National Institute for Occupational Safety and Health (NIOSH)
SEC Outreach Meeting for Nuclear Metals, Inc.

Meeting Date: Thursday, March 15, 2012, 1:30 p.m.

Meeting with: Former Workers from Nuclear Metals, Inc., Concord, Massachusetts (Third of three meetings)

NIOSH Team:

Edward Scalsky, Oak Ridge Associated Universities Team (ORAU), Health Physicist

Vernon McDougall, Advanced Technologies and Laboratories International, Inc. (ATL), Outreach Project Manager

Mark Lewis, ATL, Senior Outreach Specialist

Mary Elliott, ATL, Technical Writer/Editor

Also Attending:

Bob Barton, Sanford Cohen & Associates (SC&A), Health Physicist

Proceedings

[Name and identifying information redacted] of Nuclear Metals, Inc., opened the meeting at 1:30 p.m. He welcomed the panel of contractors representing the National Institute for Occupational Safety and Health (NIOSH) from Oak Ridge Associated Universities (ORAU) and Advanced Technologies and Laboratories International, Inc. (ATL), and from Sanford Cohen & Associates (SC&A). He explained that he had been asked to help organize the meeting and had contacted many of the former employees from Nuclear Metals, Inc. with whom he had had the pleasure of working with for so many years. He thanked them for coming to the meeting.

[Name redacted] explained that the meeting was the third in a series of three. He thanked the petitioners for their efforts. [Name redacted] introduced Vernon McDougall of ATL.

Mr. McDougall introduced the contractors on the NIOSH team. He stated that Ms. Elliott would be taking notes during the meeting, and also recording the meeting with the permission of the attendees. He explained that the recording would not be a public record of the meeting, but Ms. Elliott would use the recording to prepare meeting minutes that would eventually be posted on the NIOSH Web site. Mr. McDougall added that the final minutes would not include the names of the attendees or any other personal information that might identify them. The attendees granted their consent for the meeting to be recorded.

Mr. McDougall informed the attendees that they should not give any information to NIOSH during the meeting that might be considered confidential or classified. He explained that NIOSH

could arrange a secure interview with personnel who are cleared to discuss that type of information.

Mr. McDougall asked if the attendees were familiar with the Energy Employees Occupational Illness Compensation Program Act (EEOICPA). (No response.)

Mr. McDougall explained the EEOICPA compensation program and that for the former workers from Nuclear Metals, the program is primarily for compensation for cancer related to radiation exposures and for respiratory disease related to beryllium exposure; the program does not cover exposures to asbestos, solvents, or other materials for Nuclear Metals workers. This meeting is only about radiation exposures.

Mr. McDougall explained that when an energy employee (or the survivors of the employee) files a cancer claim with the United States Department of Labor (DOL), DOL turns the claim over to NIOSH for dose reconstruction. NIOSH reconstructs the worker's dose using any available information about the employee's work history and radiation exposure to calculate the probability that the employee's cancer is related to the workplace radiation exposure. The claimant may be compensated if the dose reconstruction process determines that the cancer is more likely than not related to the radiation exposure.

Mr. McDougall explained that some facilities in the nuclear weapons complex do not have sufficient records for NIOSH to reconstruct the workers' radiation doses with reasonable accuracy. If NIOSH finds that it cannot accurately reconstruct the radiation doses, then they can recommend to the Advisory Board that the workers be added to the SEC.

Mr. McDougall stated that former Nuclear Metals workers had filed an SEC petition that is now being evaluated by NIOSH. NIOSH will write a report to the Advisory Board that will recommend either to add, or not to add, a class of former Nuclear Metals workers for a specific time period to the SEC. The Board will then make their recommendation to the Secretary of the Department of Health and Human Services (HHS).

Mr. McDougall explained that if the Nuclear Metals SEC petition is successful, people who file claims for 22 types of radiation-related cancer will not have to go through the dose reconstruction process. He noted that NIOSH had brought a fact sheet on the SEC than includes a list of the 22 cancers. Mr. McDougall stated that the primary reason for the meeting was for NIOSH to gather information from the workers that might help NIOSH in the evaluation.

Ms. Elliott asked the attendees to identify themselves when they spoke so that they could be contacted if NIOSH needed more information from them. She reiterated Mr. McDougall's earlier statement that they would not be identified by name in the minutes that will be posted on the NIOSH Web Site.

Mr. McDougall turned the meeting over to Mr. Scalsky.

Mr. Scalsky: We will use the handout for talking points for this discussion. The purpose of the discussion is to give NIOSH a better understanding of the operations at the Nuclear Metals

facility – the research, the production of reactor fuel rods, penetrators, powder manufacturing, and the processing of uranium greensalt (UF_4). This information will aid us in evaluating the SEC petition. It may also help to improve the dose reconstruction input data. And, hopefully, it will give you a better understanding of the dose reconstruction process – what goes into it and what has to be done in order to determine the workers' doses.

This is the background information that NIOSH has about Nuclear Metals: The work was done at Massachusetts Institute of Technology (MIT) from 1942 to 1946. The workers during that time did research for the Manhattan Engineer District (MED), and melted and cast uranium. The MED work was moved to the Hood Building at MIT in 1946 and continued when the Atomic Energy Commission (AEC) took over the work in 1948. Nuclear Metals, Inc. was established as a private corporation in 1954 and continued the work at the Hood building until 1958. Nuclear Metals constructed a new facility in Concord for the research and development (R&D) and production of specialty metals. The new facility was occupied in March 1958. The documents that we have indicated that work with low-level radioactive materials began in October 1958. We think that the equipment may have been moved to the new facility from the Hood Building. Does anyone know when the fuel element work started?

Worker 1: The fuel element work began the early 1940s. The first elements were for the Stagg Field reactor.

Mr. Scalsky: Did Nuclear Metals send fuel elements to Savannah River?

Worker 1: Nuclear Metals did a lot of work for both Savannah River and Hanford. We made fuel elements for reactors at both sites. We also set up a fuel fabrication process for each site, largely because the processes involved co-extrusion.

Mr. Scalsky: Nuclear Metals also did work for the CP-5 program and the Fermi reactor at Argonne National Laboratory in Chicago.

Worker 1: The work for the Fermi Lab was a separate program. The CP-5 was at Argonne National Laboratory.

Mr. Scalsky: When did the work begin with the depleted uranium penetrators? Is anybody aware of the time frame when that work started?

Worker 2: That had to be the mid- to early 1970s.

Worker 1: Yes, there was production work in the 1970s, but there was some work in the early 1960s during the Kennedy administration… significant work, but not nearly as involved as the work we did in the 1970s.

Mr. Scalsky: If you have any comments or questions as we are going along, please do not hesitate to interrupt. We will try to answer any questions that you may have.

Worker 3: I think that the high period of production on the depleted uranium penetrators started in 1977 when they opened D Building and added new (inaudible) furnaces in the foundry.

