact that sometimes the employees who were so worried that records were going to be lost, that when records were put into an area for destruction would often take those records with them. It is a problem because it has prevented Pinellas the ability to be fully characterized. Wondering what we know and what we don't know, but I think the work that I have done thus far is bringing to light quite a bit of information that needs to be taken into consideration.

Next.

Missing files. I brought up the subject of missing file -- employee files to the board on April 20, 2022. I presented you all evidence that medical files from GEND had been sent to James A. Haley VA Hospital in Tampa from the Federal Records Center. The VA and the Federal Records Center -- the VA actually reached out to people to try to return them, but most of the individuals couldn't be contacted. Federal records had no idea that they

even went to the VA and claimed they never had any records from General Electric. I am still trying to ascertain where the files went and how many files are involved because countless number of former employees are being denied an accurate and reasonable examination and analysis of their work records at Pinellas. DOE has not had any luck to date finding them either.

Health studies. The DOE health and mortality studies program 1977 through 2001. Again, I go back to this diagram that was taken out of the Mallinckrodt Chemical Works archival material to -- to show you the relationship that Pinellas was to be part of the DOE health and mortality studies.

Next.

What I found in terms of this program, it was supposed to provide a study of all active and inactive workers throughout the DOE energy complex. ORAU conducted a five-rem study which examined workers who were exposed to five or more rems of radiation in the course of a single employment year. After the Tiger Team report, knowing what they had found in terms of Pinellas, GEND was going to be included in that study. But according to ORAU, there was never a study conducted on the GEND workers. There were plans to conduct one, but it was never funded. Instead, the attention and funding went to the Department of Health and Rehabilitative Services and the State of Florida conducted the Pinellas Plant feasibility study in 1994.

Next.

The Department of Health and Rehabilitative Services, State of Florida, Pinellas Plant feasibility study, that's the -- in part of that, there was a study

of the cancer incident patterns in Pinellas County 1981-1990.

Next.

The study encountered several limitations. Background incidents of cancer for Pinellas County could not be established for the first 20 years of the plant's operation because there was no data. The study was influenced by the lack of radiation exposure data and other chemical exposure information. However, according to the findings, in spite of these issues, overall cancer rates were slightly increased in Pinellas County with certain cancer rates significantly elevated in certain groups for the 38 cancers examined. Taking into account the above data limitations for the period 1981-1990, age-adjusted overall cancer incidents for all four race-gender groups appears to be elevated as compared with that of the state.

Next.

The case control study of multiple myeloma among workers exposed to ionizing radiation and other physical and chemical agents, final technical report 1997.

Next.

1997, the Department of Epidemiology and the School of Public Health at the University of North Carolina, Chapel Hill, published their results from a case-control study of multiple myeloma among nuclear workers exposed to ionizing radiation and other agents. The report was prepared for NIOSH. The author states on page 3 that certain DOE facilities were not selected for inclusion in the study for a variety of reasons. Most notably, the author states, a roster of employees at the Pinellas Plant was available. However, there was no documented evidence of radiation exposures at this facility,

according to [identifying information redacted]is a senior scientific advisor to ORAU, and in her role, she was an epidemiologist, and she served in the scientific enterprise for decades. Why would someone of her stature convey such misinformation to a principal investigator when we know that isn't the case, and so many of our people suffer from multiple myeloma and were denied access to the study and the resources available by participating in this study? I'm sorry to be emotional, but I just lost someone with multiple myeloma, and this is a disgrace. And those are my references.

So, here we go. Some lingering questions and concerns. These questions and so forth kind of supplement the questions and concern raised throughout this presentation.

Next.

Focus on production rather than health and safety calls into question the extent to which GEND behaved as a responsible steward of its nuclear operations. Most environmental health and safety mechanisms did not come into place until after the TIGER Team report in 1990. If you look at a lot of the information that is post-1990, you will see there was a lack of any type of monitoring and controls in place. And beyond that, it took several years to implement, and in some cases, by the time it was implemented, the plant was already closing. The GEND safety standards were not up to date, supporting findings that production outweighed safety and health of workers. GEND was left entirely in charge of conducting its own radioactive monitoring, both inside and outside the plant.

