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DOW WORKER OUTREACH MEETING

June 20, 2007

SimmonsCooper, LLC

707 Berkshire Boulevard

East Alton Illinois 62024

Court Reporter

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P A R T I C I P A N T S

Mr. Charles (Chick) R. Phillips,
Sanford Cohen & Associates
Mr. Grady Calhoun, NIOSH
Ms. Deb Detmers,
District Director for Representative John Shimkus

Dow/Conalco/Spectrulite Employees:

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MR. PHILLIPS: Okay. If I can have your attention, I think we're finally ready to -- to go here. We got everything in place. I think you know -- I think I met most everyone. I'm Chick Phillips. I'm with Sanford, Cohen and Associates called SC&A, and we're a contractor to the advisory board on Radiation and -- whatever it is -- Radiation and Worker Health.

And we have been charged by the board on two things related to Dow. The first one of those is to review the SEC petition and the evaluation of the SEC petition by NIOSH. And in a recent board meeting we were asked to look into the thorium exposures past 1957. Immediately when that was given -- well, immediately when I was brought in to look into that the first -- one of the first things I did is call and ask him to set up the meeting for today.

And I really appreciate your being here. I know you've gone through this several times and you probably would just as soon not go through it again. But the reason I did that is because I think you have important information. The documents we all know are not complete. And even when you have the documents

you don't get the detail in the documents that you get from you who had the experience in working there. So again, I thank you very much for being here today and sharing the information with us. In setting the meeting up again -- I think I'm going to call you okay --

: That's great. Absolutely.

MR. PHILLIPS: -- thank for making the arrangements with you. And I know of a lot of you had something to do with that too including . So I -- and I appreciate all the help on doing that. I appreciate SimmonsCooper for hosting this for us and all the work that they did in advance with setting the meeting up particular I'll call him because I can't pronounce his last name. But all that. But again, I thank you very much for being here.

What I'd like to do at this point is just let's go around the room, introduce yourself and briefly say what -- for the workers what period of time you were working at the plant and if you, you

0005

know, sort of summarize whatever your job. I know -- I know you had more than one job. But if we could just do that to begin with, and then we'll -- we'll proceed with the meeting. I'll give you a few details of what I'd like to do today, and then we'll go from there. So if we start with you, .

: Yes, I'm . I taught at Washington University for years, retired in . And I've been acting as sort of the advisor for the Special Exposure Cohort group for the Dow Madison site and am the designated SEC petitioner for the site. So I'd also just like to thank everybody for coming this -- this time to provide even more detailed information to SC&A and to NIOSH. .

: . I've come to know a lot of the workers through my association in trying to help the employees at General Steel Industries. I met Mr. early in that beginning project and have gathered a lot of information regarding Dow in trying to assist these workers any way I can in sharing and researching information about the facility.

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with Dow. I started in the pot room, went to -- finally ended up going to inspection and to

0006

supervision before I retired in -- at the end of

'83.

MR. PHILLIPS: Thank you.

: I'm . I worked at Dow from '55 to . And I had my own office in Number 2 Building which is the building that was located between the main plant and the main building and operated between the sales department and production. And it was my job to get orders from the sales department and send them out to all the different contractors. It was commercial and defense contractors. And so I was in the rolling mill picking up samples at different times and out in the extrusion plant.

They had a standing order that I was to receive ten feet of every extrusion that was -- that we produced which I stored in my building. And I remember handling mostly thorium products. I remember the sheet goods more than anything else. And I had about at least -- at least a dozen different defense contractors I sent the materials out to. And the products I remember more was in the old 63 gauge more than anything else, and it was all the --

MR. PHILLIPS: Excuse me. Can we -- can we pick up on that later.

0007

: Okay. Yes.

MR. PHILLIPS: Thank you very much. But I'd like to get that --

: Yes.

: -- in sequence with the other stuff. Thank you.

: My name's . I worked at Dow from 1954 to I retired. I -- I worked all them years in a cast house in the casting department and in the pot room and as a melter and metal caster. And I spent the latter part of my work years out in the warehouse where the work was a little lighter. And I worked in the finishing department also.

MR. PHILLIPS: Thank you, .

: My name's . I worked 1960 to when I retired. I worked in the cast house the whole time on the magnesium floor and the aluminum floor as a melter, metal caster, and crew leader for all those years.

MR. PHILLIPS: Thank you, .

: My name's . I worked at Dow from 1955 until . I was a mag melter part

of the time, ingot finisher and aluminum melter.
MR. PHILLIPS: Thank you, .

: My name's . I started in and retired in . I worked my whole time in the casting department, metal caster, melter, and a crew leader. I worked every time they worked thorium up until the time I retired.
MR. PHILLIPS: Thank you, .

: My name is . I was the in the casting department from to . So I worked in receiving and storing the metal, the castings -- the aluminum castings, the scalping, everything that had to do with processing metal and also storing of the thorium and furnishing it to the -- to the pot room for them to use.
MR. PHILLIPS: Thank you, .

: . I worked from . I worked years in the rolling mill then got shipped over to extrusion. I was press operator and helper in extrusion.
MR. PHILLIPS: Thank you, .

: I'm . I hired in in and retired in . And I worked mainly in the extrusion and rolling mill. And I worked in all three departments. I was a press -- I was a Press operator in extrusion for the last years I think.

MR. PHILLIPS: Thank you, .

: I'm . I went to work for Dow in . I retired in . I started out in the extrusion department for one year, and I was transferred to the rolling mill. And in I went to maintenance and I worked throughout the plant.
MR. PHILLIPS: Thank you, .

: I'm . I started in . I spent years in the rolling mill and years in maintenance.
MR. PHILLIPS: Thank you, .

: I'm . I started work at , and I worked until (phonetic). And I worked in all the departments, and I -- I was a finisher on the heavy press. But I worked in all the departments in the plant.
MR. PHILLIPS: Thank you, .

: My name is . I was a

heavy press operator. I hired in in and retired in years and did all the smaller presses also, 7, 6, 9 Press.

MR. PHILLIPS: Thank you.

: . I worked from to extrusion .

MR. PHILLIPS: Thank you, .

: . I hired in in to . I started in extrusion. I worked as a finisher. I also worked on presses as a helper. I worked in the mill as a roll grinder, and I -- my job was a PSA, plant service attendant in maintenance.

MR. PHILLIPS: Thank you.

: . I hired in in as hourly for years, then I went into in extrusion. And I spent about in the cast house one time, but primarily extrusion. I retired in

MR. PHILLIPS: Thank you,

: My name is . I worked primarily in the extrusion department from to . And I worked in shipping mostly.

MR. PHILLIPS: Thank you, .

: My name is . I worked at Dow two different times. In I worked in the rolling mill. I worked just about every piece of equipment in that rolling mill during that year and a half that I was there. I quit and went back to school. And I came back in as an industrial engineer, and I worked most of the pieces of equipment again as an IE both in extrusion and in the rolling mill. I quit in to take another job in .

And also worked down there. His name was , he's passed away. And he was there from , and he worked in extrusion as a packer.

MR. PHILLIPS: Thank you, .

: My name is . I started in , retired in . All my time was spent in the extrusion department.

MR. PHILLIPS: Thank you, .

: My name is . I hired in in and retired in . I worked 90

percent of the time in extrusion, every job in there, operator and helper on every press, finisher and finisher helper in every department, packing, and that's about it.

MR. PHILLIPS: Thank you, .

: . I was an inspector down there, and I worked in both extrusion and the rolling mill. I hired in in , and I retired in . Inspection was a different department in and of itself. And so you were -- in the beginning

0012

you were required to work throughout the plant. So I -- then later they became jobs and it was separated into each, but it still was in the inspection department. So I spent the first years in the rolling mill and then the rest of the time in extrusion.

MR. PHILLIPS: Thank you, .

: My name is , and I worked from . And I was an on the hot mill. I was a finishing mill roller, and I also worked in the shipping department before I retired in .

MR. PHILLIPS: Thank you,

: , and I began working at Dow in through or to rather. I worked on all the mills in various capacities. I left in to go to work for the

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MR. PHILLIPS: Thank you, .

MR. CALHOUN: I'm Grady Calhoun. I'm with NIOSH. I'm a health physicist. I worked at a nuclear power plant for a while, commercial power. I worked at Fernald for 11 years as a health physicist, and I've been with NIOSH in the dose reconstruction world for going on six years now.

0013

MR. PHILLIPS: And I'm Chick Phillips, and as I said before I'm with SC&A, Sanford, Cohen and Associates. I've been with them since 1990. Before that I was -- I worked for the US Public Health Service and the EPA. I retired in 1990. I have -- a health physicist with about 45 years experience. And again, I appreciate your being here. Do you have -- I mean are you okay? You getting everything? It's good.

: I'd like to kind of explain a little bit. You know, these guy say, you know, they

worked all over the -- you know, their department and that. Well, there's like 30 -- 20, 30 jobs at different job levels. So there's like -- you know, they're not just on one -- one area. They're all over, and there's like -- you know, like 20 or 30 jobs in that, you know, in that department. I can show it to you.

MR. PHILLIPS: Okay.

: And another thing I'd like to -- on this here customers I, you know, gave you the top half is all that we sent thorium and radioactive materials to. And you were saying they -- you were after from '57 on for your, you know, thorium and that.

0014

MR. PHILLIPS: Uh-huh.

: They started in '54 down there, and it's all the same, you know, deal. That's -- that's just like the rolling mill. That was just different jobs.

MR. PHILLIPS: Okay. Good. We'll make a copy of that.

: This is -- you know, I got you a copy here. But all these here were all sent radioactive materials to. These were just regular Dow jobs. About 95 percent of the jobs that Dow did was for the government.

MR. PHILLIPS: Okay.

: So that's -- that gives a little bit more of a thought on what's happening.

MR. PHILLIPS: Thank you. What I'd like to do now is kind of outline for you what I would like to take place today. But again, the emphasis here -- the purpose of this is to obtain information. So I don't want it to appear to be a highly structured meeting where we're only interested in certain information. If you have something that you consider to be important regarding the operations at Dow Chemical and its successors, then please share that with us today because that's the purpose of being

0015

here. And I know you've done this before.

We're not -- we're not going to do this exactly like it's been done before where each individual gets up and gives their prospective from what they did in their particular area. What I would like to do is to show you some areas that I'd like to emphasize and then have you respond to that. And it's

wide open, whatever you want to say, whatever you think is -- is relevant to that, important to that particular topic. And please identify yourself and say what you have to say because we're here for that purpose. We want to get information whatever that information is.

And sometimes what seems like the least significant fact can lead you into places down the road that wouldn't -- you wouldn't have been there had you not had these little prompters up in the beginning. So again, it's open, feel free to share whatever you think is relevant to it. Try to keep it to the subject, but -- but please share with us whatever you have.

And what I'm going to ask to do once we get started here -- and this is for my benefit mainly and that is and I talked about before the meeting that he had a diagram and sort of prospective of the

0016

way that thorium was handled in the plant from the very beginning. And that's something -- I have reviewed basically all the documents that are available from NIOSH and all the public meetings from the SEC petition and the evaluation petition. I've gone all -- I've gone through that. Quite frankly right now there's a lot of information rolling around in my head.

But the one thing I can't piece together from that is sort of from the beginning when the thorium came in, how it got alloyed, the whole process through the plant. And when we get started here I'm going to ask to, as quickly as he can, sort of run through that with -- with 's help because I know they have spent a lot of time on that. So could you do that for us when -- not right now but when we get started? Because that would help me.

Again, you know, I know the -- the various sections of the plant from the -- you know, the pot room down to the rolling mill. But it's not quite clicked in my head as to what the whole process was from beginning to end. So if we could -- if we could go through that, I'd appreciate it.

If you would do the first slide.

And I -- I went into a little bit of this,

0017

that SC&A is a technical consultant to the advisory board. We're a professional firm specializing particularly in radiation health physics although we

have some other specialties. But that's our primary expertise. We're not a legal firm. We're not involved in the claims or compensation portion of the -- the act that we all are familiar with. So our purpose is to provide the board with technical support and evaluations for the SEC petition.

And as I said before we -- as far as Dow is concerned we are involved in two aspects of that. So what I'm today is to get information for both of those. When we reviewed the NIOSH evaluation of your SEC petition there are some questions that -- that we have that at the end of this I'd like to just put those questions up here and get your input on trying to answer some of those questions.

Go to the next slide.

As far as the purpose of the meeting we want to gather information specifically for thorium and again any other radioactive materials that you can identify as they were -- as they were used and processed at the Dow Madison plant and -- well, at the site. So the -- the successor owners are involved in that too.

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I'd like to the extent that we can get a clarification on the uranium extrusion and the rod straightening process that occurred during this 1950 to '60 time frame. And again, as I said get a better understanding of the whole process of the thorium usage and alloy at the plant.

Go to the next slide please.

And of course, we want to know as much as we can about the exposure conditions at Dow. And I'll go into that a little later on. But gain a better understanding of the thorium and uranium process and the conditions, that's sort of repetitive from what I said before.

And I know I've seen in the record from your affidavits and from all the meetings what you had to say about the monitoring and protective equipment in place. Again, I think I understand that. But if you have more to add to that, we certainly would like to hear it.

And then the last one can you see? I guess I'm in the way here. The last -- the last item is just to allow you to present any information that you feel is appropriate for the meeting.

Go to the next slide.

Again, I've already stated that.

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Go to the next slide please.

Again, I'm aware of the -- the statements and we of course have all of those from previous meetings. But again, that's not to restrict you from repeating any information that you want to share that you've shared before.

The next slide.

Again, that's sort of repetitive. We want to know anything about the material.

Go to the next slide.

And then this one -- and we referred to that before, were the relationships with other AEC/DOE sites for shipping and receipt of thorium and other radioactive materials. I know you've addressed that before, but you know, that -- again, we'd like to have any information that you have that you've not shared before or maybe that you've shared before regarding this. And I know, Bill, you just gave me something in that regard.

Go to the next slide.

Sort of the process that we need to do just so that we -- the record can be maintained and that just for generally to keep the meeting flowing well give your name, job description, and date of activity. Actually we already have that. So when you

0020

speak if you would just identify yourself by name, is that -- is that fine?

And it's important when you give information that you identify is that information that you have personal knowledge of from your experience or this was something you heard from someone else. It doesn't mean that if you heard it it's not important to bring it out because again, that can lead you to getting information that you need. But it's important that we identify whether you have personal knowledge of that or whether it came from someone else.

The next slide.

When we talk about things it would be -- we need to know where and try to identify the time frame that you're talking about to the best of the ability, the details of how often, how much, what duration. In other words, as much of details as we can about whatever you might be referring to. Again, back to the protective procedures and monitoring in place.

And then this last one is very important.

To your knowledge when you're referring to something were there documents that were produced that could verify or extend what you're talking about. And if -- and if there were, do you have a knowledge of where

0021

those were kept. Okay. Those -- you can -- you can turn it off. We'll get to these specific questions later.

Any comments that you have or questions that you have before I ask to -- to give us a brief statement or whatever he would wish to say? Okay, .

: Okay. Well, the first thing is I am very pleased to welcome Chick Phillips and Grady Calhoun here because it gives us all an opportunity to let them know things that are highly relevant to the Special Exposure Cohort and in particular to having it extend into the 1961 to 1998 time period. That's really the -- a major thrust of today's visit.

Originally Mr. Thurber (phonetic) from SC&A was going to attend and he had to bow out. So I just wanted to mention that. I -- I wanted to mention one word about the last point that Chick made, and that is about the documents produced and where would they have been kept. And just for the record I wanted to mention that we have been seeking documents that are relative to the processes related to thorium production, uranium processing, but particularly the thorium aspect and its relationship to Atomic Energy

0022

Commission activities for the last two years.

And at this point we believe that there are significant records still kept at the Spectrulite plant. And in fact, the original plan for this meeting was tomorrow to visit the Spectrulite plant assuming that we could get access to it and not only to see the plant and to get some idea of the physical aspects of -- of the buildings but also hopefully to get access to the records that are kept at -- at the Madison plant.

And I would just say that I believe that that search of those records still needs to take place. I'm really personally disappointed that that couldn't take place tomorrow. I'm not sure why. But I -- I would strongly encourage both SC&A and NIOSH to get together and to -- to investigate those records to compliment what they're going to hear today.

The other thing I wanted to mention that's highly relevant is that last year and I and Robert Stephan -- but primarily and I had extensive negotiations with the Dow Midland headquarters and with Mr. -- who's their chief counsel at Kirkland & Ellis Law Firm to try to get the documents at Dow Midland that were related to the Madison plant and in particular to any

0023

documents that would show shipments of magnesium thorium alloys to any of the AEC plants but particularly to Rocky Flats in Colorado.

And then -- and that first round of negotiations actually led to the production of no documents from Dow. We then pressed the point this year, and NIOSH then sent a letter to Dow Midland on the 30th of January of this year. And at the end of April before our SEC meeting with the board on the 27th of April Dow Midland produced a large number of documents. And -- and some of that was very helpful, although in my opinion the documents produced were not complete and they definitely excluded documents related to the Rocky Flats shipments because NIOSH, for reasons that are completely mysterious to me, did not feel that that was relevant to their sphere of investigations. Clearly after the May board meeting it is very relevant, and that -- that document source in Midland needs to be followed up on.

And in particular and related to today I want to draw everybody's attention at -- at -- to Chick and Grady and also all the workers that one of the documents that was produced by Dow Midland was a document that they referred to called TDCC000316. And what that document is -- and I presented this to the

0024

board and SCA and NIOSH on May 4th during our SEC defense. This was a document dated 3/17/1958 from -- and it was an invoice from Dow Chemical at their South Brentwood, St. Louis office to Mallinckrodt Chemical Works and the Atomic Energy Commission, and it was for two things. But the first item was magnesium alloy plates, and the alloy is described as in this document some undecipherable letters, dash, 21XA, dash, and then an undecipherable digit and 8.

And so -- and this was under an AEC contract which was the main Mallinckrodt contract, and that is W-14-108-ENG-8. So this is a purchase order contract between Dow Chemical and Mallinckrodt

Chemical Works and the -- and the US Atomic Energy Commission for some type of magnesium alloy plate that contains the letters 21XA.

And then I pointed out to the board that in the list of magnesium alloys that -- that Dow produced -- and I showed them a table -- there really are only two alloys of magnesium that end in 21A. One of those magnesium alloys is HM21A. HM21A, as I showed them in the table, contains manganese, .45 percent to 1.1 percent and it contains thorium at 1.5 to 2.5 percent.

Now, the other 21A magnesium alloy, ZK21A

0025

is not a magnesium alloy, but it contains zinc and zirconium; zinc at two to 2.6 percent and zirconium at 0.45 percent. And the end number is chopped off on my -- on my table.

So this document becomes extremely important. And if it turns out that the reference material -- the magnesium alloy mentioned is HM21A, that that would be definite, conclusive, irrefutable proof that some of the Dow magnesium alloy and in particular thorium alloy was supplied to an AEC plant which is magnesium -- I mean Mallinckrodt Chemical Works.

So I just must stress that this meeting has to be taken in conjunction with a more intensive document search at Dow Midland and at Dow Madison.

The other thing that I wanted to just mention that later on in Chick Phillips' questions you all will hear some particular questions about Bay City. And I -- I know you all know this, but I just wanted to remind everybody that Dow Chemical had major plants in Bay City, Michigan and in Midland, Michigan and in Texas City, Texas as a matter of fact. And the two Michigan plants were heavily into thorium alloy production, thorium magnesium alloys in particular. Both plants have recently been -- had their licenses

0026

terminated and have undergone decommissioning. So the Bay City Dow plant is a -- was a major producer of thorium alloys, and those questions relate to that. I'm not sure how many of you men know about operations at Bay City.

There is one question that will come up that I did want to comment on and that is it -- it talks about data for chemical milling in Table 3 from a document by Silverstein in 1956 were taken in Bay

City. What else was done in Bay City the question asked. And I do have some information from the NRC about what occurred at Bay City which I will provide to Mr. Phillips as a compliment to whatever information you all have.

I would comment however that operations at -- at Bay City were different from operations at -- at Dow Madison. And so I'm not sure -- in fact, I think we would take the stance that radiation monitoring measurements made at Bay City really have not very much relevance to went on at -- to what went on at Dow Madison. And that's why I again think it's absolutely critical to get the Dow Madison documents.

The other thing -- final thing I wanted to mention is that we have sent a large amount of material to NIOSH already. And I am operating under

0027

the assumption which I think is -- is confirmed, but that all of that material is -- is now available to -- not only to NIOSH but SC&A, to the board, and to the Departments of Labor and Defense; anybody working on this SEC who needs access to that information.

So I think I'll let it go at that and we'll -- we'll start the meeting. And again, I hope it's very productive and informative.

MR. PHILLIPS: Thank you, . I was going to ask Grady if -- if he -- do you have anything you want to --

MR. CALHOUN: Not particularly. I'm -- I'm going to sit here and -- and listen for the most part. But as you all know the -- site has been granted SEC status up through the current covered operational period. And I think what -- what we're looking at here is how can we link thorium to actual weapons, they had to find their way into weapons. But one thing that I want to make you all very aware of is that DOE, the Department of Energy decides if the site is a AWE or beryllium vendor, and the Department of Labor determines the time period. So it will ultimately be up to the Department of Labor to determine if the covered period extends longer than its current list.

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MR. PHILLIPS: I don't believe you identified yourself, did you?

: Oh, wife. My first name is .

MR. PHILLIPS: Okay. Thank you for being

here. Okay. What I'm going to do now -- , you want to --

: I got you a picture of a aerial view of the plant they used to, you know -- and it shows, you know, the departments and that. And you got a copy of this red piece. It shows where I know that they have ran the radioactive materials in -- you know, in that area. And on the east side of the plant it starts out with the casting department. Then in the center is more or less the extrusion department. And then on the west side is the rolling mill department. I'd kind of like to go with the guys from casting because that's where all of our metal came from is the casting department and go on -- on across. But we have two guys that has to leave here before noon. has to leave and .

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: He's got to leave. So I can -- and so go from there and just start off. And we can go right on across, and they can tell how -- how

0029

they ran their metals. And -- and I can't tell you nothing on their -- their end how they mixed it or anything else.

MR. PHILLIPS: Okay. Yes, .

: I'd like to -- can I talk first? . On this -- in the casting department I worked 36 years in there running this metal. And I'm confused what said. We always went to it, it was HM21A. We never used the A. I don't know why the A was used on the -- and HK -- well, HK21 just like he said is two percent thorium and -- and one percent manganese. And HK31 -- I thought it was -- HK31 was three percent thorium and one percent zirconium. Is that right, ?

Well anyway, the thing about my first time with -- whether it was in '55 I think when I looked at it and it said 31 it was during that time in my 36 years. And we ran it on a continuous cast unit. So there was -- there was ten pots on each -- on the slab unit -- I mean, the regular ten -- ten, 6,000 pound pots on a slab unit, and it was a continuous cast. In other words, when you get all your metal thorium alloyed up you had -- you had 60,000 pounds of molten metal to be cast out continuously.

MR. PHILLIPS: When you say 6,000, that's

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the load?

: That's the load in a cast iron pot, and then the furnaces run from the bottom part. And once you get all those 10,000 pots alloyed up to specification on your -- usually a slab would run -- the slab unit was HK31. Once you get going there's continuous casting. It was down the basement. A saw automatically kicks in and cuts if off the desired length. So you could run from now to eternity if you didn't get out of spec or have a breakdown. So you had a lot of thorium going without a period. And the same thing was on the billet unit which also had ten, 6,000 pound pots. That was on AZ21 on that unit. And we'd do a -- well, we had two cast molds on that. You could put two pumps in and you could pump out two casts there. And it went to the basement and it had an eye picked in the saw to cut it off at the desired length. It was 40 inches normally.