Mr. Scalsky: A lot of the production work involved depleted uranium: 500,000 rounds per month on the GAU-8 line; 350,000 20-millimeter (mm) rounds per month on the Phalanx line; 8,000 120-mm rounds per month; 110 tons of steel powder per month; counterweights for airplanes; melted powder for medical applications; and powder for photocopiers. Do you have any idea what other work was done with the depleted uranium?

Worker 1: We also did 8,000 to 12,000 rounds of 105-mm per month. Also 774s and 833s (inaudible)…

Worker 4: What are missing from that list are the depleted uranium warheads. We were working, beginning in the late 1970s, with Oak Ridge Y-12, which had a special arc melter that we needed for making uranium 6.5% niobium alloy. We also did our initial work with Oak Ridge for cross-welding on alloyed uranium that was used in some of our applications. We also did work with Rocky Flats, again on the 6.5% niobium alloy because they had a special arc melter-type furnace.

Mr. Scalsky: There was also work with thorium at Nuclear Metals. Is anyone here familiar with that work?

Worker 5: We made tungsten tips with thoriated tungsten. We used those on rep sheets. We made depleted uranium powder, some with titanium (inaudible).

Mr. Scalsky: NIOSH also knows that there was some work with natural uranium. Let's quickly go over the depleted uranium penetrator process. There are a lot of details that are left out here. This is just a brief overview of what happened. The process began with depleted uranium melt and I believe that someone said UF_4.

Worker 2: That is correct.

Mr. Scalsky: The melt was poured into yttrium-coated molds to form ingots. The ingots were slipped into copper tubing and welded into the tubes. The tubes were evacuated and crimp-sealed to form a billet. The copper sheath was removed by acid digestion, or pickling. The extruded rods were straightened and cut into blanks by sawing. After heating and cooling, the rods were again straightened, aged, and then turned into their final configuration. Does anyone have any idea of which of these processes could produce airborne activity?

Unidentified attendee: Rotary straightening would do that.

Worker 3: In the foundry, it could happen during melting and casting, especially burning out the crucibles.

Worker 6: Basically all of the operations…

Mr. Scalsky: All of these are potential situations for airborne contamination.

Worker 3: Sometimes the billets would break open because the vacuum seal was bad. Uranium oxide came out of the billets. That would have been during the extrusion of the fuel elements.

Worker 7: At one time, a good percentage of the billets – pre-machined blanks for the large-scale penetrators – were ground to improve straightness and roundness prior to putting them into a finishing chain operation. During the grinding, of course, there were vents. At the time, the machines were all set up to be vented appropriately for that time period, but, nonetheless, there was some airborne contamination, and also to the grinder operators' hands and arms.

Worker 8: The sanding at the finishers, even though the machines had the venting, the finishers (inaudible)

Worker 9: After the billets were cast, they were put on pallets and just left outside until they were ready to be cleaned and then put into cans. So obviously, they formed an outside layer of residue. Uranium is extremely reactive with oxygen.

Mr. Scalsky: How long were the billets left outside?

Worker 9: They could have been there for days or weeks, depending on how much… I know that I would see some of them there for weeks.

Worker 6: If the extrusion press went down, those billets would be stacked twelve pallets high until there wasn't enough room for more. There were times that they sat around until the extrusion press was operational again.

Worker 9 Are we also talking about the Reduction Area, or just from casting on?

Mr. Scalsky: Any of the depleted uranium penetrator processes…

Worker 9: We had a reduction facility where we converted UF_4 to uranium metal that was actually before that. Those units would also sit on the floor. Some of them were from 400 to 1,500 pounds. We actually had one catch on fire once. We covered it with hand soap.

Worker 3: To remove the uranium from the vessels in the reduction area, we had to tip the vessels upside down and knock the uranium out. Even though there was a vent under the floor, it was still contaminated with dust.

Worker 8: I remember seeing the greensalt (UF_4) on people, on everything.

Worker 10: When we opened the furnaces in the foundry, quite often there were violent explosions – I don't know how else to describe it – that would spew into the air. It is my understanding that most of that was the uranium or the byproducts – fluorine, protactinium, and things of that nature. In fact, early on, quite often it would send smoke billowing downstairs.

Mr. Scalsky: Okay, so there was a lot of airborne contamination there.

Worker 3: We had hoods that we would pull down over it, but they really didn't help at that point.

Mr. Scalsky: Our next topic is UF_4.

Worker 7: I don't know if it's appropriate to talk about here, but you asked about airborne contaminants. Every once in a blue moon, we would have some kind of a small fire that generated black smoke that undoubtedly had plenty of uranium oxide in it for that particular time during which that smoke was being generated. What I'm talking about is the chips that had been removed from a machine or from many machines and then put into, as I recall, 55-gallon drums, but only partially filled by volume and then topped off with water and moved outside. I remember one time we had a certain facility outside. It was a very large covered shed where these chips were stored – at least overnight or for multiple days until they were further processed. I know that once or twice, we had a fire out there in the evening with a lot of black smoke being generated. The uranium chips had broken down – the water had bubbled off the hydrogen – and were somewhat exposed to the atmosphere. Since it was such an instantaneous crisis, two of us ran in to cover the chips with water again. We had to run through the black cloud to do that. We were only exposed for a couple of minutes, but nonetheless, there were airborne materials. That's one example.

Worker 8: I was a member of the Safety Brigade on the night shift, so we would occasionally (inaudible).

Worker 11: The turnings were very flammable, and would ignite. But the uranium oxide was very reactive and even under water it would create its own friction, so we had deluge systems that [name redacted] helped us construct. We had firefighting procedures that we invented.

Worker 12: We built a contraption so we could get the barrel lifted and place in a locker. We had a method of feeding water in from the top. That kind of situation would happen shortly after something came out of the furnace or out of the melting and casting area because the sludge would build up on the inside of the container.

Mr. Scalsky: I have seen indications that fires were rather common and that there were different methods of handling them at the time.

Worker 12: I had a safety brigade of about 50 to 60 people covering three shifts, so there was a minimum of 20 people at a time. We managed to go through the industrial safety training program at the fire academy. Oh yes, somebody from the academy came out and worked with us. It was successful.

Worker 13: I worked in security and the Rep Department for a short time. You're talking about airborne material. Which of these materials could be magnetized? We cleaned the magnetized air filters in the duct work from time to time, and whatever was attracted to the magnets would be

attached to that the filters. That was on those rep machines would get up inside of those magnetized filters.

Mr. Scalsky: This is the first I've heard of the magnet.

Worker 13: We used to take them out and scrape them off into a can.

Unidentified attendee: That was in the rep area. The magnets were probably for the (sounds like) C-10…

Worker 13: They were huge magnets.

Mr. Scalsky: When you say 'huge', how big were they?

Worker 13: They were probably 18 inches and bolted into the ductwork. So my question is: Could the uranium be magnetized?

Worker 2: No.