There is no evidence to suggest that this monitoring was complete nor accurate. All we have to rely on is a study of General Electric behavior in its

other facilities. With the consistent mischaracterization of radiation exposures, employees were excluded from one of the most important studies they could have participated in.

Next.

Plutonium. What is the basis of the assertion that plutonium concentrations associated with the initial background survey for plutonium, 1975, prior to plutonium arriving on site, were consistent with concentrations corresponding to global fallout associated with atmospheric nuclear weapons testing, given there was no meteorological program established at Pinellas Plant until 1991? If the likelihood of plutonium releases are next to zero, how is the variability in plutonium minoring -- monitoring results from smokestacks and soil concentrations accounted for? How is the uptake of plutonium by an employee in the RTG area in '83 and '90 impacting, if it is?

The understanding of plutonium releases at the Pinellas Plant. Has the information in the following letter been overlooked in the assessment of plutonium exposures at the Pinellas Plant? Letter dated January 1979 and referenced in the following ORAU document: There is an occurrence of contaminated 238 Plutonium oxide sources with levels exceeding the LOD of 1 in every 70 sources or less than six per year. Why was the DTPA chelation program started three years earlier than RTGs were supposedly -- and the plutonium sources brought on site?

The mischaracterization of GEND leads to failure to acknowledge pivotal role of GEND in the nuclear weapons complex and thus raises questions whether all the data has been collected to identify, authenticate

radiation exposure pathways. What else did GEND engage in that you are not aware of? Years of RTG work remain unaccounted for, which significantly changes the narrative of the GEND RTG work and existence of exposure pathways.

Next.

Bioassay data. No available plutonium bio data -- bioassay data. Nothing has been made available. Nothing can be found. It raises the issue of whether DCAS and ORAU -- do they know or have full knowledge of the MWG project and therefore have no basis by which to characterize or reconstruct plutonium exposures nor the pathways. SC&A states there are sufficient reasons to question the quality of the plutonium bioassay from Pinellas Plant. In particular, the calculations of the MDCS are questionable and worthy of a more detailed examination.

Rather than deal with the reality of the lack of information, I saw where it was decided that the plutonium exposures would be set aside and dealt with on a personal basis, but we don't have the data, and the CDC acknowledges that.

Next.

I don't believe that DCAS and ORAU have acknowledged the existence of the multiple RTG projects that took place. It appears that according to the evidence, GEND was involved in RTG programs prior to 1975. There's no significant documentation available discussing RTG work prior to 1981. There's 3,000-milliwatt generator heat sources that were fabricated and specifically shipped to GEND for the MWG program. How much or how many sources were sent for the space program? We're not sure.

There is a difference between the space and weapon RTGs at Pinellas. How can one be sure that the plutonium ratio of 80 percent Plutonium-238 and 15 plutonium -- 15 percent Plutonium-239 is accurate, and if it is, which one? Are they both the same? Highly unlikely.

Why is there no mention of RTG work being done in Building 100 before the operation moved to Building 400 in 1980? Again, the chelation program and the entire RTG program was mischaracterized and thus the investigation and incorporation of an entire exposure pathway is mischaracterized and cannot be relied upon.

Tritium. Fifty-plus areas at the Pinellas Plant where tritium was located according to the Department of Energy, and DCAS only identified 17. How do you account for this difference, which ultimately impacts the accuracy of dose in -- dose calculations because you don't have all the information? When so many tritium locations have gone unrecorded, can you be sure? The highest tritium concentration for use in the most claimant favorable dose reconstruction has actually been identified.

How have the most updated and complete diagrams at Pinellas Plant been incorporated into a better understanding of radiologic incidence, radiologic releases in dose reconstructions? What is the actual number of tritium bioassays for the Pinellas Plant?

Next.