MR. PHILLIPS: So you pumped the material from the pot?

: You do what?

MR. PHILLIPS: You pumped the material from the pots to the --

: (Inaudible) the lines on into -- into the mold.

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MR. PHILLIPS: -- to the molds?

: The lines were preheated electronically. So we could run that continuously the same way. Now, I won't mention -- we had two other units in there at the time. They were billets casting units. And we had an old intermittent unit that came from Dow Chemical in Midland, and that was a -- a Brock (phonetic).

But anyway, on this thorium the first time that I had experience with it I opened the barrel and was going to alloy a pot up and I -- I don't remember now, there was a four or five notch thorium and they weighed about five, maybe six pounds possibly. But the one I remember weighed up about a scale -- a floor scale about 35 pounds of this thorium. Accidentally I dropped it on the concrete floor, and it actually burst into flames of orange, a bright -- guys can (inaudible) bright orange color. I presume the thorium was burnt right out of it. If you didn't get that thorium in the pot melted in the pot right away you'd burn most of your thorium up. You had -- the basket had to be hot when they'd drop them in the metal, there in the middle and stir it up and alloy

it.
But like I say, this was a continuous cast unit. And this worried me quite a bit. And the first respond I got was how it was going to affect me having children and that. I was told you'd have to sit on it for -- I've heard anywhere from 500 to 1,000 hours -- or years to set on it before it would hurt you. So I -- I have a lot more to say, but maybe the other fellows in casting like I said. But I did this for years. I stayed the whole time on the mag floor.

MR. PHILLIPS: Okay. Going back, , to what you said, you have two people. Where -- where did you work, the two that are going to have to leave?

: He was a casting man.

: I worked in the casting department as a .

MR. PHILLIPS: Okay.

: So I received the metal -- the thorium bars in. We stored them in what we called a radioactive crib. And from there they was taken as needed into the pot room and processed into the HM21 or HK31 whichever they might be running.

MR. PHILLIPS: This is in Building 7; is that right?

: Building 7. Then we took the slabs, took them to the scalper, took off approximately three-eighths of an inch off of them all the way around so they can be sent to the rolling mill.

MR. PHILLIPS: How -- how -- do you mind me interrupting you as we go along?

: No.

MR. PHILLIPS: How was the scalping done? Explain that to me.

: Okay. I don't know how to explain it. You have this piece of metal, it's about the size of this table. It was cast in a very rough casting and sent around the table. The edges of it -- we -- we trim out the edges with the cutting blades, then we send it up to a -- into the scalper phase that lifts it up and drives it through. It pulls all the metal off of one side. Turn it around and send it back around. Come -- it turns and takes the metal off the other side of the face.

All these are creating chips and dust and everything else that are flying all the time. It goes

into a big hopper, and then chips all come into a container out the other side. Then you guys over in the mill get it from there. And it's usually -- most of it is inspected by inspection to make certain there's no oxides or anything else left in it so whenever it gets over to the mill that it isn't

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damaged.

And then we also bring all the metal back that has been used by the extrusion department or -- or the mill department. It's brought back in the containers which I have hourly people going through and sorting it all because sometimes there's metal thrown into these boxes that isn't thorium metal. So they have to individually check every single piece with a -- with a solution that's going to turn it red if it contains thorium or not. So we have to separate those metals so whenever these guys get it in the pot room they're not getting ahold of something that -- that's not supposed to go into the remaking of billets or slabs again. So that's the portion of it that I remember.

MR. PHILLIPS: Now, are those alloys that you were just talking about? Those are the -- the thorium alloys?

: Yes.

MR. PHILLIPS: Okay.

: My name's . I worked in the cast house. On that scalping operation he's talking about at the end of the shift there'd be a quarter inch or a half inch of dust all over the equipment, the rollers, and the floor, and on us too

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at the end of that shift. That's how dusty it was. When that slab went through that machine it made a big -- and a big cloud of dust went up on both operations of it. On the end scalping and then it went over to the face scalper it was the same thing. And that dust was all over the place. When we worked down there we breathed it all day.

MR. PHILLIPS: Is that where the dust in the pot room came from too?

: No. No.

MR. PHILLIPS: Okay.

: The dust in the pot room was from alloying -- pumping the metal over and stirring it up and sludging the pots out.

: If I might -- I might also

mention that being I had a lot of hourly employees working with me and -- and they were questioning about the thorium and the radioactive. And I didn't know anything about radioactive. And so I called up and had a metallurgist come down. We had safety meetings about it. We also had a metallurgist came down with two -- two of my hourly employees that were really fierce about saying we don't want to work around this thorium. And I finally had to set them down and I sat with them, and the name of the person

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was (phonetic). He's a metallurgist from Dow Chemical, and come and sat with me and these guys and told us we did not have anything to worry about this thorium. And therefore, I really never thought anything more about it until all of this started coming up. I just figured it's part of -- part of working with these metals and don't worry about it.

: We were told the same -- same thing in the casting part of it; that there was nothing to worry about. Heck, we -- we ate in there, everything. And at that time we didn't even have a break -- break room. We ate out -- out in the open. There was nothing to keep it from getting in our food or anything else.

I'd like to make a comment about this, all this business here. When we started there we were all young and we started working on this material. We trusted the corporation we worked for and the companies we worked for. We trusted our government to protect us. And when they told us that there was nothing to worry about we believed it. And it turned around that they lied to us. First the company lied to us and the government backed them up and let them do it. And that's all I've got to say about -- about

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that.

And not only that, when they were through running the thorium they had contaminated equipment all over the place including this scalper operation. It was like that for years and we still worked on it when we was running the regular metals.

MR. PHILLIPS: When you -- I'm sorry. When you were what?

: When we were running other alloys we were still -- all this equipment was contaminated, it was radioactive from the thorium we

ran on it. It takes years for that to go away, and we was still getting exposed to it even though we didn't even know it. And nobody told us. We trusted our company and we trusted our government, and they let us down.

: Chick, I -- I think this would be a good time -- what I would like to do to put on the record is while we're talking about dust and fumes from at least two sources now -- to have everybody raise their hand and -- and see how many people in the room wore a film badge for radiation monitoring. Anybody who wore a film badge?

: I have a comment on that.

: We got comments on that.

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: We never wore it until Spectrulite came in.

: Okay.

: I never had a badge or nothing until Spectrulite came in and they had a -- had a badge for us. But I don't remember what the account was.

: So that was in 1986, right?

: By the way, they -- they --

: --

: Yes.

: That wasn't until 1986 then, right?

: '83 at Spectrulite. '86, okay.

: Yeah. But I mean, before that none at all?

: Not at all.

: Okay.

: Spectrulite came in in '83 though.

: The only -- the only person that would have worn a --

MR. PHILLIPS: Hold up. Please identify yourself, sir.

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: I'm .

MR. PHILLIPS: Thank you.

: The only person in -- my time started in until I left. But in the majority of the years that thorium was produced there the only people that wore any x-ray or radioactive badges were the people conducting x-ray on forging stock for

airplane equipment. None of the rest of us wore any.
MR. PHILLIPS: And what -- what time frame was that?
: It was a -- that was from . And I left in and I still didn't see any badges then.
: Even when you ran uranium there was no badges or nothing?
: No. No. No. Now, I wasn't involved with the uranium. But --
: I knew as he said here. And all the time I worked I've never had anybody complain to me and have a safety meeting on what -- what effects it would have or nothing. I know he said was a high metallurgist for Dow Chemical. I talked to him a number of times, but I -- I never remember a meeting being called to explain to you what you could do with the thorium other than

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handling -- like you handle any other metal that you'd run, you'd get a slip at the beginning of the shift tells you how to -- how to run the alloy. They follow procedures of that alloy, AZ31, ZK60, or whatever. We were never told any different -- take any more different as far as you running it than that.
MR. PHILLIPS: .
: In 1995 or 1996 -- it's right in that era there -- we used to go into the pot room and we had to wear a badge because the government was in there watching them run some thorium alloy. When we got done we threw them in a bucket, and they threw them away. That's what happened with our badges that we wore. They were talking about -- asking about if the metal was hazardous or anything. It goes on back -- I don't know how far back but ever -- ever since I was there they'd bring a Geiger counter out and said look at, you know, there's no reading, you could lay on that -- their famous words, you could lay on that metal for a thousand years and it wouldn't hurt you. Well, they were bringing the wrong Geiger counter out. We found that out later on that it was the wrong Geiger counter, and they knew it. How -- how strong it was no one ever knows. We -- you know, none of us knew anything about radioactive stuff. And we'd --

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you know, it'd just -- we'd get -- we had to go by what they told us, and that's what they told us, there was none -- no hazard to it. And that went all the

way through.

: . I was the one that -- with the sales samples. I would go out and get samples and send out to the different contractors in different plants. And I remember going out into the rolling mill at one point between the -- where the shears were and where the small rolling mills were. And right before you get into shipping there was a large area, and there were -- it'd be either five or six men that were dressed in powder blue suits -- in jumpsuits, and they had big stockings on their shoes -- covering their shoes. They wore a special cap. And the area was roped off, and they were making inspections of sheet metal goods.

MR. PHILLIPS: Where was this and when was this?

: This would have been in either '57 or '58 at that period of time.

MR. PHILLIPS: And where again was this?

: This was in the rolling mill. It's right before the -- before where the shears where they would cut the metal to the different

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sizes and all. And it was a roped off area. It was probably I'd say 30 by -- by 50 feet. And then but the -- they were walking around and making inspections of the -- of the metal products of sheet goods. And best I can remember the sheet, they were -- they were thin sheets. It was 063 or something or 81 -- 16th, eighth inch products.

: Did you think the metal was -- I'm not sure about those numbers that you're giving. Is this any of the thorium alloys or --

: Yes. Yes.

: How do you know that?

: Because it was -- all the material was stenciled.

: Okay. And -- and it would help us to know how it was stenciled. You mean with a number like?

: It was -- it was identified in full. It was run across the -- it was run through a piece of equipment. It was a roller equipment, and they usually had an oil finish on it. And it had maybe three-quarter inch stenciling that ran periodic. You have it a certain space and maybe two feet more that they would run across the sheet.

: But what I'm trying to ask

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you is would it have like a word stenciled there or the number, like the alloy number?

: Numbers. It had numbers as -- as that -- like and job numbers, lot numbers.

: Would it have the alloy? But you know, what we're talking about now are --

: Yes.

: -- in particular HK31, HM21, HM31.

: I can't say absolutely sure --

: Okay.

: -- whether that was it or not, but I know --

: But those kinds of numbers?

: Those kinds of numbers.

: Okay.

: And -- and whenever I shipped out any materials I would go through the -- I would write a work order and have them cut me up samples like 24-by-24 or 12-by-12, whatever the sales people required which was again sent out to different contractors.

: And you said that the AEC were there?

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: Now, can -- it would help Mr. Phillips -- I mean, this is a relevant time. Can you remember any of those specific contractors?

: Specific contractors I sent out to?

: Uh-huh.

: Yes. I have a list here of different -- different ones. And you had a list of the contractors too. And I have different ones that I remember sending out to. But I also sent out not just thorium samples. I sent out just -- just normal samples to the --

: Uh-huh. Okay.

: Especially extrusion and all. But almost all the thorium samples I sent out were sheet goods.

: Why don't you -- why don't you go through your list and read for us who -- who you think thorium went to.

MR. PHILLIPS: Is this the list?

: Mallinckrodt in St. Louis.

: That's a different list.
: No. He only worked until '59.
: Yeah. I was only there for five years. I was there from '55.

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MR. PHILLIPS: Wait. So your list is different from this list?
: I've got -- I've got a couple of extra than that one.
: Different time periods.
: He's got -- he showed me that, and there's names on there that I'm not familiar with because I was -- I was not there.
: A different list.
: A different time period.
MR. PHILLIPS: Okay. I'm sorry. Go ahead and tell.
: It would -- Chick, it would be useful for you to get his list, right?
MR. PHILLIPS: Yeah. She will -- she will get it.
: Those that I -- that I remember are Hughes Aircraft was one. And there was a company in Van Nuys, California, and someone here said they thought it was Lockheed. I just remember the name Van Nuys.
MR. PHILLIPS: Okay.
: General Dynamics. I mentioned Mallinckrodt in St. Louis. And Martin-Marietta, I sent a lot of samples to

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Martin-Marietta in Georgia.
: And that's Martin-Marietta in Georgia?
: In Georgia, yeah.
: Okay.
: Martin-Marietta.
: All right.
: Was it Glenn Martin at that time or Martin-Marietta?
: Pardon?
: Was it Glenn Martin Company or Martin-Marietta at that time?
: I don't -- all I -- all I remember is Martin-Marietta on it.
: Okay.
: I don't know if it was Glenn Martin. I don't remember that connotation.

That was the -- the aircraft demand. Then --
COURT REPORTER: Speak up please.
: -- I sent materials to Grumman.
MR. PHILLIPS: , speak up a little louder.
: Grumman, Northrop, and Bell Aircraft -- Bell Helicopter I think. But Bell

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Aircraft Laboratories. And I also sent materials to Rocky Flats, Colorado.
: Now, this is a good time to interject this because Grady may or may not know about this. But Brandt Ulsch (phonetic) called and was asking Bill whether the comments about people sending things to Rocky Flats could have been -- rather than the nuclear weapons plant Rocky Flats, could it have been the Rocky Flats arsenal. And Bill responded back to Brandt that as far as he knew it was just Rocky Flats. So I'd like you to comment, Rocky Flats -- what -- what did you understand about Rocky Flats, what that was, where it was?
: I didn't know.
: Okay.
: I didn't know. I just -- I'm just going by the name that I remember shipping material.
: That's good. Okay.
: I don't know what --
MR. PHILLIPS: You don't know what town or --
: No. No.
MR. PHILLIPS: When you say samples, tell me what you mean by samples.

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: Samples were in most cases, especially the thorium, was the sheet goods, 12-by-12 samples that I had cut up in the plant. I'd write up a work order and then -- then I would have -- either I would pick them up or else if it was too much -- too many of them, a laborer would actually bring it over into the No. 2 Building where I was at. Then I would ship out. Of course, I had orders from the sales department. But that's what I did.
MR. PHILLIPS: But it was -- this was finished product to be used --
: Yes.
MR. PHILLIPS: -- or it was to be tested?

: It would be for us to use. Yes.

MR. PHILLIPS: To be used?

: To be used, yes. Yes. And it had -- it also had -- and it had to have the numbers on it so they would know what it was.

MR. PHILLIPS: And -- and the numbers were --

: But it was identified. And if I remember right, it was mostly in a -- in a deep blue stenciling.

MR. PHILLIPS: But I mean it would

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identify products like --

: It just had the -- had the number. It had the thorium affiliated number, and it had a -- like a lot number that it came from so it could be identified. And they kept records in the tech lab on the -- on the different lots of what was produced.

: Did you saw the material in your office?

: Pardon?

: Did you cut the material in your office?

: Yes. I stored it -- I stored it in there too. Then I also had the extrusions I mentioned, the ten-foot extrusions on everything that was -- that was produced other than the very large units. And this was all about the time that (phonetic) was coming in, but they -- him and another German engineer. And they were just putting the big -- big press together at that time.

: So there was scrap dust in your office in the 2 Building?

: Yeah. I -- I kept -- I stored that in my office in 2 Building. Yeah.

: Okay. Well, I'd just like to

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finish my thought hearing that then that relevant to Mr. Ulsch's question there was no such thing as the Rocky Flat arsenal. There was a Rocky Mountain arsenal. But Rocky Flats as far as I'm aware could only refer to one place, and that's the nuclear weapons plant in -- in Colorado. So --

: I'd like to make a comment on that stenciling. I worked in the warehouse in the rolling mill, and they had a stencil machine.

And whenever the product was finished they would put the alloy, the lot number, and the gauge on it to prepare it for shipping. And sometimes they would oil it.

MR. PHILLIPS: On the product itself?

: On the product itself when he was talking about that stenciling.

MR. PHILLIPS: And that's where you got your information --

: Yes.

MR. PHILLIPS: -- in order to package and ship it?

: Pardon?

MR. PHILLIPS: When you crated it packaged did you do -- actually do that or it came to you in that?

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: I did the packaging. I did the packaging, I cleaned the edges. I used what they called a deburring tool to clean the edges on the -- on the metal.

MR. PHILLIPS: And your information came from what was stenciled on the product?

: Yes. Yes. Yes.

MR. PHILLIPS: I just want to make sure that the two gentlemen that have to leave get to say what they need to say before they have to leave.

: I'm . I worked in the shipping department.

MR. PHILLIPS: Speak up a little.

: I'm . I worked in the shipping department in extrusion. We packed the metal that was run on the presses. The scrap, the chips, everything, we shipped it out. But I remember we shipped it to Los Alamos. I don't remember Rocky Flats. I remember Los Alamos. We packaged the extrusions in cardboard boxes, put red tags every three or four feet in the box, put red tags on the outside of the box before it got shipped.

MR. PHILLIPS: What -- what did the red tags say?

: Do not get unexposed film

0052

within five feet of this material.

: When was that, ?

: That was in the '70s.

: In the '70s.

: When they brought this

material in at 9 Press I was pumping on the billet saw in 1975. And I saw the metal sitting in on a skid, and it had red tags on it. And I walked over, and I saw what it -- it said don't get unexposed film within five feet of this material. Well, I went charging in the office, and I told the head of the department we were not going to touch that material, it was radioactive. He assured me that the president had already been involved, they had brought a man in with a Geiger counter, checked the material, and the material was safe. I called my president, and he told me the same thing. I did not know they used the wrong Geiger counter.

MR. PHILLIPS: And this was shipping from extrusion. Is that what you said?

: It's the extrusion department. I was on the billet saw at the time. About two -- a week or two later I got bumped back down in shipping, and that's when I got to pack all this including the scrap. Everything had to be packed up.

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MR. PHILLIPS: And how was the material identified that you shipped?

: I do not remember the stencil that was on it. I can't remember what alloy the stencil was.

MR. PHILLIPS: Thank you.

: But I know that we've shipped HM21, HM31.

: It was HK.

: HK.

: HK 31.

: Well, HK, yeah.

: Now, just to clarify, there was an HK31?

: Yes.

: And there was an HM31 and they were both thorium alloys. Okay. All right. , can I get you to clarify something for me.

: Sure.

: This is important. You had given us an affidavit once before.

: Yes.

: And -- and in that affidavit which I'm looking at right now you said you were

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employed at Dow from '59 to You worked in

shipping and extrusion as a packer, and as a packer I packed everything off of the presses for shipment to customers. In 1957 I was working on the billet press and saw two skids of metal with red tags set next to the No. 9 press. We were told not to come within five feet of this metal. Thorium was being extruded from at least 1975 through the late 1980s. So that would be one thing. Today does that still seem right that -- that the thorium extrusions continued on through the 1980s?

: Yes.

: Okay. And the other thing you said then was --

: Especially HM21 and HM31.

: Uh-huh.

: Especially those alloys.

: Kept on being produced?

: Yes.

: Okay. Because that's real important as to when the production period for thorium stopped and when the residual period kicked in which would be after the active production stopped.

: Also, one of our main trucking companies was Maverick.

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: Okay.

: They would come in, drop -- drop their trailers or stay with the trailers. We'd load them, they'd take them back to the yard. Most of the time they would unload the trailers onto other trailers, and they would haul the material.

: Okay.

: But there were a lot of times when Maverick hauled the material all the way themselves.

: Then the other thing you said back in that affidavit time was that you -- then you were told that the metal was being shipped to Rocky Flats. And I believe in May at the Ponderosa meeting you told and I that you also thought besides Los Alamos that some thorium alloy was shipped to Oak Ridge. Is that still something you remember or -- it's okay if it's not. I -- that's what I understood you to say at the Ponderosa meeting. So that's okay. So -- so you -- it sounds like you remember most being sent to Los Alamos.

: That's the one because I made the remark they're probably going to make atom bombs

out of it --

: Okay.

: -- which was a bad joke.

: Well, it could be true too.

MR. PHILLIPS: Give me that time frame again when you remember that this happened.

: 1975 is when I first noticed the metal. And it's before it was extruded.

MR. PHILLIPS: Okay.

: Now, it may have been -- they may have been running it before then. I do not know. But I don't -- but HM21 and HM31 they were running before 1975. But now, this stuff that they brought in on this skid I never seen anything like that before.

MR. PHILLIPS: Is it HM or HK31? HM31?

: The ones I remember was HM21 and HM31. Now, HK31, it -- it may have been run too, but I -- I don't remember it.

MR. PHILLIPS: Okay.

: Well, the table that I'm reading from, Chick, is a -- is from Dow headquarters, and it's labeled chemical composition of magnesium mill products. So it wasn't clear to me whether that document referred to throughout the Dow Chemical plants. I assume it was. But anyway, that table mentions all three, HK31A, HM21A, HM31A as being the primary thorium alloys.

MR. PHILLIPS: Yeah. The H is the thorium.

: Correct.

MR. PHILLIPS: So it's going to say H.

: Uh-huh. Correct.

MR. CALHOUN: Can I ask a question here. This is Grady Calhoun. On these -- these billets I'm just a little confused here. Were these thorium alloyed billets that were extruded that were red tagged, or were they -- does anyone know?

: They were on a skid. It was already -- it was already -- it was banded up and brought in and set by the press. It was already in this -- in the skid.

MR. CALHOUN: I'm just wondering if it was uranium.

: The only thing I know is it had these red tags on it.

MR. CALHOUN: Okay. So we're not sure

that it was thorium metal billets that were being extruded. It was -- okay.

: What press?

: Nine.

: Well, Grady, I've got to -- I've got to interject though, the contract for uranium from Mallinckrodt uranium division was 1957 to '60. So if there were uranium there in 1975, that would be a completely new thing.

MR. CALHOUN: Yeah. I'm just -- I'm just asking the question.

: No. No. No. No. I think that's a legitimate question. But that does not fit with the Mallinckrodt uranium contract period at all.

MR. CALHOUN: But it sounds like we're not sure that that was thorium or uranium at this point.

: That's -- that I --

MR. CALHOUN: Okay. You guys actually made the alloy there.

: Right. Uh-huh.

MR. CALHOUN: So you wouldn't have been shipped alloy to extrude.

: It happened several times.

: That was brought in from outside of the --

: That was pellets there, and I worked on it.

MR. CALHOUN: Okay.

: The uranium that came into that plant that I worked on and extruded it on 7 Press was pellets. They looked like little BBs. They were in a keg about that high, about that big around. It was heavy as lead.

MR. PHILLIPS: Now, we're talking about uranium?

: Uranium.

MR. PHILLIPS: And when? That was --

: I -- I worked on that in the middle of 1959, it was the summer, like June and July in 1959. So that was pellets, and it looked like little BBs. And we -- we had to scoop them up, put them in an air tank, then they blowed them into the press container. They compressed them against a steel plate and they -- you kept putting them pellets in until you formed a billet. Then they would then extrude it on out. And so that's how that worked, and

I -- I helped on that job.
MR. PHILLIPS: So you actually worked on the uranium extrusion?
: I worked on that. Yes, I sure did.
: Chick, I'd like to make a comment. I mean, I -- I think it's important for you and I think it's extremely important for NIOSH to understand that -- and to put this on the record that, you know, that's a different story than the official

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story of what was sent over from Mallinckrodt.
: Absolutely.
: There is not a single word in any document that I have ever seen from the Department of Energy, from the facility description, from any document that pellets of uranium were sent over from Mallinckrodt.
: That's correct.
: So I mean, you know, this has got to -- this is a matter of I want to call it scholarship and investigation and doing a thorough job of finding out what was going on. And so that's a very important observation.
: You know, at the time I knew it was radioactive because it was on the -- the sticker was on the kegs, you know. And I complained to the foreman about it as everybody did, and they said oh, that won't hurt you. I found out later on that it was uranium.
: Okay.
: I -- I didn't know it at the time. I knew it was radioactive. I found out later they were uranium pellets.
: All right.
MR. PHILLIPS: How did you find out?