Mr. Scalsky: Apparently, the government supplied the UF4 to Nuclear Metals. The UF_4 came in drums, emptied into the blender, mixed with magnesium granules, transferred to a bomb, capped with graphite, and slowly heated in a pit furnace. After cooling, the bomb contents consisted of a layer of magnesium fluoride and a depleted uranium derby that weighed approximately 1,800 pounds. When the drums of UF_4 were emptied into the blender, the material could get on the floor, so it had to be shoveled back into the blender. The UF_4 process went to Carolina Metals after a relatively short period of time. Does anybody know the timeframe of that process and when it went to Carolina?

Worker 11: It was maybe in the late 70s or early 80s that we processed the greensalt. I don't remember the exact dates though.

Worker 9: I started working in 1977. It was a year or two before I got involved in that program, so it was in the late 1970s and early 1980s.

Worker 1: It was 1979 to 1983.

Worker 6: It was still going on in 2003 because I was at Carolina Metals.

Worker 1: Eventually, we also handled the UF_6 to UF_4 operation in Carolina, but that was at a later time.

Mr. Scalsky: What happened to the UF_4 processing area when the work was completed at Nuclear Metals and was moved to Carolina Metals? Was the area decontaminated, or was other equipment moved in, or being reused? What happened there?

Worker 9: Other equipment was moved into the area. We cleaned out a section of that area and the surface and installed the HERF press. The rest of the furnace area stayed (inaudible).

Mr. Scalsky: The next topic is the thorium work. There are three thorium jobs that come to mind: Billets from Tennessee Nuclear Specialties for rod stock, billets that contained thorium powder, and the R&D on thorium tungsten welding rods that somebody mentioned previously. Were there any other thorium jobs that you are aware of?

The license in 1981 indicated that the maximum amount at any one time was 25,000 kilograms (kg) of natural thorium and thorium oxide. Just for your information, the license also allowed 2,500,000 kilograms of depleted uranium in elemental oxide and fluoride form, and 25,000 kilograms of natural uranium as an element for oxide. I understood that there was actually a lesser quantity of thorium present. Does anybody have any information on how much thorium might actually have been onsite?

Worker 1: There were thousands of pounds. Thorium is a pretty dense material. I doubt that there were ever 25,000 pounds. I can't find anyone who was at Concord for the first few years who can remember what all that thorium might have been used for in the first three or four years.

Mr. Scalsky: We will have to see if we can find more information on that.

Worker 10: I want to add one thing about those thoriated tungsten tips that we used on our burr machines. We machined those every day. Our people from Supply would bring those tips to the machine shop, and every morning somebody would be assigned to machine them back into the correct shape. Then those tips were returned to the work area after a few hours and used – partially consumed. That was five days a week as long as those burr machines were running.

Unidentified attendee: I hate to repeat myself but we are talking about thorium exposures, and not necessarily thorium work. Earlier, I mentioned the explosions. If I'm not mistaken, during the (inaudible) process – the melting – daughter products were released. I forget which isotope, but I think it was either thorium-234 or thorium-238.

Mr. Scalsky: The next slide is a diagram of the facilities. Buildings A, B, and C were built in 1958; Building D was built in 1978; and Building E was built in 1984. The Butler Buildings are not on the diagram. There are four Butler Buildings that were built at different times during that period. Building A housed the laboratory space: chemistry, metallurgy, applied physics, and other laboratories. Building B contained the boiler room, the electrical switch room, the clinic, the cafeteria, and the locker rooms. Apparently, they stored some depleted uranium in the hallways at that particular time. Building C was the foundry and that had all the processes in there: the melting, extrusion, metalworking, rolling mill, swaging, grading, blending, pickling, and etching. That was the heart of the process. Building D had some copper removal, the pickling, the rod straightening, the aging, and machining. And Building E was added later to provide additional space for finishing and QA. There was storage of materials. There was liquid waste treatment. There was processing of waste material for shipping. The foundry had a lot of potential for airborne contamination. Have we missed anything?

Worker 4: Something that has not come up in the two prior meetings is the scope of the outbuildings. In quite a few of the Butler Buildings, there was widespread use of shipping containers for long-term storage – the steel containers that are used in the shipping industry, the ones with the big double-doors on the end that you can drive a forklift into to move heavy stuff in and out. There were quite a few outbuildings that had special functions.

Mr. Scalsky: From what have I read, there were four Butler Buildings. Some of them were used to store depleted uranium. The information I have says that Butler 1 was used for storage, that it was free of radioactive material. I still have to do some research on those buildings.

Unidentified attendee: Butler 3 (B3) was torn down and Building E took its spot. B3 was where the uranium turnings and sludges were kept. That was removed before they built Building E.

Mr. Scalsky: That's interesting. It was built over the Butler Building that was torn down. Was there any indication that there was ground-level contamination?

Worker 4: We had 8,000 drums of concrete-encapsulated machine turnings stored back there while we waited to restart our shipping, so there was a lot of material stored in Butler Building 3. I also provided a photo of the test site that we set up next to the building. It was a hole in the ground with the instrumented drums. We were using the 'strike anywhere matches' for a shipping standard to establish the safety of encapsulated machine turnings in shipment. We passed the 8 hours at 170° F, and the thing would start to burn 16 hours later after it had cooled down. Instead of cooling down, it would take off, so those fires were contaminating the ground, as well.

Worker 2: We applied that standard so we could ship the machine turnings safely.

Worker 4: That is assuming that the cross-country tractor trailer might see solar effects in Nevada that could cause the internal temperature of the trailer to go up to a certain temperature that would ignite the matches, so we applied the same standards for the safety level of the machine turnings.

Worker 10: Some of the outbuildings were used for storage, but one or maybe two of them were working facilities where they were shaping the charges from the foundry. That was probably in the late 1970s or early 1980s, and then they were moved into the Maintenance Shop.

Worker 2: The mezzanine in Building C was the location of the GAU-8 machining apparatus.

Mr. Scalsky: That's good to know.

Worker 5: I worked in the rep area. In 1974 when I first went to work, there was an acid area and a rep area. They pickled the beryllium and uranium butts by the rep area. They put the parts in there for hours and there would be a yellow cloud that would move through the rep area.

Mr. Scalsky: And was anybody there when the yellow cloud appeared?

Worker 5: We were running the machines.

Mr. Scalsky: What created the yellow cloud?

Worker 5: No, the clouds were the fumes from the pickling process with the nitric acid.

Worker 8: Are you also asking about beryllium facilities? Or are they separate?

Mr. McDougall: The compensation for beryllium is handled based on medical tests for sensitivity, and then to confirm whether or not somebody has beryllium disease. So NIOSH does not have to develop the same kind of history for beryllium as for radiation. We are here just to talk about radiation.

Worker 6: At one point, we went up to National Lead in Albany. Is there anybody here in this room that was associated with that group that remembers the year? The equipment that we took out of that facility was very contaminated. It was brought back and stored in the Butler Building out behind the Reps. I don't remember when, but I'm sure that other people were involved.