Krypton-85. We have problems with it. Health physicists raised issues with it, but it was used anyway and incorporated into leak testing in 1963. EPA has problems. Why, when you know you have a problem, and someone goes ahead and includes its use, is there so little monitoring data in regard

to Krypton-85? It's basically just, you know, a slight discussion in the bigger things of -- in the bigger scheme of things and needs to be looked at closer to make sure that we have all of the releases and exposures accounted for.

Next.

Radiation monitoring. GE, for its history, was left entirely charged -- entirely in charge of its own monitoring. That leaves so many questions, and I've taken up a lot of your time that I won't go through them all now, but that's a questionable -- that has a questionable impact on the accuracy of anything coming out of them. If the safety standards at Pinellas Plant were allowed to fall out of date and not updated until the 1990s, it is -- is it reasonable to assume those 1990 standards can be extrapolated across the entirety of the Pinellas Plant operations? I don't think so. How has the information the Pinellas Plant mischaracterized radiation exposure -- exposures, which led to the exclusion of Pinellas Plant employees from a multiple myeloma study, being addressed? How has this mischaracterization by Cragle impacted, influenced, how dose reconstructions are being characterized? And what efforts have been made to find personal exposure summary data for the years 1959 through '62, '67 through '74, 1980, 1982 through 1983? Interviews. It is clear to me that some of the most important information that has allowed me to verify much of the research -- research I have conducted comes from employees' interviews. And SC&A noted, the interviews reflected the full date range of work at Pinellas and encompassed a broad range of professions. I have to ask myself what is meant by broad.

A review of all the interviews since the inception of the Pinellas Plant concerns really seems to challenge this assertion. A lot of the -- going back

all of those years and looking at all of these interviews, they rely heavily on health physicists, engineers, and chemists. They're not totally representative of the average worker.

Many former employees believe no one is interested in their perspectives. You must conduct additional worker interviews. We need a full range of perspectives to be included, just not things that are picked and chosen to fit a certain perception of how that plant operated.

Additionally, they're very frustrated. Our folks are very, very frustrated with the way in which the interviews have been conducted. They report not being able to complete their answers. They found it difficult to engage in conversation over the phone. They did not feel safe because they could not see who was interviewing them. They could not answer some of the questions due to security clearance obligations.

The questions were so persist -- specific that it did not allow them to speak to other issues than the ones that they were asked. Open interviews are a must because that's where you find the gems that everybody else overlooks. They must be conducted, and I am -- I going to demand on the behalf of our claimants and employees that you do that.

Next.

Documentation, the challenge. DOE discussed that yesterday. It is definitely challenge -- a challenge to find all of this stuff. I think that the lack of efforts to do a thorough examination of where the data could be located has meant that there's been an overwhelming reliance on data that is based in the 1990s and beyond. By not locating the necessary materials, you have an incomplete site profile. You have incomplete monitoring data.

I don't understand why more extensive, comprehensive efforts haven't been undertaken to find the data. If I can find it, I -- and it's me, just little old me -- why have organizations and agencies not done this?

Next.

Bottom line, I believe, I know that the research I've undertaken clearly illustrates the lack of due diligence by ORAU and DCAS in acquiring the (audio break) necessary to not only prepare an accurate site profile and TBDs but characterize the dose reconstruction. It's clear that DCAS does not have the knowledge necessary to fully understand, characterize, and investigate the radiologic exposure pathways, especially when it comes to plutonium at this facility. Again, plutonium needs a more detailed examination, SC&A states.

Next.

Our path forward. There is so much disparity in the description of this facility. It raises credibility issues about the assertions regarding dose reconstructions.

Next.

So, what are we willing to do to achieve the approval once and for all of SEC-00256? On behalf of the petitioners and all of the workers that are represented here today, I want you to know that the receipt of data is an ongoing (audio break) every day of acquiring the information that I need to prove the extensive lack of data by which to conduct dose reconstructions for the GEND facilities. A few volunteers have stepped forward to assist me in the sorting, reading, taking notes, everything that you could possibly imagine when you have boxes and boxes of thousands of pages headed your

way. Several methodologists have volunteered their services to identify questionable assumptions underlying the models currently employed by DCAS for the purpose of dose reconstruction. Government officials, of which I have reached out to consistently over the past six months have asked to remain in the loop regarding the continued problems associated with the SEC program, specifically dose reconstructions more generally, and what the heck is happening in Pinellas.