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: I think was telling me, but I'm not sure. But I thought -- I thought you were telling -- when we were talking about it a long time ago.
: I don't know about the pellets.
: Was that uranium pellets?
: That was thorium.
: Oh, I'm sorry. I made a mistake. That was thorium pellets.
: I can comment on pellets.

Now, I didn't see it firsthand, but I was told by heavy press operators, (phonetic) and (phonetic) I believe that they put a blank die in the press and they dumped pellets into the container and put pressure on them and turned them into a solid instead of pellets. So that I -- I assume this is what you're referring to.

MR. PHILLIPS: This -- this would be --

: We -- we blew them in where I was at. And then me and worked on them on 6 Press where they blowed them in, you and me.

: Yeah.

: And you know, it seemed like every extrusion was a rod.

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MR. PHILLIPS: But let's make sure though, we are talking about thorium; is that correct?

: As far as I know it was thorium.

: Yeah.

: I can't say because like I said it -- it wasn't firsthand. This was told to me.

: So this was pure thorium billets you guys were making?

: Well, they were thorium pellets, and they compressed them against a steel plate held up by the crane inside the press container, you know. Then after they were compressed then they'd -- they'd open it up, take the steel plate out, seal everything back up and extrude it through the die then.

: And it made a rod?

: It made a rod.

MR. PHILLIPS: Was it --

: So you were making pure thorium rods instead of alloying thorium and magnesium?

: That's -- that's the way I understand it.

MR. PHILLIPS: , did you have something?

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: Going back to what Grady said, we had a lot of stuff that came in the plant that we didn't know what it was. You know, they wouldn't tell us. And a lot of it was -- they'd say oh, it's special alloy, and that's -- that's all the information we could get. But you know, the special alloys -- a lot of them had the little red stickers on

it, you know, hazardous and that.

: , extrusion. Like said, a lot of these -- a lot of this metal that was shipped in there was stored out in No. 2 Building, and it would come in as a special alloy or an experimental alloy. And we never did really question too much about it. And we didn't even know a lot of this stuff had thorium in it until after we excluded it. We extruded that stuff on the 7 Press and the heavy press. And Martin-Marietta was a big, big part of that. A lot of that stuff went to Martin-Marietta because I talked to those individuals several times off and on.

And I can remember one day particularly. It was a Wednesday before Thanksgiving, the plant was shutting down at midnight and the guys from Martin-Marietta had to get back home, otherwise they was going to miss their flight. And that was in

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Georgia I believe -- no, the head guy was in another -- I think he was in one of the Carolinas. But anyway, we couldn't get our container up to temperature on the heavy press, and they would not extrude that even being one or two degrees off on that container. So they put me fully in charge of getting that container up to temperature and then we extruded that night. We even had to stay after midnight that night to finish that product.

MR. PHILLIPS: Now, when -- when would this have been, in the '90s?

: It was in the '90s, yes. But anyway, after I got it extruded I was supposed to call him from my home phone because he was in flight on his way home when I left the plant. So when I got home I called him from my home phone to let him know that we got the job done for him.

MR. PHILLIPS: Did you have something, ?

: Okay. Are we continuing on through?

MR. PHILLIPS: Just one. Do you know if -- is -- if that was thorium metal or is it thorium alloyed metal.

: Well, it was -- I'm not

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really sure.

MR. PHILLIPS: It was pellets?

: It was pellets.

: If it came straight out of the kegs, it must have been metal.

: Yeah. It -- it was -- it was metal, yes.

: Yeah. You seen the kegs too.

: Oh, yeah. Oh, yeah. Yeah, I --

MR. PHILLIPS: So you believe it to be thorium metal?

: Oh, yeah.

: I'd like to make one more -- I get to go in the plant every now and then. Here about a month or two ago I called up. I didn't get ahold of him, but he called back later. I was going into the plant delivering auto parts. And there's a road by the alloy department between the alloy department and the heavy press department. There's a guy standing in that road with what looked like to be a surveyor's thing like he was looking through this. And he followed me. He watched me all the way through until I went to the side of the building there by the heavy press where there's an office. He watched me

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all the way. And when I got out of the truck he was watching me. And I'm thinking why -- what in the world's he watching me for. So I went in there, delivered the parts, got back in my truck. He's watching me again. And I go around and I get over in back of him. And he's got a big truck there with a bunch of equipment in it. And there was another guy standing over by the heavy press building, and on the back of his shirt he had DEA in yellow letters. Now, whether that meant anything or not, I do not know. What that guy was doing over there by the heavy press building I could not tell what he was doing because he was bent over.

MR. PHILLIPS: When was this?

: About a month or two ago.

: Isn't the DEA the Department of Energy?

MR. PHILLIPS: The DOE is the only department.

: This was DEA. I made sure that I got the letters.

: I've read that in the papers.

MR. PHILLIPS: We may not want to go there. We got enough unknown substances.

: And their truck was unmarked.

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I looked for markings on the truck, but there was no markings on the truck.
MR. PHILLIPS: Okay.
: Chick, . Just one observations from conversation and I thought it went over kind of lightly. But he did mention the only people wearing radiation badges were the people that operated the x-ray device, the nondestructive testing device which I think we've heard about. And that time frame I think can correct me, but I also thought I heard that there were samples taken and then sent to this x-ray device. And this x-ray device was at a various site on the plant. So whatever was being sent over to be x-rayed for nondestructive testing apparently had across the plant in various areas. If there's anybody that knows anything about this material, you were looking at the material moving throughout the plant, were there -- and I think you described it as slices sometimes. And I heard somebody say billets were cut off.
: Well, yes. But these were special slices, and this was forging stock. And they made forging stock for airplane wheels -- for forging airplane wheels out of them until the airplanes got so heavy that the forging -- forgings would not stand it
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any more.
: What material was that?
: It was -- it could be AZ31B or different alloys. But it was -- in one part they would take the samples, but the sample would have to go through the ovens with -- with the billets. And then after that then they took them to make sure that there were no cracks in there, that they would forge well. They were never broken or anything like that.
: Well, there was a cinder block building there in -- in alloy where they had the x-ray equipment.
: So there definitely was a building for x-ray equipment?
: And they did take those slices in there that he's talking about and x-ray them in a later period of time, but it was aluminum. We shipped forging stock if we actually was worried about the cracks. And we actually brought them over to extrusion and put them in caustic and then in nitrate. Now, I don't know what the alloys were, but that was

aluminum.

: That was aluminum going to the nondestructive testing?

: That was aluminum. That was aluminum. They -- they also -- and the x-ray room was in the same building as the casting department. Now, when the -- when the aluminum units come in down there it set back in one corner and it had signs on it, special entry only or something like this -- to this effect; that only the persons operating it were the persons that were supposed to be in there. And it was -- they carried Siemens badges, and as you know Siemens was into --

MR. PHILLIPS: I think some of that information's available on the readings on those badges.

: Huh-uh.

: No.

MR. PHILLIPS: It's not?

: No. I'd like to put that on the record that there is zero --

MR. PHILLIPS: Okay.

: -- zero film badge monitoring available for any time at the Dow Madison plant.

MR. PHILLIPS: Okay. I'll stand corrected until --

: No. I'm not saying --

MR. PHILLIPS: I'm working on three sites.

: No, Chick. As far as we -- as far as we are aware --

: I have one comment on the film badge and it may not be important. But in 1955 in the rolling mill I was an end shear operator on a ten-foot or a 12-foot shear. And I was told by the foreman that they had a special batch of metal they was wanting to see if they could cut it on this ten-foot shear.

This metal came in a barrel and it had -- with a special guard that brought it in; not a guard from our plant but a guard from Rocky Flats. This metal came from Rocky Flats I was told. They dressed me in protective gear from head to foot and hung a badge on me. And this metal was in about a -- in pieces about a foot in length and so thick, and it weighed extremely heavy for this piece of metal. I couldn't believe how heavy it was. We put that on

that end shear, I did. And I asked them about the film badge, and they hung a film badge on me. And the safety director at that time was a fellow by the name of (phonetic). And he says, , that don't mean anything. He said we're just trying to be extra cautious. I asked him what the metal was, and he said he didn't know himself. And that's about all the answers I got out of it.

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And I put it on that sheer, and when I tripped the shear it broke pieces of the blade like this long. You know, we're talking about a big blade. They tried that two or three times and tore up the blades. And then they decided they'd try it on the big shear. And they tried it on the big shear and it broke it also, broke it in pieces. It couldn't cut it. What little dust and chips there was that come off of that I swept up and put it in a pan. And they put that in that barrel. And I happened to talk to the fellow who they said was a guard, and I asked him if there was any danger. And he says I can tell you this, it's radioactive. And he says I come with it, I'm guarding it, and I'm going to take it back. And that was that.

MR. PHILLIPS: Do you know when that was?

: Do I know what?

MR. PHILLIPS: When, the time.

: It was approximately 1955. It could have been in early '56, but no later than that. Because I spent almost all my time on the mill, but it just so happened I was an end shear operator at that point in time.

MR. PHILLIPS: And you were told it was from Rocky Flats?

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: I was told it was from Rocky Flats. There was no markings on the barrel. There was no markings on the metal. And it was a -- really a rough looking metal. I hadn't seen anything like it.

: I was a roller on the finishing mill. And they had five people come in from Rocky Flats, each one had their own things. And they put paper all around and they tore up the -- on the mill. And they gave us coveralls and a cap and -- for shoes. And so we -- we -- I went and I -- we made different reductions on it. We made different reductions on this. I did this whenever they

requested me.
So anyway, I asked them what -- what this metal was, and they just said it was an experiment and they wouldn't tell me what it was. So whenever we got done with it -- well, as a matter of fact, we took such a great reduction that it -- it hurt one employee and it -- it had hit him and he bled.
And they took him to the hospital and they put him in the isolation room. And I went to see him, and I couldn't see him just through the window. And when we got done with this experiment, well, we washed the whole mill down. And they had a Geiger counter

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and I knew the -- what a Geiger counter was. And it took us about two hours to wash all that off until it was safe. But I didn't have no badges or anything.
So when they got done they wrapped up all the paper. They wrapped -- they took all our clothes and everything and took them back to Rocky Flats.
MR. PHILLIPS: And when was this?
: It was in 1955.
MR. PHILLIPS: Now, was that -- is this -- are these two related?
: Well, it might be. I didn't know about that.
: I didn't know about this thing.
: I don't know about that part, but it could have been. I don't know. But I was a roller on that mill from '54 and '55, and these five technicians came in from Rocky Flats.
MR. PHILLIPS: And they -- it wasn't disclosed to you what the material was?
: Yeah. Well, it -- yeah. They wouldn't disclose what it was. They just said it's an experiment and that's all they -- that's all they told me.
: Well, Chick, I just need to

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put it on the record again to make it complete that in 1955 Dow Chemical was the prime contractor at Rocky Flats. And so to me the fact that a -- that one part of Dow would send some special projects to Dow Madison; number one, is not so surprising; and number two, could -- could be done, you know, apart from the normal work order, purchasing order, invoicing technique.
So one of the things I think we're facing

here and is really, really difficult is that without total cooperation by everybody at Rocky Flats, DOE, NIOSH, all the people with Q clearances that can look at that material a lot of these special projects could have been done secretly and be classified and be buried somewhere in the ledger books and the log books. So I just have to stress that this kind of testimony is extremely important, and we're going to insist that it be paid attention to and basically accepted as facts absent evidence to the contrary. That's all I can say. So --

MR. PHILLIPS: So noted.

: -- I think it's real important.

MR. PHILLIPS: I'm going to have to take a break here in a minute. I don't know about the rest of you. But what I want to make sure is the two gentlemen who have to leave -- before we take the break is there anything else that you want to add, need to add?

: The only that I guess that I -- I need to add is I worked on the aluminum casting unit.

MR. PHILLIPS: Speak up a little bit please.

: And until I come to this meeting I didn't know that beryllium was a problem. When I was at the aluminum casting unit I worried about the chlorine because we had to purify the aluminum with chlorine. I worried about that, but I never -- never knew there was a problem with beryllium. And I know right now that I'm going to a lung specialist for scar tissue that's building up in my lungs continuously. And that's possibly from the beryllium, I don't know.

MR. PHILLIPS: Thank you.

: You said something about the records. They had their records stored in the basement, and it got so full that they had to store them up on the third floor of No. 1 Building. Because I was taken up there one day and showed all the records they had up there.

COURT REPORTER: Number what building did you say?

: Number 1 Building.

MR. PHILLIPS: You're speaking of the Dow

era now; is that correct?
: The company records that they kept.
: When Dow sold out to Phelps-Dodge or sold the plant Dow kept all kind of records. And when Phelps-Dodge come in they was a company that didn't like records so they started getting rid of a whole bunch of the records. Now, how many of the records were destroyed that would make evidence today I will -- I have no idea. But I know it hurt us in doing our job when they started getting rid of the records. And Phelps-Dodge was only down there about a year and a half. When they sold out to -- well, they brought in -- Consolidated Aluminum became a partner with them and then eventually took the plant over.

Now, he's talking about in the beginning in '55 Dow had Madison and they had a rolling mill, they had an extrusion department. If they wanted to get something done from another plant, they would be

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bringing that there to have it done there because they didn't have any other equipment to do it on. When I first went over to the rolling mill they were learning how to -- they were trying to learn to roll sheets, and they would send that some -- a thickness of sheet and have it -- or a bar to Pennsylvania in one of the steel mills to have them roll it down to where we could finish rolling it on a -- on a mill in there. They were doing anything they could at the time to advance magnesium. So when -- when you talk about bringing the stuff in they didn't have any place else to do it. So we had no idea what it was. Like -- like they say, the alloy wasn't determined.

MR. PHILLIPS: .

: Yes. I was a plant service attendant, and I had access to the whole plant even also No. 1 Building. And I know for a fact that they kept them records up on the third floor.

MR. PHILLIPS: All right. Let's take a break. And I don't know what -- does anybody know about the lunch arrangements?

: I think said that somewhere about 12:30 they'd be -- they would bring in lunch for everybody.

MR. PHILLIPS: All right. Why don't -- is

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a ten minute break enough? I know we only got two

restrooms. But let's -- let's try to be back at ten of and then we'll continue until lunch. Is that agreeable?

: That sounds great. That's good.

(Whereupon, a lunch recess was taken.)

MR. PHILLIPS: Okay. If we could, let's -- let's try to get started again. I was just throwing up here our objectives, our purpose of the meeting again and trying to see where we were. And I think, you know, basically we're -- we're working our way through understanding this. And so I think we've touched on most of these I guess except for one. And if -- if you want to continue along the lines we're going, we can. But one thing I wanted to get a little better understanding, if anybody had any, what knowledge we had of the uranium extrusion and the rod straightening processes that occurred from '57 to '60. But I'm not sure that we're through with kind of where we started this. What's your sense? You got -- you want to continue along the lines where we're going and then we'll -- we'll just pick it up as we go? I mean,

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it's all right with me.

: I want to stay with what we was on if we could just for a minute.

MR. PHILLIPS: Okay. That's -- that's fine with me. You want to start?

: Yeah.

MR. PHILLIPS: Okay.

: Okay. In 1960 I hired in, and we was still making HM31 and HM21 in those. And we was still running that all the way up to the beginning of the '80s and maybe into the '90s. I don't know about the '90s. But that had zirconium and beryllium again, and it also had the radioactive metal in it, and they was in little bitty nuggets like. And that was melted in to every pot. Like he said they was 6,000 pound pots. And we melted that into every furnace that we cast.

MR. PHILLIPS: Wait. I'm sorry. I missed that. We did -- what did you melt into all of it, the thorium?

: The thorium ingots or the nuggets. And it was made into every pot that we used. And it was dumped on the floor really and shoveled

into a basket and then put into a pot that was at least 1,300 degrees to melt it real quick. And if it didn't melt real quick, it would just be in a solid ball. And that's the kind of stuff that'd get throwed away.

And they had a dump on the outside of the casting department that they dumped all the thorium sludge and metal that was a waste. And it was dumped out there in a area of about maybe six, seven acres out there, and that pile was pretty high. And once a year they would send a crew out there to go through and dig it up and dig the metal out of it. And they would bring it back in and remelt it.

And there when they stored this zirconium and that and the beryllium and the thorium nuggets was just in a cage. It -- it wasn't in a room or anything. It was just in a cage in the department. And that's -- there was no -- and they had signs up that said radioactive. And that cage, it was still there back in the '90s.

MR. PHILLIPS: You're speaking of the cage where you stored the thorium metal before you used it to alloy; is that correct?

: Yeah.

MR. PHILLIPS: And that was in Building 7?

: It was in the cast -- is that 7? Yeah. It was in the casting department at the very end, and they had a wire cage around it --

MR. PHILLIPS: Right.

: -- where just anybody couldn't go in there, but everybody did to get the alloy material to put on the unit. But that stuff was used and stored there.

MR. PHILLIPS: How -- explain to me -- you said -- and I saw this in the affidavits and in the -- the testimony at the workers' meeting. When you say dig the metal out of it, explain to me what -- what digging the metal out of it means.

: Okay. On the casting pots, them 6,000 pound pots we had 6,000 pounds of metal in it. They had a machine that would go down -- it had a bucket on it. And you'd go down to the bottom of that pot and you'd pick up this hot liquid sludge and we'd dump it in a container. And when it got hard you'd dump it on the floor, put it in a box, and they'd take it outside and dump in this dump area.

MR. PHILLIPS: You mean literally dump on the floor?

: Yes.

MR. PHILLIPS: Okay.

: And it would be dumped out there. And after about a year with the rain and that

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it would make it real soft, and you could pick -- go in with a Bobcat and pick it up and dump and the metal would separate from that dross and the sludge. And they did this for years out there.

Every year they'd send somebody out there. And that was usually a volunteer job because it was not an everyday job. And they had signs up all the way around this field that said radioactive metal. And then in the '90s I think they cleaned that up. And they sent it out west somewhere, and then they concreted over that whole pad.

And as far as beryllium, we used that on everything we had down there. There was only like two or three alloys that we did not use beryllium. And on that radioactive metal after it was stored for so long they had so much there they had to get rid of it. So what they started doing -- like they had billets and slabs that was HM21, 31 -- they cut them up in like 500 pound pieces, and we just used it in different alloys to make the metals that wasn't even thorium metal. But we used the thorium, it was used in different alloys. And that's the way they got rid of it.

MR. PHILLIPS: So the alloy would be marked bla-bla with a number which wouldn't indicate

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it had thorium in it, but it actually had thorium in it?

: Right. If it was HM21 and when they decided to get rid of this stuff they'd send it out and a saw operator would cut it up in small pieces. And like if we was using like AZ21 or 31 or up on the aluminum unit they'd be using 5083 or a different alloy, we'd use that to alloy with. And when you throw a piece of that into a 70,000 pound furnace it wouldn't show up on -- on the analysis of your tickets. And that's the way they got rid of that stuff.

: Can I add to that? The company used it in 172 alloy, didn't they? Because that -- that was a catch-all alloy Dow had, just throw

anything in it.

: When they went to get rid of that they had so much of it in storage back there, they'd just cut it up and we used on everything you can dump it in. And it went out as everything.

: On that scrap, scrap usually comes back from the rolling mill -- I'm -- and they'd mark it with a marking pen HM21 or HK31 and throw it in the scrap area there. That's where they stored this stuff. That's where it was stored

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at. And then at times when we running the AZ31B or ZK or something they'd bring it in and we'd charge it in the inpots to get rid of it even though it was thorium metal. On AZ31B which is three percent aluminum and one percent zinc we would throw it in the inpots to make the inpot metal. So they used that thorium. They'd keep marking normal just with a marking pen on there and it just says, you know, HM21 or HK31 and we'd charge it back in to get rid of it. That's one way to get rid of the metal.

: How did they pass -- you -- you would send samples out to the lab to have a spectrogram done on them. How did they -- this other alloy --

: There was enough pure mag in the pot to cut the thorium analysis out of it.

: And they didn't read that. On AZ31B or 5083 it wasn't read through it. When they read the sample it didn't show up because they wasn't shooting for that.

: How about AZ61A?

: AZ61A?

: Yeah. Because we extruded a -- a rod over on the 7 Press that they used for the shells.

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: That's six percent zinc and one percent -- or six percent aluminum and one percent zinc. Yeah, AZ61. Well, we used -- we used beryllium in that.

: Beryllium, huh?

: On a pumpover from the other pots, 23 and 24 we had a long ladle and we'd hold it under the pumpover there and add three or four notches of beryllium on each pumpover there. We'd get an analysis on the beryllium on that, wouldn't we?

: Yeah. It's in there. But

you're talking about the way we -- we hid it -- they hid it to get rid of that thorium stuff because in the sample when they read the machine and they had little pieces of that AZ31B or ZK something it was a real analysis. So if it had something strange in, it didn't pick it up. It didn't read that part.

: So there's -- what you're saying there's a possibility anything that went through the plant could have had thorium in it.

: It did. You're right, it did.

: That's how you get rid of it.

: Because when they started throwing this into the aluminum and then when they cut

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the aluminum and ran it in the mill and that that scrap would come back. That had beryllium. They used that aluminum in the pot room to alloy the mag with it. So that had beryllium in it, but it wasn't showing up because the samples wasn't made to show up. And that's how all that stuff -- that stuff went through everything in that plant.

: Every element.

: Anyway, there's thorium in that because they stored it there. And when they decided to get rid of it -- and that's like the stuff from outside that was pure HM21 and 31 -- they brought that back in, melted in, and used it in everything even though that was the thorium scrap.

MR. PHILLIPS: Okay. Thank you. , you had --

: On the spectrograph I don't see how they could have got rid of it because that spectrograph is a colored illustration. The colors determine what the alloys and everything are. They had to be using something to leach it out because if that -- if that spectrograph does not come out, then the colors from burning at that high temperature does not come out, then it does not pass. So they're having to use -- they were having to use something to

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leach it out in the --

MR. PHILLIPS: .

: If -- if you're making a pot of soup and you dump a whole can of salt in there, you can taste it. But if you sprinkle a little bit, you can't even taste the salt. That's the same thing this was doing on this metal. They -- they throw it in in

bits and pieces and got rid of it without it showing up.

: And if it did show up on our sample, it wouldn't be on there. They didn't put it on there.

: When you pure a cell mag -- magnesium cell mag would cut that because if the pot was maybe three percent pure mag, then you'd cut that thorium out, you wouldn't see it. You wouldn't see it on analysis at all.

: But you was dumping into 70,000 pounds.

MR. PHILLIPS: Okay.

: I remember on some of the extrusion paperwork when I worked on the presses they were actually putting magnesium thorium on the paperwork. I've seen that several times.

MR. PHILLIPS: I'm sorry. Say that again.

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I missed -- I missed something. Say that again please.

: When I worked on the presses there was different times that they'd have it on the paperwork as magnesium thorium, and then it had the alloy number. And I wished I'd have kept a -- kept one of them, but I never knew it would all come to this.