Worker 14: I think that we went up to National Lead around 1978. Yes, that was a large amount of contamination. That equipment was boxed up and had to be decontaminated before it left Albany. That equipment was moved to Nuclear Metals and put into storage. I believe that some of the equipment was put into use.

Worker 1: I visited the Albany facility more than once. Eventually, the owners got the government to take it over for zero dollars. We may have brought some equipment out of there before it was final.

When you mentioned the Butler Buildings, it reminded me that at least one of them was used to store enriched uranium. There were stacking arrangements so that the enriched uranium would be separated. There were poles going up, and bars going across, and every so often, there would be some pear-shaped object containing enriched uranium. They were separated. It was not only used for that purpose, but also was used by the government to determine whether they could transport enriched uranium over the road undetected. Our facility was involved in the prototype testing.

Worker 9: Acid pickling was also done in the mezzanine area of Building C. They had the same issues across from that in Heat Treat and had some issues with (inaudible) there during production. So they had the same issues with nitric acid running away and overwhelming the (inaudible).

Worker 13: I have one more brief question about airborne. There was a sifting process for the steel powder in the Finishing Department. Was the depleted uranium or any other product sifted in the same place?

Worker 8: I started sifting the (inaudible) in the QC area because it was stuck together, but they were not associated together.

Mr. Scalsky: The next subject is work schedules. We are interested in your work schedules because the number of hours that you worked plays an important part in calculating the doses that people may have received. We know that there were three shifts at some times. Does anyone recall when you started working three shifts?

Worker 3: In the Reduction area, I started in 1980 on the second shift. Prior to that, it was the second shift in the Rep area.

Worker 13: I worked a weekend shift, a double weekend shift on Saturday and Sunday, double-shift.

Mr. Scalsky: A 16-hour shift?

Worker 10: The foundry had a second shift when I started in 1978.

Worker 7: We had a third shift in machining pretty early on. It could have been as early as 1979 on the GAU-8 line.

Worker 1: For the company, it probably started in 1973 or 1974.

Mr. Scalsky: Did people work overtime? How much overtime did you work per week?

Worker 7: Yes, seven days a week – Saturdays and Sundays, nights, you name it.

Mr. Scalsky: Was it 8 hours a day, 10 hours a day, for 7 days a week?

Unidentified attendee: We worked 10- to 12-hour days. There was a lot of overtime available.

Mr. Scalsky: What period of time was that?

Unidentified attendee: It went on into the 1990s when things started to slow down.

Worker 7: In the machining area, I think there was a third shift in 1979 in a small area when they were machining in the GAU-8 line. And then eventually, the phalanx line was added in that area. For the longest time, we had bonus programs for getting the product out the door. That machining area, the CAF line, was running seven day a week. It might have shut down for 6 or 8 or 12 hours on a Sunday just because we didn't have enough volunteers, but it was basically in operation 24 hours a day, seven days a week.

Mr. Scalsky: What would was the average overtime during the week? 60 hours? 50 hours?

Worker 11: I think in my department it was about 60 hours a week.

Worker 7: In machining, it was 64 hours.

Worker 10: The Company used to have employee get-togethers once a year. They would give out cash prizes for different categories. One of the categories, if I'm not mistaken, was anybody with over 500 hours of overtime. There were always quite a few people with that award.

Mr. Scalsky: That is information that we would use to calculate doses. It is necessary to understand how long you worked to figure your potential exposures.

The next slide is about radiation protection. These are issues that we need to address in the dose reconstruction – film badges, bioassay urine samples, air sample analysis, air monitors, breathing zone sampling. Other things that are not listed are radiation and smear surveys, respiratory protection, protective clothing, ventilation, X-ray examinations, limited whole body counting, and lung counting.

Did everybody wear film badges? When were badges worn? When did you get badges? What periods?

Worker 15: I was issued a film badge when I started working in 1978.

Mr. Scalsky: Did anybody work there earlier than that?

Worker 2: I started in 1967. They issued you a film badge on your first day of work. You put it on a rack when you left and picked it up when you came in.

Mr. Scalsky: Was this only a film badge or was it also an ID badge?

Worker 2: Both…

Worker 1: I wore a film badge during all my years in Cambridge and I wore one when I came over to Concord in 1958. I left the company in 1969, but I was also issued a badge when I came back to work in 1972.

I did not wear a badge during the last few years, but I did for many, many years when procedure was for all the employees to wear them. For the time period that you are talking about, the practice was in place in 1958.

Worker 16: I started working at the Hood Building in 1956. We had film badges then, and when we moved to Concord, we continued to have film badges.

Mr. Scalsky: Who wore the film badges?

Attendees (consensus)**:** Everyone…

Mr. Scalsky: Secretaries and everybody who came in to the building?

Worker 17: Yes. Weren't there two badges – one with a picture and a narrower one?

Mr. Scalsky: Why was that? Do you know? Were they actually two film badges?

Worker 4: There was a brief period in the late 1970s…

Worker 7: We had always worn the film badge (the long narrow one). At some point, they incorporated it into our ID, and then we only had one badge that had both our picture and the film.

Mr. Scalsky: Did you ever wear a thermoluminescent dosimeter (TLD)? It's different.

Worker 10: Yes, we did wear TLDs. I think that was in the early 1980s. We wore them on our gloves, on our faces, on our safety glasses, and on our shirt pockets.

Mr. Scalsky: Did they tell you where to wear it?

Worker 11: When we got our suits, they had a plastic holder on the pocket.

Worker 9: I remember a period of time when they issued two badges, and they were both radiation badges, so they could measure the radiation difference. I just had a film badge, but others also had the TLDS, depending on where they worked. I didn't need the TLD at that time, but we were told to wear them here (on the chest). The foundry workers had the rings because their hands were always in the crucibles. The hazardous waste department had special dosimeters, too.

Worker 8: We had them in QC, too.

Worker 18: When I first started in1982, I was doing the laundry. That was when they started bringing the laundry in. I collected the laundry from the workers. At that time, we had the long, narrow badges. My uniform was a t-shirt and blue pants, and I wore by badge on my belt.

Mr. Scalsky: Did you have pockets in the t-shirts?

Unidentified attendee: They were button-up shirts.

Mr. Scalsky: Did you do the laundry in house, or did you prepare laundry for shipment out?

Worker 18: I handed out the clean laundry when it came in, and I brought the dirty laundry back and put it into the bins for shipment out to the laundry service for cleaning. I also handled the boots that guys turned in from the foundry and put them into lead barrels that were shipped out for disposal.

Mr. Scalsky: Do you know who did the laundry for you?

Unidentified attendee: The name of that company is Interstate Nuclear Services.

Mr. Scalsky: Were you ever given the results of the badges that you wore? Did you know what your exposure was when it came back?

Worker 12: Health physics issued a report with our exposures periodically.

Mr. Scalsky: Did that regulate whether you could continue working in an area or not?

Worker 11: Yes, they pulled us off the job if it got too high. We also gave urine samples. If there was a spike in the urine, they pulled you off the job.