I demand and we demand a total rewrite of the site profiles and TBDs. We demand that you provide on-site interviews to be conducted by the work group and whoever else must attend. We demand that the data submitted by the petitioners is actually reviewed and considered and not ignored. I have been told too much too many times that it's not important. And we demand that DCAS treat the petitioners with respect and remember they work for us, not the other way around.

Thank you for your time.

MEMBER CLAWSON: Thank you, Dr. DeGarmo. I appreciate all the work that you've done on this, and there's an awful lot of work that has been there. We're going to open it up for questions, but I just -- I want to make sure you know that we need -- we need to be able to provide the information that you have provided to us, to DCAS and SC&A to be able to review for this. And I -- what I'm -- what I'm asking you is that we need to -- we need to have this information that you have recovered to be able to be sent to them for it to be able to be reviewed. That being --

DR. DEGARMO: Absolutely. I am more than willing to share the information. You have a bibliography as a starting point, and I made that

available so that -- you know, I don't know what you have in the SRDB, so maybe some of this is already in there. This includes information from Sandia and all over the place. I -- I have it all. It's on my computer. I just need to know what the proper procedures are and how to process it to get it where it needs to go. You provide me that, I'm happy to give you whatever you want.

MEMBER CLAWSON: I will, and I -- I'm sure that Rashaun will help us with that. She's very diligent in that. The other thing is I want you to realize that, as the work group chair, this has been a concern of mine of the interviews. I would -- I would like to ask your -- I would like to proceed forward. We've got to get all -- we've got to sort through all this information that we've got. I want to be able to reach out to these petitioners and do interviews as soon as possible with NIOSH and SC&A and whoever else would like to be able to join us. I would also like to be able to do classified interviews because I've got a feeling that there's a lot more classification there than what has been meeting the eye. But we'll work with DCAS and SC&A on that path forward.

But I'd also like to ask your assistance in people that would be of the best interest to us to be able to interview. And I know that you have expressed that that is -- that something that you would be willing to be able to do. So, first of all, we're going to have to sort through this information. We're going to have to review it. But we'll be proceeding on to try to be able to do worker interviews and go from there. One of the big things is we've got to be able to meet as a work group too and be able to sit down in a situation and discuss the path forward with some of this information. But I

think we can do that in parallel with trying to do interviews.

That being said, is there any questions from anybody that -- that they'd like to ask or of questions of the path forward that we're going? If so, if you'd speak up now.

MEMBER BEACH: I don't really have any questions, Brad. But I do think that there's a lot of information here. And I think --

MEMBER CLAWSON: Yes.

MEMBER BEACH: Yeah. I think NIOSH needs to see -- give us an idea of what they already have, what they might be interested in, and then, as Paul pointed out earlier, who kind of takes the lead. I agree with you 100 percent on interviews. I don't think that the burden should be on Denise more than necessary. She's already provided a lot of information. So, the path forward is -- yeah, needs to be spelled out for sure.

MEMBER CLAWSON: Well, I --

MR. CALHOUN: This is Grady.

MEMBER BEACH: Yep.

MR. CALHOUN: Yeah, my idea of the path forward is -- you're right. We need to make sure we get all the information that was provided here. And you're also right, some of this could be in the SRDB, but some of it may not. I don't -- I think that some of these interviews, it sounded like, were done by Dr. DeGarmo with -- without any of us present, but I may be wrong. I think what we'll do is we'll B we'll it's going to take a while. We're going to try to digest this information. The first thing we'll do is we'll look at what's been evaluated previously and what hasn't. We'll evaluate any new information. Anything that's already been litigated in the previous

evaluation report will probably not be addressed, unless there's new documents. And then we're going to have to come up with a document, and just like anything else, give it to you guys, and then you guys can take a look at it, and we'll move -- move forward.