: mentioned that they put the samples through the spectrograph and so forth. But you know, in my 25 years as a supervisor after sending our samples out to the lab I can't recall one magnesium job that ever failed props. Can you, ?

: No. Not -- not after it.

COURT REPORTER: Failed what?

: Failed proprieties.

MR. PHILLIPS: Specifications is probably a better -- is that a better word?

: , I'm not talking about properties. I'm talking about specifications as to alloy.

: I realize that.

: Now, I'm not talking about properties at all, tensile properties or anything like that because in your spectrograph every element burns

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to a different color. And that's -- that's how come -- how they figure out by the space of that shade that they've got what the alloy is. So there had -- they

had to be leaching it out some way.
MR. PHILLIPS: Is any -- did anybody in here run a spectrograph? I mean, did they --
: All the samples that was sent out there did they do a spectrogram on them?
: That's how it was tested.
: Huh?
: That's how it's tested, it's burnt. It's burnt. They put the samples in like this and they -- they put them up there so -- so close together. They put high electrical charge through it so that they will burn. That gives you a chart of colors that gives you your spectrograph. And every element burns to a different color.
MR. PHILLIPS: Every -- every element will have its own signature of what -- -
: Yes.
MR. PHILLIPS: -- what colors come off of that. I don't know enough about a spectrograph to know. Is anybody in here that actually ran a spectrograph?
: No. But they told us that

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time they were allowed to have so many different things in it that would still pass. I mean, it may have had it in it, but it was low enough to where it would still pass.
MR. PHILLIPS: Okay. All right. I think we have the essence here of that that -- that thorium alloyed material or maybe even thorium was added to materials, whatever they might be.
: Yeah.
MR. PHILLIPS: Because that's -- that's the essence of it. We don't know right now if the spectrograph would have picked it up whether -- I -- I don't know whether that's set just to look at certain elements when you look at it or whether it does a broad spectrum or not. That's something we can find out later, but -- but duly noted what you said.
: Well, is there a possibility that even though it showed up they said that's no problem?
: Well, if -- if you're talking like AZ31B and using so much -- if you've got 6,000 pounds of metal in your pots, you can have two or three pounds of thorium in there and it won't -- it won't miss the chart that they have to go by.
MR. PHILLIPS: It's below the sensitivity

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of the instrument.

: Yeah. Below the sensitivity level.

: But you're saying on the spectrogram it's going to pick up everything.

: That's right. It will show it, but it -- it will be in tolerance.

: It couldn't go into the roller until the spectrograph said it was alloyed properly.

MR. PHILLIPS: Okay. Let's let speak and then we'll -- we'll get through here.

: Well, I don't know about that particular spectrograph. But I've operated enough spectrographs to know that the general answer to the question is that -- one issue is sensitivity, is there enough in there that it will even form a color peak. The other issue with a spectrograph is you -- you can read the output of a spectrograph two different ways.

One way is there are window settings where it just looks at a particular peak. And if you set it for let's say three windows, then that's the reading you'll get, whatever appears in those windows. And anything outside the windows you won't see it at all.

And then another way to do it is, you know, you can have a very elaborate standard which

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will show peaks of known materials like beryllium -- thorium let's say as added peaks in a standard and compare that to a -- a line tracing of your spectrograph which will show every single peak that's generated.

And so it depends on the way the spectrograph was operated, whether it was worked by windows or they read a continuous spectrum and used elaborate standards and looked for the beryllium and looked for the thorium. If they didn't look for those, they wouldn't be recorded.

So once again, you know, that's why we crucially -- to answer that question correctly we need to have -- to look for the records of the spectrograph output. And we don't know if they exist. But again, Dow Madison may still have them or they may have them at the Midland headquarters.

: May I say a word or two? When Spectrulite first took over the plant that area you were talking about that was screened in to store the thorium, I went back there. I was a , and

I used to haul the material also in for the men to charge. And I was back there in the area, and there was a gentleman back in there going through all that scrap. It was all mixed in. The thorium alloys was

mixed in with AZ31B, ZK60. It was , the man that bought the plant.

And I said who are you and he said well -- he said I'm looking for this H -- this HM21, this thorium metal. And I said if you look around in here, it's the only scrap you'll find that's marked someplace in there with a pen. And that was that bought the plant. It's mixed in with other alloys in there. It was back in there because the cage was a small cage in the corner. And the other place was where we stored all kind of scrap and other alloys. I just wanted to emphasize that.

MR. PHILLIPS: Okay. Thank you. Did you have something?

: No. covered it.

MR. PHILLIPS: , yours was covered too?

: I was going to say about the same thing what he did. Whenever the spec lab -- when they run it they'd run like, you know, so much mag, so much aluminum in it or so much whatever. They'd -- they'd check that out.

And like when we had this six million pounds of mag from Russia that was radioactive it kept getting a spike in there and they didn't know where it

was coming from. But they were only looking for certain -- certain alloys, say for AZ31. Whatever it took -- wherever that met that spec then that was okay to do it. And that's what they were doing there. They weren't looking for you dumping other stuff in there, you know, or anything else. They were just looking for what they're -- what they're needing to run. That's what that was out there.

MR. PHILLIPS: As far as the thorium usage, thorium alloying process and everything, is there anything else that comes to your mind that would be helpful?

: Well, I read and I -- I didn't know anything about this beryllium deal, that so much of that was put into aluminum. And I think one of you fellows over there told me that, that it was down in the aluminum unit. Why, we never knew

that there was anything in aluminum. We just knew them by their -- they were like 7005 or 2024 or whatever, you know.

And what made the difference in them was how they were either stretched or whatever they were done to them, run through the Lindbergh, aged and all that determined the -- of course, it didn't -- it determined the finished product, but it didn't tell

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you -- the 7075 was an alloy that came over there. 2024 was an alloy that came over there. These are alloys that were in aluminum. And I'm hearing from these people in alloy that beryllium was one of the main things that they used to cast their aluminum with.

Now, whether beryllium is a -- is a -- causes cancer or not I have no idea. I -- I was told there is a -- I -- I guess it was NIOSH, they come up some eight, ten years ago to one of the meetings. And I was just told that there is a beryllium disease that restricts your lungs and also that the only way that they can find that is by blood tests.

Now, I had a blood test run, and I've never got the results back. And anyway, I have also had -- I know I've got deterioration of my lungs, but I don't have any cancer. So I'm wondering if all this alloys of aluminum that if beryllium was in that to the point to where it would cause something like a -- is it -- is it radioactive?

MR. PHILLIPS: Not that beryllium. There is a beryllium isotope that is but not what you --

: What I understand is -- I also understand is that it would get so hard that you have to -- you can't cut the stuff, you've got to saw

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it or something like that.

MR. PHILLIPS: Why don't we let explain berylliosis or just to give a broad view.

: Yeah. Well, beryllium metal, you know, gets into your lungs and -- in particular if it's in fumes or dust -- and it -- it causes two diseases that are compensated under this act. One of them is called beryllium sensitivity. So in -- in effect your body mounts an allergic response, and -- and that's detectible through this test you were talking about, the lymphocyte proliferation test.

So they take a blood sample, then they take a little bit of that blood sample, put in into a

petri dish and actually expose your lymphocytes, the immune cells in your blood to a sample of beryllium. And somebody whose been exposed to it for a long time and is hypersensitive has a reaction of their lymphocytes to the beryllium that can -- that can be quantified. And so that's called a lymphocyte proliferation test, and that indicates that you are more sensitive to beryllium than the rest of the population.

Then a certain percentage of people who are sensitive to beryllium after months usually or years of exposure to it then can develop fibrous

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tissue growth in their lungs, and that's called chronic beryllium disease or CBD. And chronic beryllium disease honestly the -- the lymphocyte proliferation test is not the only or the best way to test for that. I mean, you can test for that by a chest x-ray in combination with pulmonary function tests. And the most definitive way to detect chronic beryllium disease is to take a biopsy, a piece of tissue and do what people like myself do, pathologists look at it under the microscope and -- and detect it by its histologic characteristic.

And then finally, although for reasons that baffle me, there is still some controversy in certain scientific circles about whether beryllium is a human carcinogen. But to me the evidence that it is a human carcinogen are overwhelming, and I can't imagine why that -- why there's any controversy about that. But the act interestingly only compensates cancers that are caused by radiation. But in addition it covers people who have beryllium sensitivity or chronic beryllium lung disease. So -- and the law further specifies that -- I think it's after 1993 to have a diagnosis of beryllium disease you have to have that lymphocyte proliferation test. So --

: Nobody can afford it.

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: Well, there are -- there are various ways to get it done. I don't think that's the subject of this meeting. But if you want to talk to me about it, I'm trying to find out the easiest, best, and cheapest way to have it done. And I can tell you that the Department of Energy has a program to do free screening for it, but unfortunately Dow is not at the present qualified for that program. And so we'll just have -- we'll have to take that up.

But I -- I know that's an issue, and I know we need to define the best way to get that done for you guys.

The -- the comment I'd like to make is that a lot of beryllium was used for a very long time at that plant. And you know, so it, as far as the medical effects to the workers, that's a major factor there at the Dow plant. And I'm -- I'm glad that the guys are talking about it today.

: Getting away from this for a minute. We're talking about this thorium cleanup and taking all this stuff and shipping it out. I hear comments that it was shipped west. But I was told at the time that it was happening -- the first one that happened was that Dow Chemical had bought a used strip mine in Indiana. I cannot verify that, but I'm -- I was told at that time that they had bought an old

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strip mine, emptied it in, covered it back up, and it sits there as normal land today. Now, whereabouts I can't tell you, but it was going to Indiana.

: This is . I can comment that in 1993 a company called ERG, Environmental Restoration Group was hired by interestingly Dow -- 1993 now by -- by Dow and by Consolidated Aluminum. They came to the Dow Madison plant and they cleared out 850 railroad cars of thorium magnesium sludge from that 40-acre plot next to the castings building and shipped it out to Envirocare in Utah. So that's a -- that's a documented fact and --

: Yes, sir. That's a documented fact, but I was gone. I left in '83, and this happened -- this happened before -- before I left.

: Yeah, I understand. And then there were -- there were other --

: There's other -- other --

-- : In the testimony there are other cleanups of that stuff that have been sent to various places. This is the first time I've heard about the Indiana strip mine, but that could very well be true. It was a -- it had been accumulating there,

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you know, for 40 years by 1993. So --

: I worked down there and retired in '92.

: Uh-huh.

: Now, when bought

the plant from Consolidated Aluminum part of the deal was that they fenced off that dump out there.

: Right.

: And he wouldn't buy that part. Dow owned that.

: Dow absolutely denies that. I -- I have heard that story.

: Well see, that's what we were told.

: I understand that, and I understand that whole history.

: But what I was going to say is that I was working down at that plant when they were cleaning that dump out when they was hauling the -- all the things out, and I retired in '92.

: I got a comment on that. When they went through that dump Dow Chemical sent two or three guys in there and built a separate building outside of the casting clothing room. And they went out there, and they worked for two years with a Geiger

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counter separating that thorium sludge from all the other sludge that was in there because the guys taking it out to the dump had no supervision. They'd keep dumping in the same spot, they were dumping with other alloys. They worked out there for two years going through and separating and getting a separate pile for all the thorium sludge. And they hauled that -- and then they hauled that away after that.

And also that was right outside of the locker room from the dock in casting within 50 feet of where that storage area was. And they had a -- from the main gate you had to right by that to bring your trucks into the warehouses, the docks on the lots. They went right by it, every truck that ever came in there. But they spent two years and had their own lab set up in there outside the fence. As a matter of fact, the building was an old beat up building setting there. I had no idea.

: I think we need to come off the Dow dump and go along.

MR. PHILLIPS: Okay.

: I don't know if that's going -- I don't think that's going to help you to --

MR. PHILLIPS: Yeah. I think -- I think that's all documented in the -- in the affidavits and

0102

in the other meetings. So unless there's something

that anybody thinks of is not related to what's already been said.

: I'd like to get back to the beryllium. It concerns me a lot for me and my family and all these guys and their families because we had to be taking that dust home. As the I worked in my street clothes.

MR. PHILLIPS: Yeah. I --

: And these guys might -- might have changed clothes every day, but they had to take their clothes home to be laundered and so forth.

MR. PHILLIPS: Yeah. I -- I don't disagree with that, but I'd like to -- I'd like to separate that out because we're not -- it's not going to get to where we need to go here if -- if, you know, like says is probably the best person to discuss with you that. I'm -- I'm just not familiar with it to be real honest with you, and it's really not part of this. It's not to -- to put you off because I know it's important to you. But I'm afraid that we could -- we could get bogged down here and not get to where we want to go. But please hold on to that, and I'm sure will be glad to discuss it with you.

0103

: Yeah. We'll -- we'll have a follow-up meeting just about beryllium if -- if there are enough people who want to talk about it because -- so I agree we should move on.

: One more question if you don't mind for .

: Yeah.

: Could you tell me after you have the blood sample how -- how long a period of time before it should be tested? I've heard conflicting reports.

: In other words, how much of a delay can you have --

: Right.

: -- between the -- well, you're testing live lymphocytes.

: Well, I'm having it done Monday at Quest Diagnostics.

: Yeah.

: And they have to send it to Cleveland, Ohio.

: Yeah. Yeah. Well, they need to send --

: They say 72 hours. Now, is that right? I don't know.

: Well, you know, I'm not going to second guess Quest Diagnostics. My approach would be to ask them to send it Fed-Ex overnight.

: That's supposedly what they are going to do.

: Well, that will get there in less than 24 hours.

: said 24 hours.

: Right.

: Forty-eight hours. In that 48 hours it has to be tested.

: Right.

: I just called him up on that because I was -- I had the same question and I had the same answer as he did.

: Send it Fed-Ex overnight priority. I'm telling you that's the way to tell them to do it and don't -- don't equivocate around. Just tell them to send it as fast as possible, and then it will get tested within 24 to 48 hours or it should. But -- but you want to get it there. They're live lymphocytes, and those cells break down and stop working right -- the longer you let it wait. So they put it in a preservative so it will keep them going. But anyway -- okay?

: . I spoke with a lady last night that's given me permission to tell you that she couldn't come today but she would like to talk with you. Her name's or (phonetic). I'll get you the exact name and phone number. She was in the administrative department of Dow and can definitely confirm materials being shipped to and from Rocky Flats in the 70's and '80s.

MR. PHILLIPS: Maybe we can --

: I believe she said that around -- I'm wanting to -- I'm wanting to say 1988 that there was a big rush to send -- they cleaned out all the documents according to her. What she told me they'd take out all the documents up in the offices and then shipping it all. And she thought it was --

: Well, she was talking about barrels of material.

MR. PHILLIPS: What we could do is if --

we can set up a conference call. And Grady, if you wanted to be in on it and and I, we could -- we can talk to her. I'm -- what about the person who was going to do the telephone thing? Where did we -- what happened to that?

: You know what, I can go call him. I'll leave and go call him soon.

MR. PHILLIPS: I'm sorry. I forgot that. Let's -- let's see if -- would you mind seeing if we could do that.

: I'll go do that.

MR. PHILLIPS: Because I don't want to forget it. Okay. , did you have in mind, I mean, another -- did you want to say something?

: Well, I just thought maybe we could come off the dump over there and then go and talk to the people in extrusion. And when they get done then go to the rolling mill.

MR. PHILLIPS: Yeah. I think we -- we started somewhere and we -- we got lost. But did we -- did -- we talked about the casting. Did we talk about -- and I guess in that we talked about the pot -- potting process too whatever it's call.

: In this -- in that casting we weren't -- we didn't wear any protective clothing whatsoever, no respirator. And the clothes were just bib overalls and flannel shirts. We weren't instructed anything, you know, to protect us.

MR. PHILLIPS: Does that cover through 1990 when you were there?

: Yes.

MR. PHILLIPS: At any time during that?

: I don't know what happened after '90, no. This was at that time. Ventilation was very bad in the casting department. About '67 they (inaudible) big fan, and each unit had one. Half of them didn't work half the time.

MR. PHILLIPS: Okay.

: So ventilation was bad. Sometimes you couldn't see the guy next to you it was so dark in there. And I got one comment about something that happened to me in the early '50s. A fellow I was working with was a metal caster and he says hey, , I've got a clearance -- a security clearance from Rocky Flats. I said you are. He said I'm thinking about transferring jobs out there. And

it went on for about a month or two, finally he come to me one day and said I decided not to go out to Rocky Flats. And I think maybe Dow must have been recruiting different ones in the plant to go to Rocky Flats. He eventually didn't go and a few years later he passed away. I just thought I'd like to emphasize that.

: I just wanted to make a comment and try to get some clarification on a couple of employees that passed away of brain cancer down

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there, (phonetic) and (phonetic); that they both worked on 7 Press. And that was the most highly radiation contamination above it.

: I worked with both of those guys.

: Yeah. And they both died of a -- some kind of a brain cancer identical. And they -- they would relieve each other. You know, you worked three shifts. They would relieve each other. They were both billet attendants.

: Billet heater attendants, right.

MR. PHILLIPS: Yeah. That -- that's in the record. And I'm -- and I'm not trying to put you off, but I don't think that's -- I don't think there's anything that we can -- we can address in here about that. I mean, it's noted in the record, and you know, we all looked at it.

: But in '95 is when they done their contamination cleanup above that press, correct?

: 2000.

MR. PHILLIPS: Was it '95?

: And then again in 2000, July of 2000.

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: And then again in 2000? Did they do -- they done two cleanups there?

: Right.

: Well, I heard that they -- well, in fact, I saw a picture of it -- that they sold 7. And when they -- who they sold it to shipped it back to them because it was so damn hot with radiation that they -- they didn't want it. And it sat on a lowboy down in Venice someplace down there for --

: I -- and I recall hearing it in the newspaper. I went down to Venice, and I saw

that press sitting on its lowboy down there because the lowboy blowed some tires out. And , was sitting there in his watching it that day I was down there. I heard it's back in the plant covered up with plastic.

: They stripped it out.

: Inside the plant and then hauled it out piece by piece?

: Uh-huh.

: I just want it noted that when they casted that thorium the smoke filtered right into the extrusion department from -- from everyplace. It just filtered and -- you know, it was just as smokey in that department and over to the mill.

0110

MR. PHILLIPS: Were there -- were there fans in -- to ventilate that area but they were blowing it over toward --

: It would go all the way over to the rolling mill.

: Yes.

: Inside the plant and all the way.

: It just filtered -- it filtered -- filtered out throughout the plant.

MR. PHILLIPS: But they did use fans? I mean, is that all the time, most of the time?

: There was no fans in the warehouse. Just in the casting there was fans.

MR. PHILLIPS: Okay.

: The warehouse had fans -- ceiling fans.

: They didn't need any. The fans would blow it. It was so heavy the building filled up and it had to go out any openings that it could get. And then it went into all the whole plant. We had ceiling fans, but most of them were all ate up from the flux --

MR. PHILLIPS: Okay.

: -- and everything going up

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through there. The blades were all ate up on them. They tried to maintain them, but they couldn't even keep up with it.

MR. PHILLIPS: Okay.

: But that's where all the smoke went. It wasn't blowed out by fans. Our building would fill up so thick that there was nowhere

else to go. It had to flow out the doors. That's how it got in the other departments. I seen it all especially the rolling mill.

MR. PHILLIPS: Yeah. I -- that's -- that's in all of these reports about these.

: Chick, everybody, there is one other aspect that if you have anything to say, this would be a good time because this is about the SEC and dose reconstruction. And that is that as Chick knows there -- there are at least two reports of separate incidents where guards accompanied ingots or billets of what was said to be plutonium. And in one of those situations it was said to have emanated from Rocky Flats.

So if anybody has any more information about the plutonium work. As I remember it where we stand so far is nobody knows exactly what was done to those. And -- and like I say, there's one link to the

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-- to an Atomic Energy Commission site at Rocky Flats. And -- but for this discussion it would be good again to get the time frame for that. So does -- does anybody know about the plutonium billets at Madison site?

: I have a -- I was told they had sheets that they brought in and they were rolling them down on 7 Mill. And the metal was so hard that they didn't have any ovens other than the die ovens in -- in extrusion they could get a hot enough temperature to the annealums to where they could make another pass on them.

Now, all that metal was guarded, and they actually was carrying a gun. And a couple of the guards were friends of mine, and I talked to them. And they said -- but they told me when he was down there standing down there by the -- the annealing unit -- or the die ovens, and he was saying that well, they told me that this -- each one of these sheets is worth a quarter of a million dollars. Well, we were told it was platinum.

: That's right.

: Yeah. Now, I don't know -- I don't know anything about platinum, but why would you have to -- from my understanding with metal

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platinum is not all that hard. And it -- they had to drive -- they -- we did not have any ovens in that plant that would get the temperature up high enough on

those sheets to reroll them other than the die ovens. And they -- they had seven or eight sheets of it. And that was Rocky Flats. It came from Rocky Flats. It was designated Rocky Flats. They swept up every crumb of it. And the funny part about the whole thing was -- I think there was eight sheets, maybe seven. They got back up to Rocky Flats they was one sheet short. It was laying down on our shipping dock -- receiving dock in shipping. It'd been there for weeks or a -- or months rather when they finally found it. Now, that's the only thing I know about -- about it. I know that for a fact because I knew the guards, and they happened to be friends of mine.

MR. PHILLIPS: You said it was marked?

: Beg your pardon?

MR. PHILLIPS: You said it was marked as plutonium? Did I -- or did I misunderstand?

: No. There wasn't no markings on it. I didn't see -- they told me -- originally the story was it was platinum.

MR. PHILLIPS: Okay.

: And I rolled that on 7 Mill --

0114

: Yeah.

: -- at that time. And the guard stood right there with us the whole time we rolled that, myself and (phonetic).

: And do we know what year that was that we're talking about?

: Well, I was over in extrusion, and I didn't bid over there until 1966. So it was after that time. I can't -- I can't put a date on it.

: It had to be -- it had to be between '66 then and the end of '67 because I left the plant at the end of '67, and I worked on that job.

: Okay.

MR. PHILLIPS: But they said they were from Rocky Flats or someone told you they were from Rocky Flats?

: Oh, yeah. There was no question about that, it was Rocky Flats metal.

: Right.

MR. PHILLIPS: Okay.

: But Dow lied to you about everything else, so when they told me it was worth a quarter of a million dollars I never thought anything about it that -- that it was platinum, but I don't buy

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into that now.
MR. PHILLIPS: It was sheets. What -- what size sheets and how thick? I mean estimate.
: Maybe like four-foot wide and maybe six foot.
: About eight foot.
: Eight foot. Was it that much? About eight-foot long.
: Between six and eight foot.
MR. PHILLIPS: And about how thick?
: I'm sorry?
MR. PHILLIPS: How thick?
: When I saw -- saw it it was about -- I'm going to say about three-eighths of an inch.
MR. PHILLIPS: And supposedly the purpose of bringing it in was to -- to roll it to a thinner sheet?
: Roll it down to a thinner sheet. And it came from Rocky Flats, and it was shipped back to Rocky Flats.
MR. PHILLIPS: And were you successful in rolling it to --
: We rolled it, but not to the gauge that they wanted. Took several passes on it
0116
back and forth --
: Back and forth.
: -- continual.
: Yeah.
MR. PHILLIPS: And I heard you say that then they cleaned up, they took all the scrap.
: They took every speck.
: When you'd roll something like that well, you'd break off at the ends of it because it -- it would get cold on you and it would break, you know. So they kept every bit of it.
MR. PHILLIPS: And what temperature? Do you remember roughly what temperature you rolled it in?
: No. I can't say to that.
: I can't either.
: I do know -- the only thing I know is for sure that the only oven we had in the plant that would get it hot enough to where they could make -- anneal it and make another pass.
: The ovens started out at

1,600.
MR. PHILLIPS: And the highest one, the one you were talking about -- how high would the temperature go on that?