Mr. Scalsky: We will get to that in a minute. Okay, so now we understand that everybody wore badges, even the secretaries. Is it also correct that nobody went into the production areas without a badge?

Attendees (consensus)**:** Yes.

Mr. Scalsky: The next topic is bioassay. NIOSH has documents that show the urine samples started in 1958. From 1958 to 1983, the documents indicate there were 14,500 samples analyzed for uranium. Another 484 samples were checked for depleted uranium in1983. There were also 255 samples analyzed for enriched uranium in 1958 through 1962, and also in 1970. Six samples were checked for thorium in 1964. No urine samples have been identified for 1968, 1972, and 1975. Is there anything significant about those three years? The results may be there somewhere. We may just have not found them yet. Is anybody aware of anything going on at that time that might have happened?

Worker 1: It's not a direct answer to your questions, but I think it is significant to say that the urine sample practice continued from Cambridge. I cannot think of any reason why you wouldn't have data for those years.

Mr. Scalsky: We are in the process of searching for additional records. Maybe we will be able to fill that in when we get more records. Which employees provided urine samples? Did everyone provide a sample once a year?

Attendees (consensus)**:** Everybody gave a sample at least once a year.

Worker 11: Certain areas had more frequent sampling, like the foundry and hazardous waste.

Mr. Scalsky: What was the frequency? Weekly? Bi-weekly? Monthly?

Worker 11: It was definitely a monthly schedule.

Mr. Scalsky: I have also heard that the foundry, the Reduction area, and maybe QC provided samples every week. Is that reasonable?

Worker 4: Yes.

Mr. Scalsky: Did you see the results of your urinalyses?

Worker 11: We were pulled off the job if it went over.

Mr. Scalsky: Let's talk about air monitoring. I understand that there were twelve locations that had more than one monitor in a particular location. You know, they might have had 10 monitors in one location and another location would have 10 monitors. Is anybody aware of where monitors were located and how many there were?

Worker 7: In the machine area, they were sort of dangling between every pair of machines, especially in the high production areas – GAU-8, phalanx, and large caliber. You know, like between a pair of CNC machines, between a pair of DVAs, (inaudible), or whatever. There were tubes hanging every place. I think somebody was coming along and picking those filters out at least once a day, if not more often.

Mr. Scalsky: Once a day? I got the indication that they were changed every two weeks.

Worker 9: Certainly from 1981 on as far as the large scale goes. I can say the same thing for the phalanx line. I thought we had filters hanging around (inaudible) when I went to work there in 1978. They checked the air flow around the samplers every day, and that is possibly what some of the confusion is over. They went around with a flow meter and checked the concentration.

Mr. Scalsky: Was that every day?

Worker 9: The sampling rate obviously affects the concentration.

Mr. Scalsky: In 1959, an AEC inspection indicated that the air samples were to be obtained during every operation involving high enriched uranium. Do you know if that happened– if every operation was monitored with an air sample? Is anybody aware of that?

Worker 7: In the machining area, we had air samplers at each of our grinders. We had a few grinders in the machine shop. But it seemed like virtually every place we had somebody working at a machine, we had a sampler in the area. It might not have been hanging exactly in the area where we had engine waste. At the Bridgeport mills, we might not have had an air sampler on each one of those machines, but I know we had one in the area. I already described what we had around the high production machines.

Worker 4: That was depleted uranium that they were working with in the other area.

Mr. Scalsky: Did you use breathing zone samplers? You called them PAMs earlier. Do you know where they were used? What jobs?

Worker 14: I was in maintenance. I used to see the guys wear them a lot in the foundry and the reduction area. Maintenance personnel wore them extensively when they were changing the filters. The welders wore them when they were doing welding operations up inside furnaces. The PAMs were definitely used in any area that had a lot of dust or oxidation.

Mr. Scalsky: Was that primarily during maintenance work? I understand that PAMs were never worn in Quality Control. The QC man in another meeting told us that.

Worker 15: We wore PAMs in Quality Control when I started working in 1985. That was in Building A.

Mr. Scalsky: Thank you. Let's talk about radiation and smear surveys. When I asked at the morning session if there were radiation safety people on site, I was told that there were people from MIT who were there in 1958 that were classified as radiation safety. Were these people trained in radiation safety, or were they assigned to be the radiation specialist for a period of time? That was a common practice in a lot of these facilities. In the reactor facilities back in that time period, the maintenance man would be the health physicist for the week or the month, or whatever period of time. Then the operations engineer would take over, and then somebody else would take over until they hired a trained health physicist. Is that the same sort of thing?

Worker 1: Not quite… There was no health physicist on the company's employee payroll. [Name redacted] of MIT came in every two weeks or every month to review the work that [names redacted] were doing. I'm not sure if [name redacted] is still alive.

Mr. Scalsky: Were radiation surveys performed for specific jobs? Did somebody come around and make a measurement of the radiation levels in the area around the job you were doing and tell you what they were? Does anyone recall?

Worker 3: I remember health physicists and personnel coming down to the Foundry for radiation surveys at least once a week in the early 1980s.

Mr. Scalsky: Was that for a specific job or was that a survey that they did on a routine basis?

Worker 3: I think it was routine, not for a specific job, because we did pretty much the same type of production.

Worker 1: We had more skilled people, more trained people that were never health physicists. There was [name redacted] during the MIT and Hood Building days. I think he came over to Concord for a short period of time. [Name redacted] was on the company payroll for a short period of time – an extremely brilliant man.

Worker 7: In the machine shop, one time we wanted to use a Simonds grinder for a specific job. We were trying to run some really miniature things that looked like 774s, but they were only about 3 ½ inches long. I forget what the number was on them. But any time we wanted to start up the grinder for a small production run, Health Physics would always send people down. We had to process a few parts while they took air samples. They were looking for coolant spray and things like that. They had to sign off, or at least verbally give us permission before we could start the job. Yes, there were instances where specific testing was done for specific jobs.

Mr. Scalsky: When was that?

Worker 7: It was in the early 1980s and into the late 1980s.

Worker 19: I worked in the (inaudible) area, which was where they kept all the reject material. Before processing, that was where it was also stored, so they monitored that area periodically for the radiation levels because we were completely surrounded by it.

Worker 11: In the hazardous waste department, we tried to reduce waste by experimenting with different schemes for waste processing. The health physics department sent people down to make sure things didn't catch on fire or that we weren't overexposed when we tried new processes. It seems to me that if we were doing certain jobs, we had to go get a PAM.

Worker 4 to Worker 11: Do you remember when you were playing around with the shredder? We ended up getting a steel-belted radial tire shredder that worked really well. Didn't we have that housed in one of those transport containers? I didn't think that we should have that in there. I am trying to remember if that was ventilated.

Worker 11: When I first started there, we used the big shredder that was in (inaudible). Then as years went by, the venting got better.

Worker 12: In many cases, when we were ready to begin a certain project, we had a job description that was put together by an engineer or maybe some of the technicians. If it was a first-time operation, we documented what we intended to do step-by-step and then we followed through and corrected it as we went along until we completed the final job description. That gave the people in Health Physics and the Safety Department a chance to observe and make sure the procedure was followed properly. If something went wrong, you could find the reason.