MEMBER CLAWSON: Grady, that -- and I -- I agree with you totally on that.

One -- one thing that is bothering me with this is I would like to be working towards the worker interviews. We're losing too many of them at all of these sites, and I would like to be able to be proceeding forward with that. We know what the heavy hitters are on this.

You know, the question of plutonium, tritium, a lot of these different ones. One of -- I'd also like to be able to -- I think there's a few classification issues that we're -- that we're going to get through, but I'd like to proceed forward with trying to do some worker interviews too if I could. And I know that you guys have got an awful lot of data that you're going to have to go through, just from what I've seen on these slides. But I would like to kind of do that in parallel if we could.

MR. CALHOUN: Yeah, let's just put something together and, you know, plan, and we'll try to support it the best we can. I -- we can --

MEMBER CLAWSON: Okay.

MR. CALHOUN: -- be walk and chew gum at the same time. I think we can probably have some people do some interviews, and we'll look at the documents, too. So, --

MEMBER CLAWSON: Right. I -- yeah. I just -- I just -- we're just losing too many -- too many of the people too fast, and we're -- we're losing

a lot of history there. So, I'd just like to do that in parallel. I do understand that you have to have -- go through the documents, find out what we do have, what we already have, and what we don't have. So, if -- if there's no objections, I'd like to be able to proceed that path forward. And we may -- we may have to get down here a few weeks. I don't -- I don't know with Rashaun or so forth like that, but if we could have a technical call or something like that with a Pinellas work group, kind of to go over what our path forward is and go from there.

Is -- would there be any problems with that, Rashaun?

DR. ROBERTS: Hi, Brad. I think it may be possible that we can just reschedule the work group meeting in the near future.

MEMBER CLAWSON: Okay.

DR. ROBERTS: So, yeah, I will be in contact about that.

MEMBER CLAWSON: Okay. We'll discuss that and go from there.

With that being said, is there any questions from any other Board Members or DCAS that we need clarified before we close this?

MEMBER ZIEMER: Brad, this is Paul. This is --

MEMBER CLAWSON: Yeah, Paul.

MEMBER ZIEMER: This is not a question necessarily to clarify. First of all, I want to reiterate our appreciation to Dr. DeGarmo for all of this information. As -- as sort of the old guy on the Board, I want to remind us that if we go back and look at the start of what we've been doing, we have started with no procedures, no methodologies. The -- the whole program, we've learned as we've gone along, and part of that learning has come from not only our own staffing and our own contractors and our own Board

Members, but very much from the petitioners and those who are the stakeholders in this program. So, we continue to learn as we go. We continue to learn how to find materials, and it's -- it's been very complex.

The story we see here, and Dr. DeGarmo, and I'm sure you're aware, is not unlike many of the other sites, where particularly in the early years, in a whole lot of cases up until the Tiger Team days, the -- the compliance issues were acute. They have improved, but -- and still, in many cases, need improvement. But we -- we learn as we go. And information, such as you've provided, is helpful to us as we improve our methodologies and improve our ability to do what we're required legally to do. So, I just thank you and keep in mind, historically, I don't think anybody's trying to avoid doing any of these things. We need help in many cases in knowing how to do them and where to go to get information. So, it's very, very helpful. Thank you.

MEMBER CLAWSON: Very well put, Paul, and I want to -- and I want to also express my appreciation to Dr. DeGarmo because I was asked the question of what -- what do we need to be able to do to be able to push this forward, and I says we need information. We're -- we're limited to where we're at. We've done the best that we can, and we need information.

And -- and a hundred and something slides later, I truly do appreciate it, but what I really do appreciate is the people of Pinellas working with their designated -- their designated representatives and helping us get this information. And we'll proceed on forward with this, and we'll keep you in the loop as we process forward. We'll probably ask for your help again and go from there. But I do want to say thank you. It's opened my eyes to a lot

of things that I had questions on. And as Paul said, we're -- we're always learning.

And each one of these sites are different. Each one of them has different parameters. They deal with different things, and we're striving to do the best job that we can.