: That I don't know either. It -- but like our solution heat treat ovens and stuff like that the metal got up over 800 degrees. So it had to be a lot more than that.
MR. PHILLIPS: Anybody have any --
: Is there some discussion here if Dow was involved at Rocky Flats, or is that a known fact?
: That's a known fact.
MR. PHILLIPS: They operated it, yeah.
: Some of the questions going on it makes me wonder.
: They built it.
: Okay.
: They operated it --
: That's what I thought.
: -- from 1951 to 1975.
: Yeah. But -- but some of the questions that was going on it sounded like they was trying to prove that Dow Chemical run that plant.
: They did.
MR. PHILLIPS: No.
: No. Okay.
MR. PHILLIPS: We -- yeah, that's known. That's --

: No. But we're trying to see if there's a connection I think between Madison and Rocky Flats.
: Well, what he brought up a while ago about the gentleman we worked with was going to transfer to Rocky Flats. I told him -- I said , you know you're going to lose all your seniority. He said no. He said that's still Dow Chemical, I carry it with me to Rocky Flats. So that's the connection right there.
MR. PHILLIPS: Yeah. It's -- it's --
: Who was that? Was that ?
: No. He's dead now. His name was (phonetic).
: He didn't go.
: He changed his mind and he didn't go. But when I asked him about his seniority

he said oh, that ain't no problem, that's still Dow Chemical, it goes right with me.

: We heard about -- I think it's or something like that.

MR. PHILLIPS: Yeah. We -- we know that Dow operated both plants. The question is what --

: Well, some of the questions didn't sound like that so I was wondering.

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MR. PHILLIPS: Well, the -- the questions -- well, the uncertainty is what kinds of materials and how much, what were they that were transferred between the two. That's -- that's the open part of it.

: You might -- you might make a contact with .

MR. PHILLIPS: Who is he?

: He was a rolling mill supervisor, and he would have been in charge of that about that time. He lives in --

MR. PHILLIPS: He's on the list here but --

: Yeah. He's on the list.

MR. PHILLIPS: -- he didn't come in.

: He would have been here today, but he broke his classes last night.

MR. PHILLIPS: Okay. Has he -- has he -- I don't remember everybody that has talked. At any of the meetings has he talked before?

: No. I don't think so.

MR. PHILLIPS: He has not?

: No. He's a new person.

: This would have been -- this would have been mine and his first ones.

0120

MR. PHILLIPS: Will you -- will you contact him, ?

: Yes. If he's on the list. , do you have his name?

: Who?

:

MR. PHILLIPS: It's on here with a phone. Not right now but at some point.

: Yeah. Yeah.

: He was intending on coming. He didn't make it, and -- but he would be an interesting person for you to speak to. So would .

: Yes. I would --

MR. PHILLIPS: Can we get an affidavit from him?

: Yeah. Yes.

: They were both -- they were both in -- in the early years, right? Apparently he had -- he had an accident with his eye glasses and couldn't come.

MR. PHILLIPS: What about the --

: I tried. He was working with his wife. Let me try one more time. His wife is very, very ill. He said he'd call me right back.

MR. PHILLIPS: Okay. I know something about casting now. What about the pot mill? Do we need to -- need to go there, or is that all intimately tied together here?

: Casting, pot room, aluminum it's all the same.

: One thing can I -- , on all this stuff I think it would help Chick --

MR. PHILLIPS: I'm going to have to be excused for a second.

: Yeah. When he comes back why don't we all talk about it. Can we put an end date on thorium production throughout the plant? In other words, think about --

: When they quit it?

: Yeah. The last time we ran thorium in castings, extrusion, and rolling mill.

: About '98 or '99. In casting they ran a unit in '95 or '96, that's when the government came in. And then they sent the slabs over to the mill. They were sitting over in the mill. And they ran some of them in '98 -- the late part of '98 or early part of '99. And they sat there until they had the cleanup in 2000.

: Uh-huh.

: And where they went to from there I never found out who got them or where they went to. But there must have been I'd say close to 30 or 40 slabs of -- thorium slabs in the mill in -- in the 2000 cleanup which was in, what, June, July, 2000?

: And we also -- and we know when there was residual thorium in June of 2005 because of that Pangea survey. So how about in extrusion? What -- when was the last time we think extrusion of thorium took place?

: Extrusion ran the clench bar. That's that -- you guys might know that, that four-inch -- four-inch and they cut it seven inches long. That was clench bar, that was HK.

: That clench bar was AZ61A.

: AZ61. Yeah.

: AZ61?

: Yeah. We -- it -- it was a (inaudible) of the Sable (phonetic) shell.

: Yeah, the Sable.

: So how late was that run?

: You really can't tell when we quit running it there because a lot of this metal was shipped in from out -- from other plants such as Martin-Marietta.

: Right.

0123

: And you know, it was just called special metal or an experimental metal.

: That's okay. I'm -- I'm just trying to get for Chick.

: Up to the time, you know, I left in 2001 I would say they was still extruding that stuff then because we was pushing metal.

: Okay. And when -- I can't remember. When -- when were the extrusion presses all gone, 2003, '4?

: No. They was --

: Well, they still had 7 Press.

: Okay.

: Part of the 7 Press.

: Yeah. Because we found it out on the highway.

: Yeah, in 2005.

: Okay. Okay. So Chick, just to sum -- while you were gone what I tried to get -- and we -- we could put names to it I guess, but there was a kind of a group discussion on when -- when did thorium production end in the various main components of the plant. And what we came up with was casting probably 1995, the rolling mill 1998 to '99, and the extrusion department maybe 2001, maybe even later. So

0124

except for casting, the thorium production period actually lasted, you know, through this extended SEC period that we're all talking about. So -- so you know, definitionwise if we're talking about the thorium production versus residual periods, it's

somewhere around 1998 or later. So you know, they were producing thorium alloy all the way through that period.

MR. PHILLIPS: Okay. Thanks.

: This is that back part of that 7 Press I was showing right up in here. That was found down in National City on the side of the road. You can see in these it was to get it sent and they sent it back. That's the only pictures I've got, so I've got to have them back. If you need them or -- maybe they can get them copied for you.

: Okay. is on the phone, he is joining the meeting. And I'll let you take it from here.

: Thank you, .

MR. PHILLIPS: Hi, I'm -- I'm Chick Phillips. I am with Sanford, Cohen & Associates.

: Okay.

MR. PHILLIPS: We're a contractor to the advisory board.

: Okay.

MR. PHILLIPS: And we asked that this meeting for the workers be set up today so that we could get a better understanding.

: And if my wife was seriously ill, I'd be there.

MR. PHILLIPS: Well, I'm sorry about that and wish you could be here. What we're really focusing in on, although we're not excluding anything that relates to the Dow plant, is to try to understand the thorium operations, the alloying operations involved with the thorium at the plant. That's the main focus although we've covered other areas and also anything related to the processing of uranium during the time period of 1957 to 1960.

: Yeah. I was there.

MR. PHILLIPS: Okay. So I think probably the best thing to do would be if you have something that you would like to say about your involvement with either of those --

: Okay.

MR. PHILLIPS: -- of what you knew about it.

: All right.

MR. PHILLIPS: We would like to -- like to hear that.

: Okay. I was involved with most of the thorium materials as well as the uranium, more intimately probably with the uranium but so let me cover the thorium first.

When I began in 1953 I started in the spectrometer laboratory. I was analyzing samples that were brought from the casting floor via a pneumatic tube system. And we would put thousands of volts across those little pins that they would send us up to spark down to get the analysis. Obviously, some of those were thorium alloys they were casting out in the casting plant and the pot room.

And you know, I would go out to the pot room occasionally and see all the dust and dirt and fumes and poor ventilation and everything. And we kind of wondered what was going on over the years.

And you know, there's a subbasement there too where they would cut off the billets as they were cast. So you could go down below, and that place was dirty and very, very latent with -- had air and everything, but you know, we didn't think of it as being hazardous.

But I'm sure they were casting thorium alloys during the time period that I was there which

0127

was in 1953 to 1971. The reason I'm really sure they were casting the thorium materials there is after I moved out of the spec lab I worked with process development out of the laboratory servicing the extrusion plant, the casting plant, and the rolling mill.

MR. PHILLIPS: Excuse me. Could you -- could you slow down just a little bit. It's being -- a court reporter is recording it. So she's having a little --

: Yeah. I'm way too fast for that. If you want me to repeat anything, you just need to tell me.

MR. PHILLIPS: You're okay. Just slow down. Get a southern accent.

: But anyway, I serviced all three plants as a process development technician working for the metallurgical engineers in the laboratory which went back and forth between the plant working on developments of new materials.

And the thorium alloys I'm very familiar with because we extruded -- I ended up in the extrusion plant. We extruded HM31 which was three

percent thorium and one percent mixed metal. And that material was very difficult to extrude and constantly

required laboratory supervision. You've got a guy there by the name of . I bet he'll be able to tell you that it was very difficult to control the speed of the alloy and that sort of thing.

I know because I ended up as a tool and die design engineer later designing the tools to extrude those materials -- I know those materials were used for leading edges of aircraft surfaces. This was an aircraft where -- where heat would be developed, and the thorium material resisted the heat and kept the strength of the metals. But I don't know who the names of the customers were anymore, Martin-Marietta, Raytheon, people like that, Hughes. You know, the typical people in the aeronautic industry. But let's see.

MR. PHILLIPS: Can you give us a time frame on that?

: Yes. I was in the laboratory from 1953 until I'm guessing about 1959. And then I moved out to the extrusion plant as a tool and die design engineer working upstairs in the offices of the extrusion plant which were right next to the casting plant by the way. And that's where I met and all the other people of course from my early development days as well as when I

worked out in the extrusion plant.

I later on became production services which meant quality control, process control, process engineering, and cost analyses. And I reported directly to

So I was constantly seeing what was going on in the plant. I was constantly being involved in process control, aware of what was going on in the casting plant. And my work on the extrusion plant lasted until 1971 when I -- when I left after Consolidated Aluminum took over.

The uranium happened while I was a lab technician. I remember a fellow by the name of (phonetic) who came over from Mallinckrodt, and we extruded the uranium billets for him into rods on No. 7 Press, the 5,500 pound press that everybody there knows very well. The engineer at Dow Chemical was (phonetic). I was his technician. We extruded the material. I think we may have had badges

for radiation, but I'm not sure of that. But you know, we cut the material, we sampled it, and we extruded it. We didn't take any special precautions. We treated it like any other metal.

Now, it's interesting that eventually came to work for Dow Chemical Company even

0130

though he was the metallurgical engineer for Mallinckrodt during the uranium processing. I -- I know that he's died I think of probably radiation causes.

I don't know what else I can tell you unless you let me pause and see if you'd like me to talk about anything else or maybe you have some questions.

MR. PHILLIPS: What I'll do is ask the -- the workers here is if they want to comment or ask questions and then --

: Most of those guys that worked in the extrusion plant ought to remember me because I grew up there.

MR. PHILLIPS: All right. would like to --

: I remember the name.

MR. PHILLIPS: That's southern for whatever his name is.

: When he was talking about extruding uranium --

MR. PHILLIPS: You have to speak louder.

: , when you were talking about extruding uranium was that pellets?

: Was that what?

0131

: The pellet job.

: It was billets, yes. Probably -- probably 12-inch, 13-inch billets on No. 7 Press.

MR. PHILLIPS: He -- he said pellets.

: Oh, pellets. No, the pellets that we used to extrude were ZK60 which were six percent zinc and about a half to one percent zirconium. That was the pellets we used to extrude mostly on No. 7 Press.

MR. PHILLIPS: So the uranium was in billets?

: Yes. They were solid.

: Is that the -- is that the right year range too that the -- does the years match?

: Just tell him says hi to him. I built his home for him.
MR. PHILLIPS: says hi.
: Tell the house is still standing.
MR. PHILLIPS: A few cracks here and there, but it's okay.
: He's welcome to stop any time.
MR. PHILLIPS: Anyone else?

: . Do you have any information or knowledge of dealings with Rocky Flats' location while you were there at Dow?
: You know, I know of the Rocky Flats location just from what I read in my scientific interests. But I don't remember a Dow Chemical connection with Rocky Flats. It could have occurred, but I don't remember it.
MR. PHILLIPS: Anyone else? Yeah. would like to --
: Okay.
: Can you recall for us when the uranium work -- the years that it was performed at Dow from your point of view?
: When was it?
: Yes, sir.
: I -- I would think it had to be between 1953 and 1960, but I can't pinpoint the year.
: Okay.
MR. PHILLIPS: We thank you very much for taking the time to do this. We wish your wife well.
: Okay. Thank you. And I wish you guys lots of luck on what you're doing. I think it's a good effort, and I'm hoping it pays off for everybody.
MR. PHILLIPS: Hold on just a second.
: Did he say the pellets -- the original pellets that they first brought out were thorium?
: I heard something about thorium and what?
MR. PHILLIPS: He's -- he's talking about the pellets that got extruded.
: Uh-huh.
MR. PHILLIPS: What -- what the material

was.

: I don't remember it being anything other than ZK60. I don't remember it being anything else other than ZK60. And the reason for that is they were casting fine pellets in order to make a fine grain structure which made a stronger material. I don't think we ever did anything other that ZK60 in that, although there could be maybe a small thing that was done once in a while experimentally. I can't think of anything there we ever did in any volume other than ZK60.

: He's saying that there was radiation (inaudible) on those cans is what was saying.

0134

: What about the heavy press? They run pellets down there and made billets out of them as well.

: The 14,000 ton press?

: Yes.

: Boy, I remember a lot of Boeing material being extruded down there and a lot of fancy stuff going on down there, but I don't remember any pellets down there.

: Well, it didn't last very long because it didn't work out.

MR. PHILLIPS: Again, we thank you very much.

: Okay. I wish I could be of more help and I wish I had more time, but again good luck to you guys.

MR. PHILLIPS: Thank you. Okay. We'll get -- we'll get the information on that, right, ? Okay. Thanks. Okay,

: s going to have to be leaving right shortly.

MR. PHILLIPS: Okay.

: And he was a press operator in extrusion. Be the first one to start talking.

: I don't know much. I know

0135

in the '90s we ran two special runs. One was Allied Signal I think, and the other one was Martin-Marietta. And the second one was when we used the carbon blocks. We put the carbon block behind the billet, and when you'd hit the extrude button, hang on because it shot through there a hundred mile an hour. And all the dust from up above come falling down. Other than

that, the beryllium and those I don't --
MR. PHILLIPS: What was the time frame again on that please?
: It was '92 -- '91 or '92.
MR. PHILLIPS: And these were two special runs that you're talking about?
: And one was with carbon blocks and the other one was without.
MR. PHILLIPS: What does carbon blocks mean? I'm just --
: Well, it was a carbon block. We -- that was first we ever ran it. They said that was a way to clear the die.
MR. PHILLIPS: Now, where are the carbon blocks? I'm -- I don't know what it is.
: A test block. A test block.
: It follows behind, doesn't it?

0136

: You put the billet in then back up.
: You've got a 9-inch billet like going in.
MR. PHILLIPS: All right.
: You'll have a 9-inch carbon block about yea thick ---
MR. PHILLIPS: Okay.
: -- right behind it to push it through. I guess -- I'm not that familiar with it.
: But -- but it's only required for very heavy, hard metals, right, like uranium? I mean, I believe the testimony before has been that that carbon block --
: Cleans.
: It -- yeah. It's -- it's required for something like uranium or thorium.
: Well, actually I was reading something where Mallinckrodt had an agreement with Dow Chemical. Part of it they were experimenting with uranium, but they were also experimenting with a follower block.
: Exactly. They -- they had to --
: In fact, it was a carbon block.

0137

: Yeah. But it was -- it was --
: And I'm trying to get a --

: It wouldn't work without it.
: It was part of the agreement.
: So in a way if -- if a carbon block was used on a special metal product, you kind of knew that the special metal had to be uranium. The only other metals that I'm aware of that would fit the bill would be uranium, thorium, or plutonium. I mean, it was a hard metal like that. And the men talk about it, if you didn't have the right kind of follower block and the right temperature, the metal would break up and so forth. So -- so that's -- that's part of the reason why they think those special runs were a metal like thorium and probably were thorium. There wasn't any Mallinckrodt uranium in the 1990s because Mallinckrodt was gone. So that's --
: Well now, we did something in extrusion, it didn't last very long. But we tried to extrude titanium.
: Okay.
: And we had to put in a special oven to get the billets up to a certain temperature. And then even after it got to that

0138

temperature it was heated in a -- the billet heaters. And they had to put an extra billet heater on a table to drive the temperature even higher. Well, they extruded some very simple shapes, T section, I-beam. One push and the die was eroded away to where they couldn't use it again. Now, that was only done on 8 Press, and it was only -- it didn't last very long, like a very short period of time that they tried that. That's the only thing that I know of that would have been hard enough that would have required that kind of temperature.
: Okay. Do you know, did that require a carbon follower block?
: You know, I don't know.
: Okay.
: I can't say. And that was run on 8 Press.
: Okay.
: Well, I remember we ran I guess that one time we did the carbon blocks. And the people that -- I guess the customers were standing there. And when we hit the extrusion they took off behind us. Where the hell you going, you know. Like I said, when you hit that button it -- we had a stop on the press. You know, it went right on through it.

0139
Woke up the electricians, millwrights. They all come out, thought we was tearing the place up. No speed, you just hit the button and go.

MR. PHILLIPS: But you don't know what the material was?

: It come out, it was a rod -- or a bar two or three inches thick, something like that. Run out with six or eight feet, and that was it. And they always told the helper don't look in there because most of the -- when you start a job a helper's got to guide it out. They said no, because it shot out like a rocket. Yeah.

MR. PHILLIPS:

: I was burnt in the '60s on thorium metal. And within one week it -- from a blister I had a hole in my -- the top of my foot about a quarter of an inch deep, and it just kept eating into it. And they had to graft skin and everything on it to get it to stop. And that was HK31.

MR. PHILLIPS: And what was that from? I'm sorry.

: It was thorium metal.

MR. PHILLIPS: A chip hit?

: No. It went -- liquid metal went down my boot, and it just burned the whole top of

0140
my foot. And it took about six weeks before that thing even started healing up.

: And where did you get exposed to that, in the pot room?

: In the pot room. Yes.

: Okay.

: Yes. When they extruded those special alloys for these customers the customers bought the press. They would take the scrap, everything. And they wouldn't allow no one but the press people in that area. They didn't want no -- no one else around.

: Did they rope it off?

: Yes. Yes.

MR. PHILLIPS: You're talking about these same two special runs --

: That same time that --

MR. PHILLIPS: -- that's he's referring to?

: -- . Yes.

: Were those the only two special

runs?
: No.
: No.
: There were more where the
customers brought in --
: Just in tons of it.
: -- the customers watched it?
Then get that on the record.
: While you all are talking about this there is one super important thing I've forgotten. And that is that at the May board meeting John Mauro (phonetic) who is the head of the project at SC&A had a draft report with him. And one of the comments that they had was they had obtained some data on radioactivity around extrusion presses. And he commented that the radiation levels were relatively -- and I assume this was data from extrusion presses that were extruding uranium and thorium. And John's comment was that the levels of radioactivity around the extrusion presses were relatively low. And one of the points that I made to the board that day was that, you know, at a lot of other places that I've read about the extrusion presses that ran radioactive metals had hoods -- vacuum hoods around them, and they suck that fumes and dust away. And I just wanted to get it on the record -- I believe it's true, you all have said, that the -- none of the extrusion presses at Dow Madison had any vacuum sucking hoods.
: No. No.
: Is that -- would you all confirm or deny that.
: We did not have any hoods. We did not.
: Didn't have anything like that.
: Right. I think that -- so I think that's a general consensus. Yes.
: Didn't the Corps of Engineers say that it was, what, 15 times above limits above the press?
: I think they said that was the average of the --
MR. PHILLIPS: I believe that was the dust on the -- is that what you're referring to?
: Yes.
MR. PHILLIPS: , were you talking about

--

: I'm sorry.

MR. PHILLIPS: You're talking about air concentrations as opposed to --

: Yes.

MR. PHILLIPS: -- direct radiation, right?

: Yes. I was talking about air concentrations in the -- in the immediate vicinity of

0143

the press. I -- I just wanted to comment on that because John's report, one explanation for a low level -- and in his report it wasn't specified whether this was a hooded or a non-hooded extrusion press. And so I think that's absolutely crucial. And I would expect that on a hooded extrusion press the air levels would be much lower than an unprotected one. And -- and none of the extrusion presses at Dow had any vacuums.

MR. PHILLIPS: What kind of ventilation -- I mean, was there no -- no forced ventilation, no fans or --

: Ceiling fans about 35 foot up.

: And those didn't work. Most of them didn't work. I didn't know why they didn't. They didn't work. I know they weren't on.

: Chick, I was just asking if they were ventilation fans or if they were simply ceiling fans.

: They were simply ceiling fans. They were supposed to blow air down. They were supposed -- they were put in on the purpose that they came out with a claim that they could save so much heat in the winter time.

MR. PHILLIPS: They were downdraft as opposed to updraft?

0144

: Yes. Yes.

: You've got to understand that that place was almost all glass.

: I can't think of the guy's name that put in that suggestion, but he got some money for that by putting in all these fans, you know, to save heat. It forced the warm air down in the winter time, then they could burn less fuel in the Dravo heaters.

: So they were downdraft.

: That was a government kickback. The government paid for all that.

: So they were downdraft

rather than ventilation?
: That was a government kickback. That was a government program.
: They didn't really have any fans down there that was meant to -- to take the air out of the building because you didn't need them. You had broken windows. The whole plant was glass, and so everything went up. You know, the heat from the presses drove it all up. And your ceilings were black naturally. And -- and there wasn't a real need for exhaust fans for purposes other than maybe over in alloy and some places when -- when you had high

0145

humidity there would be chances when that whole damn place would be full of smoke.
MR. PHILLIPS: Were they all downdraft in casting and -- were those downdraft or updraft?
: No. We didn't have downdraft. We had big ventilation fans in the --
MR. PHILLIPS: Updraft?
: Yeah.
: That was -- you guys, that was only in the pot room, wasn't it?
: The warehouse didn't have fans.
: The smoke would drift out towards the mill and it keeps the warehouse (inaudible).
MR. PHILLIPS: Okay.
: In their permit --
MR. PHILLIPS: Hold on guys. We got to do one at a time.
: They had caustic things where they worked on the dies, it was supposed to clean them off with acid. And that went up to the ceiling because the fans didn't work and the crane men and all them got that. And they sent people to the hospital before for caustic burns because the exhaust

0146

wasn't working. And they had that all the way in the heavy press where that -- that if it was a bad day it just drifted all through there. And some people were sensitive to it and some of them weren't. But they -- they never worked most of the time. And every time they cleaned a die up it had to go back there to the die shop and be dipped in there all that stuff washed out and boiled up and went to the ceiling. And most generally they didn't work.

: There had to be millions and millions and tons of this material went through that plant. People just can't visualize how much material went through that plant and how much of it was contaminated, just millions of it.

: Yes. In the '90s they ran a job on the heavy press for Allied Signal, and they extruded it. Allied Signal bought the press. They extruded it. They solution and heat treated the material, and they had hot ice trucks just to the north end of the solution heat treat ovens. And as it came out the solution heat treat oven we put it in the hot ice trucks. We stored it in the hot ice trucks, you know, for it to -- I don't know -- to reach specs, you know, whatever. And then it was shipped over to the rolling mills for them to roll it down to so many

0147

thousandths or whatever.