Mr. Scalsky: So there was a procedure for the job. Did they prepare a radiation safety work permit for that job?

Worker 12: Yes, for many years the radiation work permit was also included.

I continued working with the company after Nuclear Metals moved to Concord in 1958. When I left, I was working in the foundry in melting and casting. For some reason, the work decreased and I had the opportunity to leave. I was a [identifying information redacted] at the time and I got on full time with [identifying information redacted]. So I left Nuclear Metals and worked full time with [identifying information redacted] for 15 years and then back to Nuclear Metals as [identifying information redacted] on a contract basis. I checked the roof stack monitors and changed them on a periodic basis. After a time, the vice president of safety approached me and told me that they had had an NRC inspection and the inspector had suggested that we establish a position for [identifying information redacted]. He told me to tailor the job description for what a [identifying information redacted] would do. After I brought him a few suggestions, he asked me for a resume and I was hired.

Worker 10: My recollection is that the radiation work program began somewhere around 1982 or 1983.

Worker 18: I worked overtime and part-time down in the Packaging Area and also in Shipping and Receiving. I remember Health and Safety coming down with Geiger counters and taking smears and radiation surveys on the crates and inside the trailers. I can't tell you exactly when that was.

Mr. Scalsky: The smear surveys and the radiation surveys are Department of Transportation requirements. Were smear surveys done in the plant on a routine basis for removable contamination?

Worker 11: When we moved into the new building from the Butler Building, the smears were done all the time. I don't remember seeing them in the old building, but in the new building (inaudible).

Worker 7: I recall seeing people wiping the floors in the machining area, but I can't tell you how often. They also did smears on surfaces of the machines. Not necessarily a wet surface, but across the top of a machine. Perhaps they were looking for precipitate out of the air. That was at the CNC machines, as well as the high production machines.

Mr. Scalsky: There is one thing that I have not addressed. Was there a cleaning routine, like mopping around the machinery?

Worker 5: Yes, we had Zambonis that went up and down the hallways to keep the dust down.

Worker 6: We had to use a vacuum on the floors because of the greensalt.

Worker 13: The foundry workers used to clean, vacuum, and wash the floor every day. I do recall coming in, the health physics people coming down and taking floor sweeps.

Worker 7: In machining and in the high production areas for sure, there were buckets on wheels in the corners with mops sticking out of them. I don't think there was a 24-hour period that went by that the floor in any part of the machine area wasn't wiped. And it was a wet wipe, and it was to gather our chips, as well as any coolant that might have spilled on the floor. So it was done with some frequency if you measure a 24-hour period.

Worker 3: It wasn't every day, it was every shift.

Worker 7: Are you asking us when the machines were cleaned out, or when the areas were cleaned out?

Mr. Scalsky: The general question was whether the areas were cleaned, rather than the machine itself. But, obviously, the machines were cleaned out.

Worker 7: All of the machines had chip conveyors, so the chips were continually pulled out into a container. The CNC equipment had in-the-ground conveyors for chips. In other words, the machines were literally designed so the chips would fall right through the bottom of the machine.

The machine was at floor level and the chips fell through a hole in steel plates, and down into a 3- or 4-foot deep conveyor that was full of coolant. The chips would be moved down the conveyer and dumped into a container and into a hopper of some size. That was constant – when the machine was running, the chip conveyor was running, so the chips were being pulled out constantly. If the machine didn't have a chip conveyor, the operator had to be aware of the production on the machine and watch for chips. The grinders had a requirement for sludge. When it got deeper than one inch on the bottom of the grinder, they shut the grinder off and started scooping sludge out.

Worker 4 to Worker 11: How did the chips get from the CAF line to the butler building for processing?

Worker 11: We put them into 55-gallon drums, 5-gallon pails in sludge. Then we moved the cart from the machining area to the hazardous waste area for storage. At some point, we would gather it up and process it.

Worker 4: I mentioned that this was a problematic process before the completion of Buildings D and E. When the new buildings were completed, we were able to make the entire plant a restricted access area. So these carts had to be carted from areas where uranium was being processed through, in this case, down the elevator from the A building second floor to the first floor, and then down the corridors and outside to these Butler buildings. It was always a constant problem trying to maintain cleanliness. We basically used these Zambonis to make sure that we could do this very difficult task.

Mr. Scalsky: I can see where going through the corridors of Building A to the outside storage areas could be a problem.

Worker 8: Can we talk about the machines themselves being wiped down? Is that a concern? Was there a regular schedule for cleaning the outsides of the machines?

Mr. Scalsky: That is important, too. You know, if they didn't wear gloves, it's certainly important. If they did wear gloves, it was still important but had less potential hazard for the individual.

Worker 7: In the machining area, we had steam cleaners. We had two of them. One was up on the CAF line where GAU-8 and phalanx was being machined. To the best of my recollection, some of the machines were taken down and all of the shielding was taken off, and then they were steam cleaned on a weekly basis. I don't know how often, but I know that it took place. There was steam all over the place. That got to be a pretty messy operation, so all peripheral equipment in the area was shut down at the time when the machines were being cleaned, so every last bit of sludge or chip was being pulled out of the bottom of the machines. So the machines were cleaned frequently, though perhaps not more frequently than once a week.

Worker 4: Does anyone know if we had dedicated Zambonis for the "hot" process areas versus the "clean" areas, or was the same machine used to clean everywhere?

Unidentified attendee: We had separate machines for each area.

Worker 10: My recollection is that Zambonis didn't come until a certain point in time. As I recall, when I was hired in 1978, there wasn't a Zamboni.

Worker 6: I was hired six months afterwards. I didn't have vacation time yet, so that was my summer vacation the first year I was there. They had a plant shutdown, and I literally washed the whole foundry floor over and over and over again and actually sealed it. The other thing is, HP would come down and tell us that an area was hot and we would clean. We spent so much time cleaning the outside surfaces of the hood doors and spray painting them that everything was twice the thickness because there were so many coats of paint. We found out that some of the workers in the cleanest areas also had higher exposures because they spent so much time cleaning. Their numbers were higher. There was a lot of that.

Mr. Scalsky: Let's go to the next page: respiratory protection and protective clothing. Did you wear dust masks or respirators?

Worker 5: I wore a dust mask in the Powder Room.

Mr. Scalsky: A dust mask basically in that case. Were there particular criteria used to determine whether you wore a dust mask or a respirator?

Worker 12: That depended on the operation that was taking place. In many cases, workers were mandated to wear the positive pressure air purifying respirators (PAPRs). Other times, we could get away with a face mask. It was an operation-wide determination.

Worker 11: Most jobs, nobody wore anything. There were no respirators, no dust masks, no (inaudible).

Mr. Scalsky: Someone indicated that in the Reduction area, workers wore respirators every day. Was anybody here in the reduction area? Did you wear them every day? Were they cleaned once a week?