With that being said, if there's no more questions, I'll turn it --

MEMBER BEACH: Brad?

MEMBER CLAWSON: -- over to --

MEMBER BEACH: Brad? I have one more --

MEMBER CLAWSON: Yeah?

MEMBER BEACH: -- comment. It's not really a question, but Dr. DeGarmo, you mentioned that you have another data drop coming, and I don't want to lose track of that for any information that might be in that new batch that you're going to receive. So, I'm assuming you will process it in the way you have, and any pertinent -- anything that the work group or the Board needs to see, you'll maybe let us know?

DR. DEGARMO: Ms. Beach, I am nothing but transparent.

MEMBER BEACH: Yeah.

DR. DEGARMO: I mean, I have -- you know, you think this is a lot, you should see what I have on all of the nuclear facilities across the United States. I am dedicated to helping these people be compensated because of all that they have gone through to make us a safe and secure nuclear weapons nation. My intent is to be cooperative. My intent is to provide information that these people expect, these employees expect of me. I could not have done this without Dr. Roberts helping me figure out -- I

didn't know what I was doing. I didn't know how to present. So, I really appreciate that support.

Dr. Anderson, when you -- when sent your invitation out, I almost fell off my chair. I'm really humbled by the fact that you would give me this opportunity to do this. To the Board, I am so sorry that this was 134 slides, but you know what, couldn't do it in --

CHAIR ANDERSON: No problem.

DR. DEGARMO: And -- and --

MEMBER BEACH: No problem. I bet it could have been more.

DR. DEGARMO: It could have been more.

MEMBER BEACH: And -- and not to take away from any of that, I just don't want to lose track of --

DR. DEGARMO: No.

MEMBER BEACH: -- moving forward. This isn't finished, I guess, was my point.

DR. DEGARMO: No, but I think that the people who have reached out to me -- I understand you need to reach a point where you have to evaluate what you have. I don't ever know what I'm going to get. I don't know how much I'm going to get. But anything that I have is relevant, I will certainly make available to you. I just need to know how to do it because we're talking thousands of pages. I don't know how you all want me to do this, but if you tell me that, I will do that. So, I'm not trying to make your lives miserable, but I'm trying to illustrate there's a story here that hasn't been told, and it needs to be told.

But thank you all for your help and your consideration and your

patience. I greatly appreciate that. And the people of Pinellas have finally been heard, and I can't tell you how much that means to them.

MEMBER BEACH: Thank you.

MEMBER CLAWSON: We appreciate that. And -- and as far as the data, I know that Rashaun will -- will help you with the appropriate ways. We just want to make sure that we don't lose track of it and that it gets to the right, appropriate people. And I'm sure that she will -- not put words in your mouth, Rashaun, but that she will help you with that.

Is there any other questions at this time? If not, I'm going to turn it over --back to Henry, and we'll proceed on from there.

CHAIR ANDERSON: Okay. Well, we've had a productive session. It's a lot of information. As you say, we don't want to lose sight of it and then have to go back over all of it again. So, the -- the good thing is we've got a good start here, and I think we've begun at least to identify a way forward. So, with that, we have a couple of other things.

We've had a couple of retirements, so we haven't been able to celebrate in person. So, it's been hard to try to do something sufficiently challenging to the retiree. So, what I would like to do now is I have a little letter that we all agreed and contributed to. As you know, Dave Kotelchuck is retiring from the board, and this is going to be his last meeting. I think we twisted his arm to stay on a little bit longer than maybe he wanted, but I think you enjoyed these last sessions that you were part of, David. So, let me read our tribute that we put together here.

It's a tribute to David Kotelchuck, Ph.D. Members of the Advisory Board on Radiation and Worker Health ("the Board") wish to pay tribute to

Dr. David Kotelchuck, appointed to the Board by President Obama in 2012. David Kotelchuck, professor emeritus at Hunter College, directed Hunter College's graduate program in environmental and occupational health sciences. He received his Bachelor of Arts degree in physics from Johns Hopkins University, his doctorate in high energy physics from Cornell University, and his Master of Public Health in occupational health and safety from the Harvard School of Public Health.