MR. PHILLIPS: Is that the same Allied Signal --

: Yes.

MR. PHILLIPS: -- that we're talking about here?

: Is it the same Allied Signal or the same run? Was that the same run?

: No. No. No. It was a different run, a different run.

: A different run, okay.

MR. PHILLIPS: Did I see somewhere that that material had been identified or is it still unidentified, the -- the material that had to be cooled?

: I don't -- I have not heard it identified.

: Yeah.

: No.

: I didn't hear what you said.

: Were there any other special runs that you guys know of?

: That was for the Stealth Bomber there. We ran that back in the heavy press (inaudible) put them on there.

0148

: Right.

: And they had a guy from the company there where he came and watched it the whole time. And they banded them each one on and they took them out to the refrigerator back there, and that was

for Allied.

: What year was that?

: 1994. I just found out last night.

: was the on that. And they had a problem where they did them all wrong and they fell inside the oven. So when we came on the four to 12 shift my helper noticed them. They had to turn the bolts around the other way so they would stay on. So they weren't going to send them home. So they stayed and run that out.

: Do I remember it right or not, didn't the Air Force buy that big press? The Air Force paid for it. It came from Germany. They brought the German engineers with them too in '50 -- '57. They assembled it, the engineers.

MR. PHILLIPS: You mean the Air Force brought it in to Dow or whoever?

: They bought it. They bought it, then it was brought in. It was shipped --

0149

it was shipped from Germany. It was part of Hitler's machinery, they had that big press, 14-ton press. It was all -- the Air Force -- I understand the Air Force bought it because they needed it for the -- one of our bombers, for the wings of the -- for the bombers we had. It was the first thing they --- they pushed out of that.

: Yes. This is the biggest extrusion press in the world and has a long history. But --

: One comment about it. They brought it all in, they brought it by boat and they came away down and they pulled it over here on the outskirts of Granite City and it ran off the -- it ran off the track. It was stuck there. It was a massive press, you know.

: I got one more thing. Like he said, tons of that metal was made. In one day in a 24-hour period on the HM31 they'd make 90,000 pounds a day. And in one week they'd do 630,000 pounds a week. So a week was just a short run really. A lot of times it was two and three weeks at a time of thorium metal being made.

MR. PHILLIPS: How much in a week? I'm sorry.

0150

: 630,000 pounds.

: Now, that's in case we don't go on a tempcon, seven-day schedule.
: Yeah. That was a --
: That was a five-day schedule.
: You just can't imagine.
: Most of the time we run the thorium we went on a seven-day schedule. We'd work seven days, then come off. Seven days you'd get four days off. On all the unexpensive metal we were on tempcon.
MR. PHILLIPS: Hold on guys. One at a time. What -- what year are you referring to?
: That was almost all the time when we ran that. I'm referring to any time after '60 all the way through. I retired in '99 and it would still be that way.
: So this was kind of an average for that '60 through '90?
: I'd say '99 or '98, somewhere in that area I think. I don't know exactly when they quit making that 31. It could have been '95 to '98, somewhere in that area.
: One thing you have to remember and take into consideration is that how light

0151

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MR. PHILLIPS: Thank you for coming. I'm sorry.
: I say one thing you need to take into consideration is how light magnesium is. And when he's talking 630,000 pounds, that may not sound like very much if you're talking steel, but that's a lot of metal when you're talking mag.
: You load trucks with -- if the third -- with a third liner is on a full truck because you don't have any more room to put any more metal in it. It's a lot of --
: Speaking of amounts, one of the things we haven't talked about today that would be interesting for Mr. Phillips I think is for you all to talk about -- maybe, , you could talk about the amount of thorium alloy that was sent to Rocky Flats. You know, I know what you all have described, but I think it'd be useful to talk about that again.
: I -- I can't really say exactly how much we sent, but I'd say at least a truckload a week went to Rocky Flats. And that would go anywhere if it was what we called sheath which was

kind of thin metal it would be about 36,000 pounds on a truck. And plate would go up to maybe 42,000 pounds. And we -- we shipped a lot of it to -- like that to Rocky Flats. In say a month, you know, you'd have four trucks a month or so.

We'd also send it to Los Alamos. They always wanted a sample first. You were talking about samples. You always had to send a samples of whatever they were ordering. If they were ordering six-inch plate, you had to cut it, you know, foot by foot and send it to them. Then they'd come back and say send -- send what they ordered, you know. Sometimes you'd order two truckloads and three truckloads or whatever to them, and --

MR. PHILLIPS: That's HM31 material you're talking about?

: What?

MR. PHILLIPS: You're talking about HM31 material?

: HM31, HK -- or HM21, HK31. We -- we had three different places that Martin-Marietta had; one in Tennessee, one in Georgia, and one in Florida. And Rocky Flats and Los Alamos was the -- the big, big ones that we sent to.

You always knew when you were sending out metal that -- you know, if it was radioactive or not because we had to put the little red stickers on it on down on all the -- all the skids and everything else. And -- but we -- we started setting records like 12, 15 million pounds a year of mag. And that was a lot of mag at that time to be shipped.

: , I hate to keep interrupting and I hate to keep making this point, but I have to. I want you to just put on the record when you're talking about 12 to 15 million pounds of mag per year, you're talking about magnesium alloy.

: Yeah.

: Some of which was magnesium thorium alloy, right?

: I'd say most of it was.

: Okay.

: The biggest part of it.

: Well, but the point I'm trying to make is people who read mag or aluminum may assume that we're talking about pure aluminum or pure magnesium metal. And although there was some, that

that's not -- what was it, ten percent of what you sent out was pure magnesium or even lower than that? In other words, magnesium per se is always alloyed and -- and Dow Chemical companywide was specializing in -- in the thorium magnesium alloys. Is that a fair statement?

0154

: Yeah. I'd say most of the -- might know, . But almost all the -- all the mag that we shipped out was usually radioactive except for PE, and we shipped out some tooling plate. But other than that it's all -- all went to different outfits. And I'd say 95 percent of all the metal that we did ship out -- that's both mag and aluminum in that -- all had DOE, in care of like Rocky Flats or Martin-Marietta or, you know, whoever the customer was, you know care of. But everything that Dow had was -- had DOE on it when they mailed it out or, you know, shipped it out.

MR. PHILLIPS: And the time frame again. Is that '60 to '99?

: I'd say from '62 to '75.

MR. CALHOUN: Chick, I have it leave, guys. So I got a plane to catch. But thanks for having me here. I actually learned a lot from you guys. So continue on. It's a shame that I can't stay longer, but this is the last flight I can catch for a while. So I'm glad I didn't plan on the two o'clock.

: All right. Thank you for coming.

: Thanks, Grady.

MR. PHILLIPS: Do you remember anything

0155

other than just Rocky Flats, it just went to Rocky Flats? I mean, there's nothing more specific?

: Of stuff we sent to them?

MR. PHILLIPS: Right.

: We sent a lot of sheet and plate to them. I'd say stuff from aught 16 to up to seven or eight inches thick out to them. And whenever -- whenever it came back if it was sheath they just weighed it and put it off to the side. But if it was plate -- was the head of metals for Dow, and was the head of sales for Dow -- they'd both be down there.

And when we unloaded the truck for plate they'd weigh it, put it right on a wagon, and they shipped to casting. And from there I don't know where

it went to or what they did with it over there. But every time any scrap came back them two guys were there to make sure it got weighed and shipped over there.

MR. PHILLIPS: So you shipped material to Rocky, and you received scrap back from Rocky. Is that what I'm hearing?

: Yeah. They'd send stuff back. A lot of it was machined out different shapes and that. I don't know what they did with it or what they

0156

were making with it or nothing like that. But they'd -- they'd ship a lot of the scrap back to us.

MR. PHILLIPS: But you -- you were personally involved in the -- the shipping of the material?

: I -- I was a crate builder, and I'd be on, you know, tearing the blocking off -- off the trucks and that while they were unloading it.

MR. PHILLIPS: And you knew it was thorium or at least something and you had to mark it as -- as radioactive?

: It had Rocky Flats wrote on it.

MR. PHILLIPS: And you had to mark it as radioactive? I mean, the -- the red tags you were talking about.

: I -- I'd put them on there or the crew leader would put it on there when we were shipping out there. And some of it would have -- you know, some of the skids would have the markings radioactive materials on it, most of it didn't. When it came back it was just throwed on the truck any way they could get it on there and ship it back.

MR. PHILLIPS: Do you ever recall shipping thorium metal or only alloy?

0157

: It would -- all -- all we knew is HK or HM.

MR. PHILLIPS: And again, this was '62 to '75 time frame?

: Yeah. Sometimes I got bumped out of shipping for a couple of -- maybe a month or two. But most of the time I was down there during that period. In '75 I went to the pickle line, so I left the shipping area. Then on the pickle line I'd get, you know, to run the thorium through the pickle line for shipping. So I don't know how they shipped

it from there and that.
MR. PHILLIPS: You're saying -- you're --
: You're talking about the stuff that we salvaged in the -- we'd remark pickle and roll and all that? You were talking about that?
: Yeah.
: Well, a lot of that metal went over to McDonnell Aircraft and went into the Gemini program at the time when McDonnell was involved in making --
: Space.
: Yeah, space -- involved in space. I was an inspector over there at the time, and those sheets were like 180 inches long and -- and

0158

maybe -- there's a 180 thousandths was the thickness that was shipped out on most of it. We had to mike (phonetic) them all over that they had to be within a given gauge, and it's pretty tight.
And to get it to that point you started out first of all with sheets that were probably five-eighths of an inch thick. And we would put them in the sonic tank to find out where the bad spots were, cut them out so they wouldn't have to -- wouldn't -- that wouldn't be involved. Well, then they'd roll and keep on rolling them down. Every time they rolled them they'd send it to inspection. We'd mark out the spots. They'd send them over to the salvage area. They would grind out the dirt and everything and then back through the pickle line. And that was that particular operation. Now, I don't know anything about Rocky Flats.
MR. PHILLIPS: This is HK and HM material?
: Beg your pardon?
MR. PHILLIPS: HK and HM material you're talking about?
: Yes. And this was -- most of that went to McDonnell Aircraft. Of course, that later become Boeing. But at that particular time we used to always say McDonnell didn't want anything else

0159

from our plant. Boeing loved us, but McDonnell hated us. They wouldn't buy any of our aluminum or anything like that. But they did this HK and HM.
: Now, each time they'd make a pass on that HK or HM and that they might take 50, 70, 90 passes through there. And after about every three passes the inspectors had to mark where the dirt was

or where the dings were at in the metal. They'd have to send it to hand salvage. They'd do it, run it through the pickle line and right back to the mills in the same process over and over and over on it.

And wherever they cleaned up like hand salvage they'd just blow it over to the wall, you know, and all that dust just blew all over the place. Especially like in the winter time or if the Dravo heaters were on, it would just blow that dust over half the plant -- I mean, half the department down there. And but --

MR. PHILLIPS: The pickle line, is that acid pickle?

: Yeah.

MR. PHILLIPS: So you -- you --

: What they call A and P or chrome pickle.

MR. PHILLIPS: Where was that done?

0160

: Where?

MR. PHILLIPS: Yes, in the plant.

: That was just south of --

: North end of the rolling mill.

: -- shipping.

: In the rolling mill?

: The rolling mill. In the rolling mill.

: But they did pickle again in the extrusion as well. But they were dip tanks. And where he's talking about it would run through as sheets all the way through. And you had to start it with the acid and et cetera and then water to wash it off. And it'd come out the far end and be stacked and go on with the operation.

: I was just trying to figure out how much thorium we used in a eight-hour shift. If we put 30 pounds of thorium per pot for ten pots, that would be approximately a little over 300. Now, that depends on your -- after your samples from the lab how much additions you'd have to work with. Figuring that ten pots would be 300 pounds -- approximately 300 pounds of thorium for those ten pots -- 6,000 pound pots. If you went on a continuous

0161

casting, I would have to find out exactly what that -- then you start the unit after you get your whole unit alloyed up, the ten pots. The ten pots all alloyed up

and then you'd start your cast. You average about a pump -- a pumpover an hour which would be eight -- eight pumpovers a shift. Eight pumpovers a shift would run you approximately -- I got my figures here wrong.

MR. PHILLIPS: 2,400 right now.

: Huh?

MR. PHILLIPS: 2,400 in three shifts.

: Right. That'd be right. Yeah. So that's a lot of thorium going through that unit.

MR. PHILLIPS: Four times three is 12 -- ten-eight, am I right?

: I can't hear you.

MR. PHILLIPS: 10,800, is that --

: And then that's just a estimate on the 30 pounds. It could be 40 pounds or 50, depends on the -- on the analysis that comes back. And sometimes you lose your thorium for some reason, you'd pump it loose and that. And it could probably be sometimes 50 -- 50 pounds. Of course, on the cell mag -- raw cell mag, magnesium was in the pot. So I

0162

haven't figured on the -- a 70 run. So you take and figure that's about 300 pounds per pot for ten -- for ten pots.

MR. PHILLIPS: So if I understand you, somewhere in the neighborhood of 30 to 50 pounds of thorium per pot, ten pots and you cycle eight of those per -- eight times per shift?

: Right. Eight pumpovers per shift usually. Sometimes it depends on your relief. Sometimes you might get a nine -- you might get nine pumpovers, right fellows?

COURT REPORTER: You're saying pumpovers?

: Pumping the metal from one pot to the next, yeah.

MR. PHILLIPS: And you were running three shifts per day?

: Sir?

MR. PHILLIPS: Three shifts per day?

: Yes, sir. And some days it's seven. Like I said when you're on this metal thorium they wouldn't take a chance, you know, of not running it, so you run it seven days.

MR. PHILLIPS: Seven days per week?

: Right.

MR. PHILLIPS: And this was pretty much

0163
for the '60 to '99 time frame?
: How much?
MR. PHILLIPS: 1960 to 1999 time frame?
: Right.
MR. PHILLIPS: If I multiplied correctly, it's about 10,800 pounds a day. But that was in my head so I --
: Something like that. That's what I was doing. And like I said before, we had no instructions about how to run the -- the cast except for the instructions we'd get on a sheet every day. And you run it the same way you run any other metal. But my concern is the amount of thorium we were using per shift in there.
: And like he said, that stuff would get lost in the process of melting. And that's what they drossed out or sludged out. And that -- that's what ended up out there on that big pile.
MR. PHILLIPS: I'm sorry. Say that again. I understood most of that, but I'm not sure I understood all of it.
: Like a lot of times it would take 30 pounds to alloy it.
MR. PHILLIPS: Right.
: But a lot of times it would
0164
take 50 pounds because it would burn up and get lost in there. So when you clean that furnace out from the bottom up you'd get dross. It's a real heavy sludge like. And that would be throwed away on that sludge pile outside.
MR. PHILLIPS: But that would be recycled. So on the -- on the whole the 30 pounds is probably a good estimate because you're going to recycle that that went out.
: Yeah. That's true.
MR. PHILLIPS: So it is, that's a surprising amount of thorium.
: More than you think it is.
MR. PHILLIPS: Okay. Thank you. That's instructive.
: From my recollection that thorium in the -- the ones that come in the floor notch they were a lot lighter than the ones that came when we had pellets. The pellets were a little heavier. But like you said, the pellets went on the floor when you was shoveling them -- you're shoveling

them in the basket.
So I'd like to emphasize I worked with that for 36 years because I've changed -- stayed in that casting part, I didn't work in the warehouse

0165

(inaudible). And my whole time was spent in that pot room as a metal caster, a welder, and a crew leader for the last 15 years. So I was exposed to a lot of radiation I would say. I used my -- a lot times I picked it up with my bare hands. I didn't even use my -- my cloth gloves. I just picked it up with my bare hands because I was under the assumption it didn't hurt me. I have cancer now.

: Yeah, I do too.

: He does too.

MR. PHILLIPS: Thank you.

: And here was hired in 1960, so he misses out on compensation by days. And I'd like that -- I just want that mentioned. He missed it by two months.

: Are you counting --

: The 250 days you have to have.

: Somebody made a point at one of the meetings that was very important. You counts days, or you count hours? Because these guys worked overtime, did you not? Doesn't that make a difference in their time because don't they say 250, eight-hour days?

MR. PHILLIPS: Again, I'm -- I'm out --

: I thought I heard that

0166

discussion at one the meetings.

MR. PHILLIPS: I'm out of the compensation part of it. I have -- I have no idea.

: Because --

: But actually that -- that is was a very important point to get on the record.

: Oh, it was made at a meeting.

: Well, let's just do that. Let's expand that a little bit because it is important.

: Sure.

: It has got to do with dose reconstruction, and it has got to do with the -- the total exposure over a lifetime. And I -- and Chick, as you know there is a -- a work group who's working on relatively high exposures that would result in a

compensable dose with respect to the probability of causation for people who worked at a site less than 250 days. So --

: Exactly.

MR. PHILLIPS: I'm aware of that. I'm just not --

: Yeah. But I think what would be useful, since we have a really broad cross section,

0167

would you all -- I mean, recognizing that over -- overtime was part of the plan, what would you all say was your average workweek? I think it'd be useful to get some assessment of that.

: About three shifts a week.

: Well, why -- why don't we try to -- why don't we do it hours per week.

MR. PHILLIPS: Why don't we go in -- why don't we go in order if we're going to do that so she -- we can get a good record of it. Start with you, .

: Now, what is he talking about?

MR. PHILLIPS: How much overtime that you worked.

: Yeah, but what's he talking about? Is he talking about casting? Is he talking about extrusion or the rolling mill or the whole plant?

MR. PHILLIPS: Whatever. What was your average workweek I guess is a good way to do it.

: By individuals.

: Right.

: My -- my individual over this?

0168

: That's going to be pretty hard to say because when we had a lot of business we worked a lot of hours. Then when -- when the business was slow we just worked a normal 40-hour week.

: Well, give a -- give a range then, . I mean, you know a -- what would be a slow time or an average time and then a high -- high work time.

: Well --

: We're trying to get a rough -- here's the point. What NIOSH is going to do as a default is going to say you all worked 40 hours a week. Is that accurate?

GROUP: No.

: Well, then put on the record what is in your own words. Why don't we go around the room. How about you, ?

: When I was working in a union job my hours would normally be -- they would run 48 to 52 hours.

: Okay.

: I'd say 48.

: I didn't turn down much overtime. I'd say times I worked three weeks in a row without a day off. I'll bet at least 56 hours a week.

0169

MR. PHILLIPS: Fifty-six.

: Back then we was on tempcon -- in the '60s we worked tempcon shift which was a seven-day week. So we could work as much as 64 hours a week on over -- counted as overtime on that.

MR. PHILLIPS: That would be like the high, right?

: That'd be like three doubles a week. And a lot of times four doubles if they didn't have nobody to cover. So on the average probably 64 hours a week when we ran hard alloys.

: I would say 64 if you were on the tempcon shift. And there -- there was times when we was on this -- this thorium that I -- the crew leader didn't show up and everything I'd work 16 hours on it several times. If your relief didn't show up, you had to -- you had to stay.

MR. PHILLIPS: , did you we get you in there?

: No. About 64 hours a week.

: I'd say 56 hours a week.

: I had at least 56 a week.

: About the same.

: I'd say about the same because they extended the workweeks in extrusion where

0170

you had to work every Saturday whether you wanted to or not unless it was an absentee.

: About 60 hours a week.

MR. PHILLIPS: Sixty.

: Same here.

: About 50 hours a week, in that neighborhood.

COURT REPORTER: About 50?

: Fifty.

: Well, in '54 and in '55 we ran a lot of overtime. And I remember I worked a lot of doubles, as many as I think four in a week. But I know I worked a lot of threes. So I ranged from 40 to 64. And I'd use an average that these guys are using, probably 56 hours a week on the average.

MR. PHILLIPS:

: I'd say about 50.

: I'd say about 56.

: It's hard for me to put a number on it because I went to extrusion and was on tempcon. Now, tempcon is seven days in a row, 24 hours off, another seven, 24 hours off and another. And you're changing shifts. And when I got over there I had vacation so I was away on vacation for a week. I came back and they asked me to work overtime every

0171

day. And in 1988 I had to go to a doctor to get excused from working overtime. So to tell you that it was 48, 50, 60, whatever I couldn't put a number on it because it varied so much. In a -- in a matter of 39 years you're talking a lot of time and ups and downs and everything. So I'm going to say 60 hours.

: I'd say 52.

: Except for tempcon I'd say that's close, 50.

: Under Dow the first week of the month they cut all overtime down. You'd probably just work 48 hours. The second week you probably worked 48 hours. The third week you'd probably work maybe 60 hours, and the fourth week it would be nothing for people to work 80 hours. And then when they were on tempcon the guys worked, you know, around the clock like. And it's hard to say what they were doing, you know. So it -- it is really hard for -- you know, to say exactly, you know, give a amount of time. But it -- they worked a lot of overtime down there, worked in all departments and everywhere else overall.

MR. PHILLIPS: What is tempcon?

: Tempcon is where you work like seven days, then you're off a day. Then you worked

0172

seven four to 12s, then you were off two days. And then you worked seven midnights, then you're off five days.

: Four days.

: Four days, yeah. Okay. They

call it five. But a lot of times they'll work you even that time when you were off, you know. And then when you're on the tempcon --

: That's a lot of hours.

: -- you're -- you're still working two and three shifts of overtime during that part of the time.

: On tempcon every third week was a six-day week.

: There you go.

: Well, when you went from four to 12 to your midnight shift or your last of your day shift to four to 12 that was your six-day week. You got paid for six days. Okay. So you worked Monday and Tuesday days, you was off Wednesday, then you worked Thursday, Friday, Saturday, and Sunday four to 12. That's a six-day week. It's probably like that every third week.

MR. PHILLIPS: I hope this is on the record because I don't understand.

0173

: How that worked out was that there was four shifts --

: Four crews.

: -- four crews working 21 hours -- or 21 days in a 28-day cycle. And that kept the -- the equipment running continuously.

: Continuous operation.

MR. PHILLIPS: Okay. All right. That's as close as I'll get.

: Continuous.

MR. PHILLIPS: A lot of -- a lot of work. Okay.

: You look tired. Are we wearing you out with all these hours?

MR. PHILLIPS: I didn't sleep last night, I'm not sure why.

: What they're saying then on that 60 hours and 70 hours that you're saying don't count like in '60 -- 1960 if a guy had a lot of overtime if you count the hours, he got it. But they count days, so that -- that makes a difference.

: No. They don't necessarily count days if I understood the conversation. And I have to check the transcript, but I thought at the Naperville board meeting there was a discussion about

0174

this or it was going to be looked into. It was at one

of the board meetings I attended, and I can look up those records.

MR. PHILLIPS: But this is an area I know absolutely nothing about. I'm --

: Right.

MR. PHILLIPS: -- I'm just listening.

: Pretty interesting.

MR. PHILLIPS: I -- I know the 250 hours, I know what that means, but I -- I have not been involved in anything beyond that. So --

: Just as a summary statement then we had comments from 19 people who said they worked between 48 and 60 hours a week. So that's considerably beyond a 40-hour week. Okay.

: It was a lot easier to work overtime than it was to hire that -- that other employee that would take up the work. It cost the company a lot less money.

: All companies do that though. I've worked at five or six different plants. All companies do that.

: Right.

: Steel mills, the Western right down the street here, all of them do that.