Worker 3: Yes, but I don't remember how often they were cleaned. Pretty much every job in the reduction area required it. Workers in the pickling area used canister respirators.

Worker 9: In the reduction area, they had to wear the half-mask respirators. They were responsible for cleaning them with alcohol every day and keeping them in bags at the end of the day. And at the end of the week, if I remember correctly, they turned them in and got brand new respirators. They were put in a washing machine. At one point in time, they actually had a machine to wash the respirators.

Worker 11: We didn't have to wear respirators in the hazmat area until the 1980s. We did not wear them when I started working there, but as time went on – I'm not exactly sure when – we had to wear them.

Worker 9: I started working in 1977 and a lot of this stuff wasn't required when I came. There wasn't much in the way of respirators until later in the 1980s, when it changed a lot.

Mr. Scalsky: There is a transition period. A lot of changes were made in the late 1970s. RWPs came into effect, and things of that nature.

Worker 11: When the hazmat department finally started using respirators, we had to turn them in every day.

Worker 5: We had fitting tests in the 1980s.

Worker 11: We had to be evaluated.

Mr. Scalsky: So you had to have a physical for wearing the respirator.

Worker 5: Yes, but I'm not sure exactly when it started in the 1980s.

Mr. Scalsky: And then you had to shave your beard.

Unidentified attendee: It was a good program.

Mr. Scalsky: Did you have to wear protective clothing? Coveralls, shoe covers, gloves, lab coats, head covers? Was there a difference between the gray and blue uniforms?

Worker 4: Wasn't there a special procedure for foundry workers and reduction workers? We found that their clothes were particularly "hot." Also, wasn't there something about the laundry services where the clothes were coming back hotter than when they went out, so we had to change vendors? Does anybody recall that?

Worker 18: I vaguely remember because it was at the time that I was in the department that collected the dirty uniforms. We were doing a smear and had to bag it if it was over. We checked them when they came back in.

Mr. Scalsky: How did you check the uniforms when they came back from the laundry vendor?

Worker 18: Health and Safety checked the laundry with a Geiger counter and would do some smearing. It was more random as opposed to every single uniform.

Worker 10: I can speak specifically for the foundry because I worked there. When I came in 1978, we wore blues and we went in and out of the foundry in the same uniform. We didn't change our shoes at the time and we had to wear rain rubbers over our shoes inside the foundry. At some point in time, we started to wear yellow radiation suits on top of our uniforms. After that, things changed and they started washing the laundry from the foundry separately.

Worker 9: I vaguely remember the fact that they began to segregate the laundry because they knew that it was the foundry and reduction area that made them have to double wash them because the clothes were coming back too "hot."

Worker 3: We had two sets of boots – one set for inside the foundry and one for outside the foundry. We changed them every time we had to go somewhere.

Mr. Scalsky: So you had a particular place where you sat down, took your shoes off, and changed them?

Worker 3: We actually took our boots off on one side and put them back on, on the other. I think that started in late 1970s.

Worker 4: There is some period in the 1980s where zigzag came into (inaudible) and we were getting rid of wall pallets, we were getting rid of booties, you know. So there was a drive to cut down on the volume of waste created, so we shredded it.

Mr. Scalsky: Our next topic is ventilation. Was there local ventilation for certain jobs?

Attendees (consensus)**:** Yes.

Mr. Scalsky: How was that set up? Was the ventilation a tube that was placed above certain areas? Or was it a general ventilation system for a particular container, box, or whatever?

Worker 7: Every machine tool had a vent coming to it. Manual machines had one more tube. They (inaudible) tube coming down (inaudible) into a Y so you can catch smoke going in or mist going in from different directions. The automated machines had sheet metal caps built on them. And the vent tubes would come down on the top end or side of these metal caps. The caps were, shall we say, (inaudible) smoke being generated in that particular machine operation. Grinders had cap-like shields or shield-like caps on them that had one or two vent tubes coming to the same place. So yeah, every machine that was used on DU or beryllium had some filter system. But every machine tool had tubes coming to it and enclosure (inaudible) production.

Mr. Scalsky: Was the ventilation effective?

Worker 7: Yes. An example of what we started when we first installed a number of (inaudible) lathes for large-scale production, the venting was so good that it sucked the airborne coolant right out of the machine, up the pipes, into the (inaudible). The coolant just went up to the ceiling and into the transfer tubes and vent tubes that were three feet in diameter. At night, if they shut the vent down, you could hear the gurgling sound of the coolant coming in and rushing back down the tubes, and everybody would run away from this because they knew that someone was going to get a bath. Yes, they were effective.

Worker 9: (Inaudible) ventilation systems, (inaudible) valid from the day I started, as far as effectiveness. We built a lot of ventilation systems. I started in 1977. We would sometimes

(inaudible) coolant, but we would find it near a chuck. We were blowing the air out, blowing the particles out of the machine. You probably understand what I'm saying.

Mr. Scalsky: I saw something that indicated there was an awful lot of work on the vents and there were an awful lot of vents at the top, on the roof.

Unidentified attendee: And those vents did a pretty good job.

Mr. Scalsky: And it was those vents into which these tubes were hooked into the ones on the roof?

Attendees (consensus)**:** Yes, that's right.

Mr. Scalsky: The next topic for discussion is X-ray examinations. Did you have a pre-employment x-ray and physical?

Worker 17: Yes.

Mr. Scalsky: Everybody who was hired, regardless of job title?

Worker 17: Yes.

Mr. Scalsky: Did everyone have an annual physical examination and an X-ray?

Attendees (consensus)**:** Yes.

Mr. Scalsky: How about a post-employment X-ray?

Unidentified attendee: I don't think we had a pre-employment X-ray back in the 70s.

Mr. Scalsky: Well, if you were going to be in a facility where you wore a respirator, you had a physical for that.

Unidentified attendee: But that was in the 80s.

Mr. Scalsky: That was in the 80s. So the consensus is that in the 70s, you don't recall having a pre-employment X-ray. If the office personnel had them in the earlier days, there is no reason people working in the factory wouldn't have.

Worker 9: Having a pre-employment physical was a hiring requirement.

Worker 17: I started in 1974 and everyone had X-rays, both pre-employment and annually.

Mr. Scalsky: Did you have X-rays?

Worker 17: Yes.

Mr. Scalsky: And that was part of the pre-employment and the annual. Do you remember what kind of x-ray? Were they front-to-back or back-to-front?

Worker 17: Chest…

Mr. Scalsky: Did they take side views?

Worker 1: Yes, side views also.

Mr. Scalsky: Were all of the X-rays done at Emerson Hospital?

Worker 1: No, the site was associated with Emerson Hospital, but not at Emerson Hospital. They were done at a private practice.

Mr. Scalsky: Were any of the X-rays done onsite at Nuclear Metals?

Worker 1: No.

Worker 4: We did not have an X-ray machine on the premises to do chest X-rays.