As a career industrial hygienist, his interests and experience span radiation safety, noise control, hazardous waste worker, and emergency responder training, and occupational epidemiology. In 1984, he founded the Center for Occupational and Environmental Health at Hunter College. Dr. Kotelchuck was the director of the industrial hygiene program and then deputy director of the New York-New Jersey Education and Research Center. He is the founder and served on the board of directors of the New York Committee For Occupational Safety And Health for over two decades while he had an opportunity to work on the health and safety problems that faced workers in many different industries. In 2008, he received the Alice Hamilton Award from the occupational health and safety section of the American Public Health Association.

Dr. Kotelchuck's lifelong career in support of worker health and safety brought a wealth of practical experience to the Board and its mission during his 12 years of service. That went by quickly, didn't it, Dave? The Board Members offer him our thanks for all the work he has done on our behalf. We wish him and his family our best wishes in the next phase of his life.

This tribute is hereby adopted this 8th day of August 2024 at the

159th meeting of the Advisory Board on Radiation Worker Health by teleconference.

MEMBER KOTELCHUCK: Thank you.

CHAIR ANDERSON: -- a few words, Dave.

MEMBER KOTELCHUCK: Well, thank you very much. It really has -- thank you. It has been a pleasure to work with each and every one of you really. We almost always came to consensus on the many, many cases and situations that we face. Occasionally, we didn't agree, but we talked respectfully to each other, we listened to each other, and we moved ahead.

So, it really was an honor and a pleasure, and I thank you all very much.

MEMBER CLAWSON: Dave, this is -- this is Brad. This is Brad Clawson. I wanted to personally tell you I appreciate all the time that we have spent over dinner discussing issues, discussing back and forth with enthusiasm, --

MEMBER KOTELCHUCK: Right.

MEMBER CLAWSON: -- but also telling me when I was wrong, and what I needed to look at. I appreciate the time that you spent and discussed that and helped me better serve the people that we're trying to represent. I have enjoyed my time with you so much.

MEMBER KOTELCHUCK: Thank you. Thank you.

MEMBER BEACH: Well, and Dave, this is Josie. You know how I feel with the different emails we've sent back and forth, --

MEMBER KOTELCHUCK: Yeah.

MEMBER BEACH: -- but I am going to miss a little glimpse into your

life through your kitchen, and I will be seeing you and your wife prepare meals.

Anyway, it's been an honor to work with you and serve with you.

MEMBER KOTELCHUCK: Thank you. Thank you. And we -- I work out of my kitchen because this is New York City, folks. We don't have very large apartments.

MEMBER BEACH: No, it's wonderful.

MEMBER KOTELCHUCK: Yeah. Thank you.

MR. CALHOUN: Dave, this is Grady. I'm going to echo a little bit of that, too. The dose reconstruction review committee that you -- the subcommittee that you kind of took over, man, you made a difference in that, and we got a lot of stuff done, and a lot of that was due to you, and we worked great together, and I really appreciate that. And it's been fun. So, happy retirement and good luck in everything else you do.

MEMBER KOTELCHUCK: Thank you. Thank you.

MEMBER ZIEMER: Dave, this is Paul. I'll -- I'll add to the adulations for you. First of all, it's been a pleasure having you on the committee, both from a technical as well as a personal and professional point of view. And we've all learned a lot from you, and the only thing I haven't learned from you that you've already mentioned is how in the world you tell Brad that he's wrong. We've all learned from you, and we'll miss you very much on this Advisory Board.

MEMBER KOTELCHUCK: And I will miss all of you.

CHAIR ANDERSON: And I have to add to that, Dave. Your and my relationship goes back into the '70s when we were both young

whippersnappers.

MEMBER KOTELCHUCK: That's right. That's right.

CHAIR ANDERSON: In New York City, so --

MEMBER KOTELCHUCK: Right. Right.

CHAIR ANDERSON: -- we are near the end of our careers and still together, so it's great --

MEMBER KOTELCHUCK: Right. Right. Right.