0175

MR. PHILLIPS: Okay. Where are we? Do we need to take a break?

: Yeah.

MR. PHILLIPS: Yeah. Okay. Twenty-five after. Let's do -- is ten minutes enough? Well, we got two bathrooms. Twenty of.

(Whereupon, a short recess was taken.)

MR. PHILLIPS: Before we get started Debbie I think who most of you know has joined us and she would like to say a word.

: I just wanted to say hi. I'm Deb Detmers, the district director for Congressman Shimkus, and I know a lot of you guys because we've worked together on -- on this for some time. and I've known for my whole life I think now is what it's been.

: Six years.

MS. DETMERS: Oh, just six years. Okay. But it feels like -- yeah -- it does kind of feel like a lifetime. I just wanted to say hi. I'm just going to sit back and listen. And they tell me you guys are

telling them a lot of good information today so just keep it up. And I know it's been a long day, so

thanks for being here.

: Tell Shimkus hi.

MS. DETMERS: We will.

MR. PHILLIPS: Okay. I'm not sure where we were to be honest with you. Are we to the point where we get to the specific questions and see if that prompts anything? Or is there other things, Bill or anybody, that you think we need to go into further on the thorium and the processing and that?

: Let's go -- let's talk about the explosions we had in the pot room.

MR. PHILLIPS: Okay.

: We can all tell you a lot about those.

MR. PHILLIPS: All right.

: We did a lot of running in the pot room. If anything cold goes in the magnesium, it goes sky high, you know.

MR. PHILLIPS: All right.

: And somebody talked about the dust and -- in the plant. Was that, , right 60,000 pounds of dust was removed from a certain part of the plant?

: Was it 60? I don't -- I don't have that in front of me right now, but it was a lot.

: But anyway, I've got scars all over my back from running from the metal, and not necessarily thorium metal but other metals too. And I know sure that other fellows has been burned by the -- that thorium metal, but I never was that I can think of. I never had my scars checked. But it was a very dangerous place to work, we all realized that. And so a lot of explosions was unnecessary because it was carelessness on our part and a lot of it was horseplay.

MR. PHILLIPS: I didn't hear that.

: But that -- that does happen. When you get a bunch of young men -- old men trying to be young men (inaudible). But any of you boys got any say about some of the explosions that we had? I had a bad one when I was notified when I was a to go down the basement and check a unit, it was about to bottom out. And I got the wrong information and I kept running the one unit because I said we got plenty

of time because my caster told me that it was so-and-so unit. Well, it was just the opposite.

And about five minutes later that unit made a cut. I thought it had -- had a lot of time to make the cut and it didn't because he had -- supposed to have it slowed down from three inches a minute to

0178

one-five. So all hell broke loose, and my -- the sawyer in the basement said let's go over on the step. In the meantime, it blew me against a wall, and it blew the big elevator doors plum off of the elevator and knocked me out. And the guy -- the operator and sawyer carried me up the steps and I was unconscious for a few minutes. But that was just one of them.

The guy I was working with hit the cast when it started -- blew the floor piece right out from under his feet right out into the middle of the aisle, terrific explosion. And there's -- that's just only one example. Every one of us has been through a lot of explosions that worked at the casting department.

: When was that, ?

: Huh?

: When was that do you think maybe?

: Oh my, I wish you hadn't asked me that. What was the time? I would say it was in the 70's. (phonetic) was my metal caster.

COURT REPORTER: Who was your metal caster?

: was my metal caster.

0179

: ?

: . He lives in Granite City I think. Matter of fact, he won't speak to me today for some reason.

: To change the subject a little bit, do you have any questions for us that any of us could ask or answer for you?

MR. PHILLIPS: Yeah. I have a list of questions here that relate a lot of it back to our review of the -- the SEC petition and the evaluation by NIOSH of that. We -- we independently reviewed that evaluation by NIOSH, and we have some questions regarding the process and other things. So I have those specific questions. But I sort of asked mine as I went along through what we did. So I don't have any

questions in general, but I have these specific questions that I'd like for us to -- to cover.

: Chick, may I ask you a question in regard to that? You know, John Mauro brought a draft of your report to the last board meeting, but we have never seen that report. Is that in kind of final form or --

MR. PHILLIPS: It's -- it's close to being final and that's what I'm trying to get the answers to --

: Okay.

MR. PHILLIPS: -- in order to finalize it. I have a -- but this is a -- you can see it's -- it's not final, but it's close.

: But -- but we will get a copy when the final report comes out; is that right?

MR. PHILLIPS: Absolutely. Absolutely.

: Okay. All right. Okay.

: I'd like to make a comment on what was -- I think what he was trying to say is that by the time that the radioactive dust was removed from the beams in the cleanup in I believe it was 19 -- was it '98 was the radiological survey, the cleanup happened closer to 2000, right?

MR. PHILLIPS: Correct.

: By that time there were various things that happened that knocked a lot of that dust off. So by -- by the time they actually did a cleanup very little of the dust was actually, in their minds, still -- still present on the beams because of the explosions, because of cranes moving back and forth through the building, because of men getting up and working in the rafters or working on the cranes that a lot of dust had already been replaced.

And I had one man -- and I don't have -- I don't remember who made the statement to me -- but he said that on one of the times whenever there was a plant shutdown kind of thing that he walked in and there was this company called Smart Company, S-M-A-R-T. Right, is it Smart Company? And I don't know what they were contracted to do normally, but he said that he was surprised that this company was up in the rafters actually trying to vacuum dust off the rafters, and this was prior to the cleanup. And I -- I can look up his information and try to find who made that statement to me. But am I right on what I said?

Yes? Okay.

MR. PHILLIPS: This was prior to the FUSRAP Corps cleanup in --

: Yes.

MR. PHILLIPS: -- 2000 or whenever?

: Yes.

MR. PHILLIPS: Was that 2000? Is that the right time?

: Pretty close.

: That's when the final report came out, right.

: Maybe '98, wasn't it?

: Right.

: When I first hired in in

0182

the plant I was in the labor pool. And I can remember like on a Saturday where we worked overtime some laborers, and we worked up over the top of the pots cleaning up the residue on the steel work above it. So it'd been -- this we're talking 1953. This has been going on some time.

: That the rafters had been either cleaned up or -- or shaken clean?

: In the '60s and the '80s they blew the roof off that building at least two or three times to where the rain and that and everything got washed off then, you know.

: And then told me one time he -- he actually took a hose up there and blew dust off the rafters --

: Did that a couple times.

: -- because he -- because -- take it.

: Well, we were in -- we were working in the dust, you know, and getting dust all over you. And we were cleaning -- well, I was talking to you about fire checks. All that dust is going right back down into the fire checks, and we couldn't get them clean. So I just cleaned -- you know, blew everything off. And they didn't like it, but at least

0183

we had a kind of clean place to --

: How long did that last after you cleaned it off, build up?

: About two months, three months it was the same way.

: So by the time they actually did a cleanup it had already been shaken off there or

cleaned off there or vacuumed or blown off --

: Quite a few times.

: -- quite a few times. Another thing is you're talking 50 years of constant contamination through working in the thorium. I'll shut up.

: How long did the baskets and all the equipment have thorium on it? After we got done with that metal we'd just go right into another metal. So actually the equipment would still be contaminated because it was used in the metal like the pumps and the fork truck, the sludgers that went down inside the metal. That stuff would all stay contaminated.

: Yeah. But you took it back to the pump wash and washed it, but you only washed it off with flux.

: Yeah. That's just flux.

0184

That's just to get -- mostly to eat it up, not to -- that's what usually all that was.

: Yeah.

: We had a -- we used to ship forging ingots out of extrusion, different alloys. And we had a man that operated the scalper. Now, his name was, what, (phonetic)?

: .

: . Anyhow, several years ago away he filed a -- a lawsuit against Dow because he was having lung problems. And of course, he was thinking it was from the from the dust from -- just mag dust, you know, that he had been breathing in all that time. But this piece of equipment was sitting real close to the press that we've been talking about that was so hot. And anyhow, the man died pretty young, a fair -- what I consider a young age. I think he was in his 50s when he died of cancer and he lost his lung.

Now, I would like -- we -- the way we determined the -- the die number of a particular forging ingot was by the diameter of it. And it would be -- I don't remember the -- it seemed like it was a 900 series. If it's like 13 inches wide or diameter, well, it'd be -- the die number would be 9013. Or if

0185

it's 20 inches, well, it'd be a 9020. But he had to scalp all this to where they were clean, you know, the -- from the -- so what I'm saying is that did these

forging ingots that we were shipping out that -- I don't know whether they were thorium or anything else, I don't remember.

But I do know that -- that this man did die from cancer and he also sued the company. And I think he lost his lawsuit, but he sued Dow. And my opinion is probably he had the same problem that we're talking about here today; that it was from radiation more than anything else. But he did have cancer --

: He did have cancer?

: -- and it was lung.

: That man was my --

: Beg pardon?

: That man was my elementary school teacher's husband. And whenever I mentioned him to a few of the people here they always said that it was magnesium poisoning in the lungs that they thought. And I'm trying to reach that family because -- because it was my teacher's husband. So anyway, that's just a side point.

I'd like to -- I don't know if you guys mentioned the two guys that everybody seems to have

0186

talked about and have been shocked about these two gentlemen, (phonetic) --

: We talked about them some.

: -- and and they both worked on the same press and they both died of brain cancer, what, within a couple months of each other? That was brought up?

MR. PHILLIPS: Yeah.

: They spent their whole careers on 7 Press.

: Whole careers on 7 Press?

: Yes. Yes.

: Okay. And there was -- so anyway, I just wanted to make sure that that was brought up because everybody seemed to be so concerned about those two individuals.

: I was wondering why the Corps of Engineers said that that plant couldn't really be cleaned up; that there was only two or three alternate things they could do, they could take and tear it down or they could do as good as they could with the dust, or they could sprinkle stuff on it and seal it over. But if it was too hard to get it, it'd still be there, it'd be there forever. And that's more or less why they did such a poor job when it got

0187
rejected a few years back. So how are they cleaning it up now any differently?
MR. PHILLIPS: I don't -- I'm going to have to be very honest with you. I --
: But they have been -- they have been attempting to clean up what they didn't do. But then if it was clean, why are they doing it again then?
MR. PHILLIPS: I'll be very honest with you where -- where I am right now. I told you I -- I got involved in this about a month ago and I was doing -- and it's no excuse. That's one part of this that I have not gotten into is the -- is the Corps of Engineers -- you know, the whole FUSRAP thing. I -- I have those reports, but I have not gone into that. So I can't intelligently speak to it right now to just be straightforward. If you have a comment on that, please -- please --
: I do have a -- I have a comment that hopefully will be helpful to you because I think it -- it actually comes down to the core of our extended SEC. And that is that when the Army Corps of Engineers came in to remediate that was done under FUSRAP, and FUSRAP is basically a Department of Energy program. And the reason that Dow is a FUSRAP
0188
site at all under the DOE is because of the uranium contract with Mallinckrodt.
So the history of that was that the Department of Energy looked at a lot of sites that had AEC, Atomic Energy Commission contracts and -- and wanted to see which of them needed to be remediated and the -- the AEC work cleaned up. And so that's what brought the Army Corps of Engineers to the Dow Madison site. There had been a survey, a radiologic survey of the site in 1989 by Oak Ridge National Laboratory, and they found -- they did a very narrow survey.
MR. PHILLIPS: I did see that. I'm sorry. I have seen that.
: Yeah.
MR. PHILLIPS: That's where we found the dust on the rafters, right?
: Right.
MR. PHILLIPS: Okay.
: And they only looked in Building 6.

MR. PHILLIPS: Yes.

: So for instance -- yeah. So above the extrusion presses. So they didn't even look in the rolling mill where the -- where the uranium

0189

rods were -- were straightened. That -- that part of the plant wasn't examined. But in any case, they came there, they found that uranium dust and thorium dust were in the same rafters nearby one another.

And then in the interim between 1989 and the time it was cleaned up the program for active remediation got removed from Department of Energy to the Army Corps of Engineers, and that's what brought the Army Corps of Engineers there. And the Army Corps of Engineers made a judgment in their report -- and this is really the actually most crucial sentence in any document that applies to this entire thing and why we're here today. They made the statement that none of the thorium activities at Dow were related to AEC activities, period.

And so I knew about that a long time ago. And Deb Detmers and Robert Stephen and myself and in June -- in so long ago of 2005 now, we went down to the Army Corps of Engineers and interviewed them about this specific point.

MR. PHILLIPS: I saw that too.

: And -- right. And the -- their assistant attorney is a man named (phonetic). And so my question to was please tell me how you all could make such a statement, what

0190

was your primary documentation for it. And I said you simply can't say that without being able to support it. And so he replied back and basically cited the FUSRAP cleanup report, the final report in 2000 but could not cite any other primary document. So -- so anyway, that's where that rested.

And then, you know, as you know today and you've heard the same testimony today, we have a number of people here who say that Dow Madison sent thorium alloys to Rocky Flats, Los Alamos. I showed the board -- you all have a copy of it -- a purchase order that said they sent thorium alloys -- we think they are thorium alloys, they're certainly magnesium alloys -- to Mallinckrodt.

And so, you know, we take a different view. We think we have positive evidence from the workers, lots of workers -- and you've heard it again

today -- that in fact some of the thorium work at Dow Madison was related to AEC facilities and done under contract to them.

So the -- the other missing part of the picture is this -- part of the answer to this question is you've also heard that thorium, huge amounts of it were processed throughout the plant. And so you got two different views of the world, one is FUSRAP and

0191

this very limited cleanup that they did just in Building 6 based on the uranium work. They knew the thorium was there, they measured the thorium in Building 6, it was in the dust, but they left it in place.

Then you fast forward to 2003 approximately and now Spectrulite decides that they want to terminate their thorium license at the Dow Madison plant. And so to do that you have go through a decommissioning process. And so to do that they hired a company called Pangea Group which is based in St. Louis, an environment remediation group.

And so Pangea Group comes in and does three reports that I'm aware of; two of which I've read, one in 2003 and then in 2005 in March and June they do a very complete radiologic survey for thorium and -- and other radioactivity and they do a physical inventory of the entire Dow plant for thorium metal and thorium metal alloys. And Pangea Group now, unlike the Army Corps of Engineers, finds thorium all throughout the plant in many buildings. And I -- I presented that evidence to the board in both February and again May 4th. And now we know that Pangea Group is in the middle of actually remediate -- doing the final remediation of all this material.

0192

Well, when I first heard that I basically went wild because here we have thorium that's all over the place except -- and it's been well documented now radiologically throughout the plant. The Pangea Group was not doing anything active about the beryllium which is another process. So we have Pangea Group that's cleaning up the place and obviously has lots of relevant data about what they've cleaned up, how much radioactivity they've found, and so forth and undoubtedly has a large amount of information related to this plant.

And so part of what I've been urging NIOSH, Department of Labor in particular is to contact

Pangea Group and to get their information about the cleanup and what they're doing and what they've found and what the levels are and where the contamination is as a follow up to their 2005 and 2003 reports. And thus far I think it's fair to say, for reasons that are completely mysterious to me, NIOSH has failed to -- has been unwilling to follow up and find out what Pangea is doing now, what their information is.

So I just wanted to put that on the record. I -- I think again we have documentation that could fill out this story. And so what I feel is I think that where things are today is we have very

0193

strong evidence that the Dow Madison plant made huge amounts of thorium magnesium alloys and shipped truckload quantities over a long period of time to at least three installations. We have the best data about Rocky Flats as far as amounts of thorium alloy. We have some information about Los Alamos and some about Mallinckrodt which got shipped relatively small amounts.

The part for Mallinckrodt was particularly relevant because that happened in 1958, '59 during the Mallinckrodt uranium work. And so if -- if that's acceptable evidence, then it means that the thorium and the uranium were related to AEC activities and then that has implications for this 1961 to 1998 period.

So you know, I think we have strong evidence. I think there's additional evidence that could be found at Pangea Group, Madison site, and Dow Midland. I'm going to be urging that both SC&A and -- and NIOSH follow up on that information and try to -- try to get at it and try to get access to it. But I -- that's really a little bit beyond my control. But I just -- I just thought that that's what needs to be done.

I -- I personally believe that FUSRAP and

0194

the Army Corps made a mistake in 1998. I think they made a hasty decision that was probably erroneous and that was I believe that they should have cleaned up the thorium and the uranium at the plant, and I think they should have done their survey and their cleanup all over the plant, not just in Building 6.

And I further think that it's -- it's actually more serious than that because the purchase orders that showed the thorium going to Mallinckrodt

were in the same batch of purchase orders that showed the Mallinckrodt work under the same contract with Dow Madison, you know, for the uranium work. So the uranium and the thorium were done contemporaneously for Mallinckrodt, and I think they should have all been lumped into the cleanup, but that's -- that's past history. Whether the Army Corps would ever go back in again I -- I doubt it because of the work that's going on with Pangea right now.

But we will not get a complete picture about this site until we get into the plant and -- and get Pangea Group and get Spectrulite and the lawyers and the people at Dow Midland to cooperate with us.

And I just need to put on the record that for months now I've been urging that a tool to accomplish this is actually contained in the act, and

0195

that tool is the subpoena power the Department of Labor has to get records and to compel private companies to produce records. And so I urged a long time ago that the Department of Labor subpoena Pangea Group and -- and Spectrulite and Dow Midland all of which are private companies to produce those records. And I -- I am going to continue until we go to the board meeting to vote in July.

So that's a -- in a way I apologize, but that's really the answer to this question about why the thorium wasn't cleaned up.

I've also urged -- I've gave the board and NIOSH the names of the folks downtown in St. Louis at the Army Corps of Engineers and Mr. Wanch and his boss who should be interviewed I believe and, you know, asked about the thorium not being related to AEC activities. And we -- we've done that, we've already talked to them. And my view is they can't provide justification for that statement.

So I guess that's the point I'm going to make to the board when we meet with them in July that, you know, we've done our homework. We've gone and talked to all the people. We've sought the records. I think we have tried as hard as we can to get that information. Now I think it's up to the agencies, and

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I -- I strongly urge that that be done. Anyway --

: I have a question for

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: Yeah.

: Are you saying that Dow

Chemical is still connected with the thorium that was produced in there by Spectrulite? Is that what you're trying to say? I -- I missed some of that statement.

: Well, the way I look at it it's all a big continuum.

: Okay. That's just what I wanted -- that's all I wanted to know.

: Exactly. I mean, the -- and just to finish the continuum Dow, Conalco, and Spectrulite have been continuously licensed to produce and handle thorium of the same kinds, amounts, and types from at least 1956 until today. They're still licensed. The license has not been terminated. And in 1993 when they cleaned up the 40-acre plot of all that thorium sludge --

: Right.

: -- 850 railroad cars full.

: Right.

: I asked -- we asked the people at Dow how come did you all pay for that. Dow

0197

absolutely says they did not own that plot after 1973, did not own it. And yet in the lawsuit that came up about cleaning up and who was going to pay for all that involved that, an insurance company. You know, who wound up paying was Conalco which also didn't own the 40-acre plot and Dow which also didn't own the 40-acre plot and yet they paid $17 million to clean it up.

: There's -- there's no proof that -- we were always told that Dow owned that parcel and Spectrulite did not.

: Well, Dow's -- Dow's chief lawyer, from Kirkland & Ellis absolutely declares that's not true.

: It's not true?

: And -- and they were just being good citizens. Now, you and I all know that they were being good citizens because a court could order them to pay the -- I mean, the court -- they did, they went to court and that -- that's what the court said, you have to. So they were paying their share of the cleanup.

: Not true. They tried to sue their insurance companies to --

: Yeah.

0198

: -- cover their -- their cost of

that half -- their half of that cleanup.

: Right.

: The case is called Aetna versus Dow Chemical. And for some-odd reason all the records, all the exhibits produced by the insurance company whenever I looked them up on the Pace (phonetic) report it said sealed and put in the vault until the last time I went on -- on Pace and checked it out -- or Pacer and checked it out, then it said that those exhibits had been returned back to the insurance companies.

But up until I guess the beginning of -- or maybe this time last year or whatever, whatever those exhibits were produced in that case -- and it was a 1993 case -- and the judge determined that Dow could not get summary judgment because it was a -- they -- they were trying to make the insurance companies pay. And the judge said that there was so much contamination and that Dow should have known and that the insurance company were -- were not liable. So it's a case to be looked up and to be put on the record.

My other question is on that article, the 1963 article about the beryllium aluminum alloys it

0199

says that Dow was granted a -- an exclusive license and that they -- I would like to see what that -- I'm a nosey person. I'd like to see what that license says that was granted to them. But it also says that actually Beryllium Company -- or Corporation of Reading, Pennsylvania was granted by Dow a sublicense that was also exclusive. And I think that it -- in my mind it would be the Beryllium Corporation granting to Dow a license, but the article says it the other way around.

And I was wondering if any of those licenses if they were produced where we could read them -- if it would tell any more about what the products was going to, if it would make an AEC connection.

: , I -- I don't know. I really don't know what -- I think, you know, to make any sense out of that --

: When you read the thorium license --

: -- Mr. Phillips would have to -- you would have to write that up because I am still not aware that beryllium was licensed per se.

: It says that in that article.
: Well, you'll have to present
that. I -- I don't understand that. So you know, I -- and anyway, our SEC is really not dependant on the beryllium work. So I think that would be good information to get on the record. But I'm -- I'm -- you know, I have asked the Department of Energy, I've asked the Nuclear Regulatory Commission do they have any record of any kind of AEC related licenses for beryllium at Dow, and neither one of them have produced such. Now, I don't know.
: And it doesn't say who -- it doesn't say where the license was issued from. Could I give you a copy of that article?
MS. DETMERS: I have a copy. You can send me a got a copy though. I'll look -- I'll check it out.
: I think you've got Dow --
MR. PHILLIPS: What kind of license are we talking about? I'm in the dark.
: I gave you -- a beryllium license. I gave you a copy of that article this morning whenever --
MS. DETMERS: But I don't think -- I don't think it's clear as to who was issuing the license I think is the problem. It says that there was a beryllium license, but I don't think it's clear as to
who was issuing the license.
MR. PHILLIPS: You don't mean a radioactive materials license?
: It just says beryllium -- exclusive beryllium license. It's in a document I gave you this morning.
: Do I have a copy of that? I -- I can't deal with things that I don't have a copy of.
MS. DETMERS: Yeah, you do.
: Well, where is it?
: got it. got this out of the press record. You've got them.
: Dow Chemical Company has been licensed exclusively to produce and distribute the alloys under a name of its own choosing -- choice. Beryllium Corp. of Reading, Pennsylvania has in turn been granted exclusive sublicense by Dow and is expected to produce the alloys.

MR. PHILLIPS: That sounds like though that some other company has licensed them under some patent that they have to produce and distribute. That -- that's what it sounds like me, but I really don't know.

: It was developed by Lockheed Missiles and Space Company. The alloy series is known as Lockalloy and contains up to 83 percent beryllium.

: Oh, we know about Lockalloy.

MR. PHILLIPS: The -- the way I would interpret that is that Lockheed has licensed Dow to produce and distribute and they have sublicensed this other. But I -- that's a given. That's a given.

: Okay.

: Chick, let me -- yeah. I know all about that.

MR. PHILLIPS: Okay.

: Lockalloy was an alloy that Lockheed developed and then they licensed Dow to start producing it, and has the newspaper article. We all know about that. So -- so -- but that's not an AEC license.

: Okay.

: But what it does prove -- what it absolutely proves is that --

: Beryllium.

: -- is that Dow Madison produced beryllium alloy -- beryllium aluminum alloy and sold it and marketed it. That -- that's for sure.