Mr. Scalsky: The reason why that is important is that if they were not done on site at the company, workers do not receive credit for the radiation dose. X-rays offsite do not count in the dose reconstruction process. X-rays taken for injuries also do not count in the dose reconstruction, even if the injury is work related.

Worker 1: The X-rays that were taken off site were done at the direction of the AEC.

Mr. Scalsky: That doesn't matter, that's what the law says.

Worker 4: Thank you for explaining that.

Mr. Scalsky: The last page of the handout is a partial list of the facilities that shipped and received metals to and from Nuclear Metals – only a very minor part as I found out during these meetings. I guess it includes all of the materials you worked with, whether it is depleted uranium, highly enriched uranium. I think we have covered that pretty well.

Worker 1: I noticed that on your list there are only government facilities.

Mr. Scalsky: Yes, the national laboratories.

Worker 4: May I ask how shipments to and from NMI play into this petition process?

Mr. Scalsky: A lot of materials were handled at Nuclear Metals. People who handled these materials had to prepare them for shipping, and they went through a process to get into the facility, so a great number of people were exposed in the process. We have to consider that in

developing the dose reconstruction. Does anybody have any questions or comments about anything we may have missed?

Worker 2: am curious about the timeline – finalization of the report, approval or disapproval, et cetera. What is the average length of time that this process takes?

Mr. Scalsky: It all depends. We generally have 180 days to take care of this, but there are reasons why that that could be changed. If we don't have enough data, we have to do additional data research. You know, data capture trips. If we have to do a data capture trip, then that could extend the time. But it is generally 180 days that we require.

Mr. McDougall: Just to elaborate on that a little bit. That 180 days is going to run out, I believe, toward the end of May. But as he says, the 180 days is a target, but then NIOSH won't actually report to the Advisory Board until the next Advisory Board meeting. If NIOSH recommends a special exposure cohort and the Advisory Board votes without asking for any further research, it can cease there. But if the Advisory Board raises questions, it can go on for a long time. This could get wrapped up by probably late 2012. Or, it could take a while.

Worker 2: What happens after that? Does the individual have to submit records?

Mr. McDougall: Assume, for arguments sake, that NIOSH recommends and the Board approves this group as a part of the special exposure cohort. The process doesn't just stop with the Board. The Board votes and then their recommendation goes to the Secretary of Health and Human Services. She makes a recommendation, and that recommendation has to rest with Congress for thirty days. Eventually the decision will become final. Once they approve the special exposure cohort, the Labor Department will go back and look at any claims that have already been filed. If those claims meet the criteria, then the Labor Department can go through a process of probably awarding those claims. The main criteria are 250 days of employment during the period of the special exposure cohort, and a qualifying cancer. And then any new claims will be processed pretty quickly. If somebody gets a cancer let's say in 2013, that claim would get processed pretty quickly.

Worker 1: I try to look at things in a very simple way. Everyone who worked at Cambridge is covered because there is a special cohort for Cambridge. Now I know there isn't one for 1958 to 1983 yet, but there is a special cohort in place for Cambridge. I want the record to show this: Every single piece of equipment was moved to Concord. Every single pound of material was moved to Concord. Every single process was continued in Concord for some period of time. All the personnel were essentially the same for some period of time. The regulations were about the same in both time frames. So as I look at it, simply, to have a cohort in place in 1957 and then not in place in 1958 when the very same thing is going on just does not make sense to me. I respect what you are doing and I respect people who calculate things I don't know how to calculate even more. But I would like the record to show that those are my thoughts on that. I will continue to be just as helpful to anyone who calls me, whether it is you, Sam, the ATL folks, or Bob. I will help, and I can be an instrument to getting help from others who are not here. But I will have great difficulty understanding the difference remaining for a long, long period of time.

Hopefully, it will get done in 2012. And I hope I said my piece with the greatest respect for each of you.

Mr. Scalsky: We thank you for your concerns and your comments. A lot of those things are out of our hands. It's a different petition.

Worker 1: Thank you. I understand.

Worker 4: There are a number of people in the last two days who did not want to interrupt the flow of the meeting or the topic. They have approached me and want to submit affidavits at this point. Can we still do that before the time is up?

Mr. Scalsky: Yes.

Mr. McDougall: Let me just say something about how you can all be involved. You can always submit more information to NIOSH. Once NIOSH is ready to present the petition evaluation before the Board, you as the petitioners will have an opportunity to speak immediately after NIOSH makes its presentation. If they happen to do it at a place that is convenient, you can do it in person. If they do it at a place that is not convenient, you can do it by conference telephone – and it is frequently done by conference telephone. The rest of you can all listen in during that meeting since there is a toll-free call in number where you can hear NIOSH's presentation to the Board. You can hear the board members ask questions, you can hear the petitioners speak. And not immediately at that time, but at some point during that Board meeting, they will have at least one public comment period when any of you can speak to the issue. You can add your information at that point as well. This is an ongoing process.

Worker 4: Is there an appeal process?

Mr. McDougall: Yes. There is an appeal process.

Worker 2: If you live long enough…

Mr. McDougall: This is really where Bob's company comes in to play a little more. The real appeal process here is with the Board. Especially if NIOSH doesn't recommend everything that's in the petition, the Board may take it under advisement. They may have their support contractor conduct an analysis of the report, and it can go back and forth for a long time. I said this could be completed by the end of 2012, but some petitions have been going on just before the Board for a couple of years. Sometimes the Board will set up a working group to study the issues that they think remain outstanding. Then that working group will meet. You will also have an opportunity to at least listen to their input and have documentary input into that process. So it's an ongoing process. I don't want to paint a bleak a picture, and frequently AWE sites of this sort may not take very long to resolve.

Mr. Lewis: I would like to say something on behalf of our contractor, NIOSH, and all of us as Americans. We owe you a debt of gratitude for the work that you did for this nation during the

Cold War. Whether you served in the military or not, you are Cold War veterans. You helped with this thing, the Cold War. Thank you very much for the sacrifices that you made for us.

Worker 1: Thank you very much.

Mr. Scalsky: Does anybody else have anything else they would like to discuss?

Worker 8: This is hard because most of us, if not all of us, really enjoyed working at Nuclear Metals. And so having to come in and say, 'Here's what was wrong' you may get some further things that (inaudible). It's difficult.

Mr. Scalsky: I am very impressed with the camaraderie that you have with each other. Everybody has stated that they were very happy to be working at Nuclear Metals, and it is unusual to find a facility where everybody is really satisfied and working together. I know it is difficult for you to come in here and say, 'Well this was wrong,' but it is all part of the process. We thank you all very much for doing that. It helps us greatly.

It is an evolutionary process. I mentioned to one of the other gentleman today that even in our business with the National Committee on Radiation Protection, they developed the rules and it was an evolutionary process to get to where we are now with the regulations. So, it is not unusual that it happens. Everyone is still learning.

Worker 1: It is all very interesting. I have enjoyed listening to you.

Mr. McDougall thanked the attendees for their time and dismissed the meeting at approximately 4:00 p.m.