CHAIR ANDERSON: -- to work with you all those years.

MEMBER KOTELCHUCK: Very good. Oh, it has been really nice. I remember you as a post-doc and working in the Mount Sinai Laboratory with Dr. Selleckal (ph), and it was really wonderful. I was -- I was a bit senior of you at that time. Still am. Age-wise, however. Age-wise. Okay. Okay.

CHAIR ANDERSON: Okay. Rashaun, you want to -- or anyone else want to say anything? Kathy?

MS. BEHLING: Yes, this is Kathy Behling, and I would just like to express from SC&A's point of view that we -- we certainly acknowledge and recognize your passion and -- and dedication to this program, and that's very admirable. And being the chair of the dose reconstruction subcommittee is certainly challenging, and as Grady said, you have done an admirable job in -- in conducting that subcommittee. And SC&A and all of us appreciate your contribution to this program, and we wish you all the best.

MEMBER KOTELCHUCK: Thank you. Thank you.

CHAIR ANDERSON: Go ahead, Jim.

MEMBER LOCKEY: David, you know, you have such a distinguished

career and so much to be proud of, how much you contributed over the years to the health and safety of workers in this country. It's incredible. So, thank you for everything you've done. It's -- it's something to be very, very proud of, always.

MEMBER KOTELCHUCK: Thank you. Thank you, Jim. And thank you, Kathy and Rose and all of the other folks from SC&A. It's been really nice working with you. You've been a very important support for me in doing all the work that we do, especially in the subcommittee. Rose has been a tremendous supporter of it. And I do remember, you know, as we -- as I started chairing the subcommittee, we were so far behind in keeping up with cases, and we had to meet, you know, double -- double time in many cases, as many of the Board Members know who are members of the subcommittee. But we got up -- we finally -- we finally got -- we finally got up to date, and then, of course, COVID hit, and cybersecurity, and things quieted down. But you folks are doing great. All of you, all of us are doing very important work. And I'm so glad that the committee -- I leave the committee knowing that you all will carry on this really important work of protecting workers' health as you have in the past, so, thank you.

CHAIR ANDERSON: Rashaun?

DR. ROBERTS: Okay. So, Dr. Howard has written a letter to -- to Dave, and so I'm going to read that. (Reading): So, Dear Dr. Kotelchuck, On behalf of the National Institute for Occupational Safety and Health, I want to express my appreciation to you for your years of exemplary service on the NIOSH Advisory Board on Radiation and Worker Health ("ABRWH"). As an ABRWH member and as chairperson of several ABRWH work groups,

including Ames Laboratory, Rockview (sic) Flats, and the dose reconstruction review methods workgroup, as well as an active contributor to AB (audio break) our exhibit at Vanderbilt University, Harvard University School of Public Health, and at Hunter College at the City University of New York, NIOSH was indeed fortunate to benefit from your services on the ABRWH. We are grateful for all of your contributions. Let me also thank you on behalf of the many thousands of atomic weapons workers benefitted by your dedicated work on the ABRWH. I wish you a long and very enjoyable next chapter. Sincerely, John Howard, Director.

MEMBER KOTELCHUCK: That is most kind, and -- and I thank him, and I will write a note to him thanking him also and thanking you on behalf of NIOSH.

DR. ROBERTS: No, thank you, Dave. You've been extremely thorough. It's been a pleasure knowing you and working with you. I appreciate your brilliance and your warmth and your commitment to -- to the program, and really wish you well.

MEMBER KOTELCHUCK: Thank you. Thank you.

CHAIR ANDERSON: I think we're ready to adjourn. I'll let David -- rather than have Brad and Josie step up and make a -- make the motion to adjourn, so you get to make the motion.

MEMBER KOTELCHUCK: All right. All right. I proudly and happily so move that we -- we -- that the meeting -- the meeting end. I move that the meeting come to an end.

MEMBER ZIEMER: Second.

MEMBER CLAWSON: I second that, Dave.

(Whereupon, the meeting was adjourned at 3:00 p.m. EDT.)