: And it was for weapons.

: And we've got lots of people that can't breathe.

: And it has got nothing to do with an Atomic Energy Commission DOE connection at all.

MR. PHILLIPS: Yeah. Beryllium is not a -- is not a licensable radioactive material.

: No. This is a license to produce it as a submanufacturer --

: Okay.

: -- and to -- and just what Chick said, a patent to market their patented product.

: , up to 2002 -- January of 2002 Dow was paying for electric for that 40 acres out there.

: Well, , what I would say

is actually that would be very useful if we could get any proof of that. We need proof. We need a bill, a statement. But we -- we need to have that documented.

: I'm the one that took the readings, and (phonetic) is the one that sent it to -- faxed it to Dow every month.

: Well, we need to see a copy of those faxes then. I -- I don't -- I mean, I -- I don't not believe you, but I do know what their lawyer has said, and he said they don't own the property. So

0204

I mean, that would be very interesting for everybody if we could get proof on the other side.

: There has to be a deed on that property somewhere.

: Somebody owns it.

: The county should have a deed on that property somewhere.

: , we have gotten extensive -- we've done three title searches and have all the records, and the title searches do not show -- they really don't cover that 40-acre plot as a separate piece of land, and there is no county records of Dow owning that property.

: Well, who -- who owns it then?

: It's not -- it's not even parceled out as separate property.

: 110 acres.

: Well, at one time Dow had options on where the (inaudible) used to be the old foundry.

: Fox Brothers.

: Fox Brothers, they had an option on that I was told back in those days. I don't know if there's any truth to that. That was hearsay then.

0205

: Yes, sir. I'm not sure. That's -- I know what we've done, and we can't prove that.

MR. PHILLIPS: I suggest that we -- we leave this -- that particular thing.

: Yeah.

MR. PHILLIPS: Because I don't think it's on the subject.

: I agree. I agree.

MR. PHILLIPS: I'm not sure where -- , you asked a question and I guess your response

was to that. Did you -- are you satisfied with what you heard on that?

: Sure, I got to be.

MR. PHILLIPS: No. I didn't say you had to be.

: I'm -- I've been doing it for six years. I guess I'm pretty well satisfied.

MR. PHILLIPS: Well, I think -- I think you know -- and again, I haven't gone in great detail on -- on this particular part. But I think the summary that gave is, you know, what has happened in regard to assessing what the -- what the materials there and what the cleanup was I think he summarized. And I -- I guess at this point that's where we are.

0206

: Well, I think --

: Is there any way -- since Shimkus' representative is here -- can help maintain some of these records that is looking for?

MS. DETMERS: We've been trying for six years. We've been working on it for six years. We've got -- I've been working with for this whole time. I mean, my files are -- I have boxes and boxes of files, and I don't have a tenth of what Simmons and Cooper -- without Simmons and Cooper and without and these guys, without we wouldn't be this far.

: That's what I wanted to hear. We have other congressmen and senators also, you know.

MS. DETMERS: We work -- I work very closely with Robert Stephan in Senator Obama's office. Those two offices are working very closely together. And when we need letters signed by Congressman Costello and Senator Durbin they've been very helpful in signing them. But Robert and I both have been working very closely on it.

: Thank you.

MS. DETMERS: You're welcome.

: I would like to know if -- if nobody owns that why did Dow and Consolidated

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Aluminum pay $17 million to have it cleaned up.

: Good guys.

: That's what wants to know. It was -- 17 million was just Dow's part. Conalco paid their 17 million too. So --

: More than that then.

: Well, I think it's under the

-- the general principal that the polluter -- the polluter has to pay. And so they were paying -- I mean, they put it there in the first place, there's no dispute about that. And so eventually they were forced to pay. It's as simple as that. It wasn't strictly volunteer at all.

MR. PHILLIPS: Okay.

: I'm curious, how much was actually -- do you guys know that was -- this is a goofy question. How much was buried? Do you know ever -- or have you heard of what was buried out there because the thing in my mind is you have the river right underneath there and that water's pushing whatever's buried up. And so if you guys were walking -- I might be out of my mind, but if you guys were walking around the grounds a lot or whatever just doing your normal job, you're -- you might be also getting radon gas that was from -- coming up from

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whatever's been buried.

: We all three of us know something. can speak for that.

: Okay. What I can tell you about that was when they would send us out to clean it once a year, go pick up the metal we was told to pick up 10,000 pounds of metal, and that was our day. If we could do it in two hours, we could sit for the rest of the day. And it would only take us like 45 minutes to pick up 10,000 pounds of metal and put it in boxes. So we had a easy day. That's why everybody volunteered on overtime to go out there. I mean, if you knew it was radioactive --

: On the 40 acres?

: I don't know if it was --

: You were going out there on the Dow dump area?

: The Dow dump area, yes.

: Yes.

: The 40 acres he's talking about.

: And you could pick up chunks of metal this big with a fork truck that weighed like 300 to 500 pounds at a time. And it wouldn't take no time. And you'd stay out there for a week going out

0209

there every day.

MR. PHILLIPS: Why -- why did they give -- did they give you a reason of why you were limited to

that or expected to do that? Was that a --
: Well, they figured it'd take you eight hours to do it.
MR. PHILLIPS: Pardon?
: They figured it would take about eight hours to pick this up.
MR. PHILLIPS: Oh, so they miscalculated.
: You go in there with a payloader and just go in and start digging and you could --
MR. PHILLIPS: Okay.
: It'd be easier to pick up. And then two guys would pick it up and put it in boxes. And we'd bring it into the casting department and remelt it. And then it was used in different metals.
MR. PHILLIPS: Okay.
: But there was a lot of metal out there. And the other stuff that was waste it just stayed there. We piled it up.
: And so there were times when men were sent out there to actually work on the dump

0210

area and they were being contaminated?
: At least five people would go out there.
: In summer of --
: That is a flood plain.
: -- of '72 they had a plant shutdown, and they had a guy dig a deal with a fork -- come in with a tractor about maybe 200, 300 hundred foot long down through there, and we dumped between ten and 12 slabs -- full slabs down in that ditch.
: Slabs of what?
: And then behind the -- where the leach area was to the north end of the pot room they had probably a hundred or more skids of sludge stacked in there. And we emptied all that sludge in the -- in that ditch that he dug up there, and they buried it.
And then they had a guy from Fox Brothers, the plant over got burnt with radioactive. And the Corps of Engineers traced it back to Dow's area. And they dug up about a hundred barrels of sludge or whatever it was, you know, out of it right -- they -- they knew it was there. And that's on record with the Edwardsville courthouse, the Corps of Engineers' statements on that. So there was a lot of it. I

0211

don't know how much metal would be buried in that area, but it'd be a lot over many of years.

: And so if it's deteriorating down under the ground and you got the flood -- that is a flood plain and the water does come up.

: Well, '72 there was no water. But that's when Granite City Steel was using the well water. When they quit that all the water level in the area came up quite a bit.

: I know there was a flood in '76 because that was my sister's graduation year.

: Well, the flood water is up higher than what it was then.

: And those -- those slabs are thorium slabs?

: I couldn't really tell you if they were thorium or what they would be.

: That dross he's talking about was HM21 or 31. That's where we stacked it at outside.

: Okay. Well, that burial happened, interesting enough, right before Phelps-Dodge as -- bought it in '73, right? You said it -- said that that happened in --

: Phelps-Dodge took over in --

0212

: '69 they leased it.

: December 29th of '69.

: Conalco bought it in '73.

: '73.

: , I really think we're not going to finish. I mean, Chick has some specific questions, and the disposition of what's in that plot I really think that's pretty well documented as to where we stand. And so I think we ought to go into that at another time. But we kind of need to move on I think today.

MR. PHILLIPS: And you know, just quick relative to radon, radon would not be an issue on that, not from thorium 232. The radon that's generated in that chain is really short-lived and it doesn't come out of the ground before it decays. The radon 222 is something different. The longer-lived radon's from a different radioactive chain. So we can talk about that.

: I got a question on this sludge. I was told this, I don't know if it's fact.

But they would take sludge out -- sludge out of that dump out there and put it -- and take it down to Texas and throw it -- get it from Dow Chemical's plant, throw it in the ocean, and that salt water would take

0213

the flux out of it and the metal would be laying. They'd pick the metal up and take it back into the plant and charge it. That salt water would take the flux out of it.

MR. PHILLIPS: In the record it says it's in California, but I'm --

: Maybe it is California possibly.

MR. PHILLIPS: Yeah. I -- I -- that's some -- I think that's in the outreach meeting that's covered; is that correct?

: Yes. Uh-huh. It is, right.

MR. PHILLIPS: Okay. All right. Let's -- let's get to these questions and see if we can get some answers. And if they prompt things as we go along, then we can talk about them. Okay. Somewhere it's mentioned Building 152. Does anybody know what that refers to? Is that familiar with anybody? What have we heard?

: You know, I'm thinking that that must relate to the Bay City plant or something.

: Or could it be Rocky Flats?

: There's no -- there's no building that we are -- there's no building at Dow Madison like that.

0214

: Never was.

MR. PHILLIPS: Okay.

: They have numbers that go -- where they -- they stop somewhere, or they go from 1 to --

: Well, there's 771 and all that at Rocky Flats.

: No. But I'm talking about Dow Madison now. You all's buildings went up to 22 or 23 or something.

MR. PHILLIPS: Yeah. Bill -- Bill Thurber (phonetic) actually did this and I got these. But according to a document -- and I don't know which one it is, I don't have it listed here -- but he referred to hardener work being done in Building 152. That just must be a --

: Another site.

MR. PHILLIPS: Could that be -- no, it wouldn't be Building 5. It'd be Building 7 if anything, right?

: Could be.

: I don't think -- I don't think the question relates to Dow Madison is a short answer.

: I don't either.

0215

MR. PHILLIPS: Okay. And then I guess the same for Building 356?

: See, thorium fluoride is -- as far as I'm aware there was never any thorium fluoride at Dow Madison.

: Yeah. Is that blocksum (phonetic)?

: I don't think that --

MR. PHILLIPS: Okay.

: I don't know what he's talking about.

MR. PHILLIPS: All right. Well, let's -- what about sludge recovery centrifuge locations?

: I can answer that. That sludge recovery centrifuge was that spin job, wasn't it? They had a -- they had a centrifugal spin. They would dump hot sludge into that and it'd spin and it would circle around and all the metal would form in the middle. You had to break that off and a core of metal would be in the inside. We had a man that was injured for life, I think he passed away, had his lip all ate up. And when it exploded it sent him right through all the sludge and he laid up in the sludge and burned his face and everywhere.

MR. PHILLIPS: So they -- at some point

0216

they were in use at -- at Dow Madison at where?

: In that special room right outside the --

: Right off the pot room.

: -- a billet unit. I run it myself out there. I took the sludge out there. We had pot and open the bottom up and it'd go right into that centrifuge. And they'd turn on this -- there's no way to regulate the speed. You'd throw it into high gear. And if she went on spinning as fast as it could go and that time it blew him -- blew him out. That ended the sludge recovery that time. But that had run for quite a while. What was it boys, a year

or two -- maybe two years? Nobody wanted that job.
MR. PHILLIPS: Do you have any idea what time frame that was?
: It was there in 1960.
: Were you around in the '60s?
: Well, that's when I got burned.
: I know you did. Yeah.
: And it was still there in '62.
: Right after got hurt.
: Yeah. That was probably put in about 1959.

: Yeah.
: Probably around about three years.
MR. PHILLIPS: So you'd say '59 to '62?
: Right. He was disabled, yeah.
MR. PHILLIPS: And then it was taken out of the process?
: They tore it down and -- yeah.
: They built a new one.
: Yeah. built one out there.
MR. PHILLIPS: Okay. Thanks. And I guess we've really talked about this. Were there other magnesium alloys other than magnesium thorium alloys shipped to Rocky Flats. I think we've -- we've covered that.
: Well --
MR. PHILLIPS: Or have we?
: It's important, isn't it?
: Well, I think we've covered it except, you know, I -- as a more specific answer to that question I really would refer back to this table that I have in my presentation to the board which is at least the official listing from Dow Chemical on the thorium magnesium alloys.

MR. PHILLIPS: But does that specifically say they were shipped to Rocky Flats?
: No.
MR. PHILLIPS: Okay.
: No. It doesn't. But I'm -- that's what I'm saying as far as I know that's the only table that -- and this table does not say they were shipped to Rocky Flats at all.
MR. PHILLIPS: Okay.

: We have no -- no document from Dow that says anything was shipped to Rocky Flats.

: The Rocky Flats, they shipped the thorium to there. You should have that. You all have -- I got the guy's name, but I'll have to --

: Okay.

: -- find that. I got it over here somewhere.

MR. PHILLIPS: All right. Do you know what settings refers to? Does that just mean a group of connected furnaces?

: That's -- that's probably where they all -- that's the set up on the slab for the billet unit.

: Yeah. The pot --

: Those ten pots connected together.

MR. PHILLIPS: Ten pots referred to as a setting?

: Yes.

MR. PHILLIPS: Okay. All right. I understand. I -- I got that now.

Time to produce a magnesium thorium hardener. Was anybody involved in producing -- are you familiar with a magnesium thorium hardener, what it was?

: We used a thorium (inaudible).

: That's been 17 years. That was -- that was the thorium, yes. How often produced, that depends and I don't know how much orders they had so it's hard to -- for me to verify that.

: We didn't produce the thorium hardener.

MR. PHILLIPS: That wasn't done at Madison?

: No. No.

: We used it. It was -- it was shipped in.

MR. PHILLIPS: It was shipped for you guys?

: We didn't -- we didn't produce it.

MR. PHILLIPS: Good. We talked about how often you did -- you know, you did three -- two to three sets a day on the -- the pots, right?

: Yeah.

MR. PHILLIPS: And you continually went to the --

: That depends on how much orders they had and how long they run it. We don't -- we wouldn't have that information.

MR. PHILLIPS: All right. So I think all of that is in what I -- what I need in the record. And we covered the pickling and I think the -- a group of settings I understand that now too. So --

: There was an aluminum unit -- I mean, a billet unit and the slab unit.

MR. PHILLIPS: I guess the one thing is the uranium rolling. Now, what I want to come back to is -- , you mentioned before about the straightening of the rods. I'm still unclear as to where the uranium rods -- as to where that happened and what documentation we have on -- on that. Where -- where were the rods -- the uranium rods, where were they straightened and do we have documentation on

0221

that?

: I think the only -- I think the only documentation that the Department of Energy produced is a purchase order from Mallinckrodt that called for the work to be done.

MR. PHILLIPS: Okay.

: I think there is zero DOE documentation on anything else about the process.

, did -- did you not tell me -- I may be mistaken, but I -- I thought the only testimony we've had about the rod straightening was that it actually somehow got done over in the rolling mill. Is -- please correct me if I'm wrong, but that's --

: We straightened it over on the flattening ovens.

: And where were they?

: In the rolling mill about middle ways in the mill. They put them in there and they -- they had weights that they could put on them. They'd straighten them out and then they -- from what I hear they put took them over to -- what's that, the tube and round deal in the casting -- I mean, the extrusion and ran it through there.

: What size were they?

: Huh?

0222

: What -- what diameter were

they?

: I -- I don't really know.

: Because that would determine what tube and round it would be on.

: Yeah.

MR. PHILLIPS: The question -- the question that I have is where. Was it done in the rolling mill in Building --

: Five.

MR. PHILLIPS: -- 5, or was it done in Building 6?

: Both.

: Both.

: I'm sure we bump straightened some in extrusion.

: Bump straightener or whatever.

: They -- they tried to roll straighten them. They tried to bump straighten them and it didn't do any good. They took them to the mill, they tried to roll straighten them. Then they tried to take them to a -- put them on a stretcher, it popped. They put them back in the cases and they set out -- they set out there in No. 2 Building for about two or three months.

0223

MR. PHILLIPS: And this was in 1960 -- '59, '60?

: I can't tell you. I can't tell you what there was to do. We had -- we had a building full -- we had a building full of great big packages which were very, very protective on these rods because you had a -- you had a lead case. You had a carbon case. You had a another case, then you had straw on the outside of that.

: Are -- are you saying that the rods never did get satisfactorily straightened?

: No. Not to my knowledge.

: What happened to them?

: What?

: What happened to them?

: This is another thing that you never know anything about. They're there one day and they're gone the next day. Unless you are an authority in place to know, you don't know nothing about it.

MR. PHILLIPS: So the answer is it took -- it took place in both Buildings 5 and 6?

: Yes.

: I'd -- I'd like to put on the record another comment, and that is that in all this

work, you know, we're concentrating on one limb of two. One limb is what's got sent to Dow Madison. But there's got to be the other limb which is once the work got completed and got sent back to Mallinckrodt there should be additional documentation at Mallinckrodt. And as far as I can tell in all this time, seven years nobody has ever tried to find that information from Mallinckrodt.

Now, you know, people might say well, why don't the petitioners do that. And I -- my comment is really different. My comment is why doesn't the Department of Energy do that. And we have tried. We have really tried. Why doesn't NIOSH do that you know? But that's a very important question. We don't even know what the rods were used for actually. I mean, some people have said fuel rods. We don't know what the -- you know, and here we're trying to calculate doses based on exposure to those rods. We don't even know the physical form of the rods. We don't know whether they were -- if they were fuel elements, were they clad, were they covered with oxide. That makes a lot of difference about the exposure you get. Do you have a little bit of -- a thin film of oxide, big? I don't know. But we really don't know very much about it is what it amounts to.

MR. PHILLIPS: But it's certainly not in the record.

: No. And we can -- we can put it -- though I think that is important that it's in at least those two buildings. And again, the assumption from the FUSRAP report and the cleanup Building 5 I don't believe the rolling mill was ever assessed for uranium. They concentrated on Building 6.

MR. PHILLIPS: Not in the original survey that I saw.

: Right.

MR. PHILLIPS: But I -- I haven't completed that, but no.

: I don't -- I don't think so.

MR. PHILLIPS: Not the one that was done by --

: ORNL.

MR. PHILLIPS: Oak Ridge.

: Yeah. I think that's right.

But now the Pangea cleanup for thorium and its radiological survey they did go through Building 5 and 4, the whole thing.

MR. PHILLIPS: Yeah. I haven't seen that one yet.

: Right. Well, I'll just tell

0226

you months ago I gave those reports and the contract information to Mr. Elliott at OKUS (phonetic).

MR. PHILLIPS: I have it.

: Oh, okay.

MR. PHILLIPS: I just -- I haven't had a chance to go through it.

: Well, I don't know whether he got the -- the whole Pangea report or not.

MR. PHILLIPS: I have one. I don't know how long --

: I suggested that he did.

MR. PHILLIPS: I don't know how long it is. I believe. If that's not true, I'll get back to you. But I believe I have it.

: Okay. Okay.

MR. PHILLIPS: I just have not had time.

: Okay.

MR. PHILLIPS: We covered this, where is the technical department metallurgical area located. I guess --

: The technical department was -- I was through there. It was right up against -- maybe about 60 feet away from -- from Building 2. It was the main -- in the main building. The sales offices were upstairs, and then they had the

0227

employment offices as you first came into the main doors. Then you walked through a small hallway and they had the spec lab on the -- on one side. It was all very confined. It was all the classed in. That was part of the technical department. was the director there and -- and (phonetic) at the time. And was also -- he was part of the fracturing department where they tested the broken metals. And then right in the middle of all that was the -- was a small chemical lab.

And then right before you walked out of the building going towards No. 2 Building they had -- they had different equipment you could use to sand or finish materials for testing for small materials. So that -- that was all the technical department in that

area. It was all probably in a -- in a hundred by hundred building. And there was a gentlemen you may remember, . Was -- that was ?

: What's that?

: (phonetic). Yeah. He -- he was there. The engineers were mostly there. And -- I want to say -- was the -- was the . And these were all small cubicles in that department. But the whole -- all everything I've talked about here isn't

0228

any more than a hundred feet by a hundred foot building.

MR. PHILLIPS: The next one we're not going to -- we're not going to find anything. We talked about where the acid pickling was done. It was both in extrusion and in rolling, right? Both had a pickling area in extrusion and in the rolling mills?

: Yes.

: Chick, may I ask you a question that I -- I'm really confused about. That third question --

MR. PHILLIPS: Uh-huh.

: -- where are these questions coming from? It -- it doesn't make sense. Number one, where is Attachment G, Section G. -- is that part of your report? Job descriptions from film badge survey of HK31. Well, number one, HK31 is a metal alloy. And what sort kind of a film badge survey would you have of a metal alloy? I mean, I can understand how you would have a film badge survey of workers who worked with that. But like I say, at Dow Madison there is no personal monitoring data.

MR. PHILLIPS: No. I don't think it's -- I'm going to have to get back to you on that. That -- that -- like I say, I didn't review that well enough.

0229

There -- there is some film badge records, and this is what I was referring to before. But I think they were placed on top of thorium sheets, and I think that's what that's referring to. But I'm going to have to get back to you. I never seen further information. That information you should have. You don't have any?

: We don't.

MR. PHILLIPS: You don't have it?

: Never -- never heard of it.

MR. PHILLIPS: Okay.

: So if -- if it's available --

MR. PHILLIPS: If it's available, you'll get it.

: Yeah. No. I didn't mean it that way. I just meant that was a completely new thing to me.

MR. PHILLIPS: Well, I knew when I misspoke -- thought I misspoke before I knew I had seen some film badge results --

: Uh-huh. You may have.

MR. PHILLIPS: -- in all of this.

: You may have.

MR. PHILLIPS: And I thought it was area monitoring. I knew it wasn't personnel.

: Oh, it may have been the area

0230

monitoring.

MR. PHILLIPS: It was area monitoring in their -- their -- I have seen those results. But right now I can't remember where they are and what that refers to. So I'll have to --

: Well, there's an earlier question about a Silverstein report in '56.

MR. PHILLIPS: Correct.

: And I think Silverstein, you know, I'm still not clear. I think that area data may relate partly to Bay City but partly to Dow Madison, and I'm not -- that was in some NRC reports.

MR. PHILLIPS: I'll get -- I'll get that out and I'll get back -- I'll have to get back to you because I specifically don't know now.

: Okay.

MR. PHILLIPS: My recollection is that at one time they placed some film badges on some thorium --

: Okay. I think you may be right.

MR. PHILLIPS: -- material and made those measurements and that's --

: Maybe that's in the NRC report.

0231

MR. PHILLIPS: -- what he's referring to. But it's not personnel monitoring.

: No. Right.

MR. PHILLIPS: So there's no job description associated with it. So I'm -- I'm a little confused by 's question to be honest with you.

: Okay. But just on top of those thorium sheets?
MR. PHILLIPS: Yeah. That's -- that's my recollection. But I will get back to you with that.
: Okay. That may be. Okay. Got you. Okay.
MR. PHILLIPS: That was -- that was it as far as what I had. And I thank you for giving me some insight on that. So --
: Okay.
: Can I ask a question. , the testing lab was in the main building?
: Yes.
: The main Dow building?
: Yes.
: Where all the administrative people worked?

: Yes. Yes.
: Would samples have been taken into that facility?
: Yes.
: Radioactive samples taken into that facility?
: The samples come --
: They were sent by carrier.
: I'm sorry?
: The samples from would be sent by carrier.
: The -- the alloy plant had a -- they had a vacuum system that sent us small tubes like they have at the banks now where you send your checks and everything else in.
: Sure.
: And they sent the sample. They sent those small plugs. They were only about two inches long and a quarter inch from the alloy plant to determine what the alloy was. They would read it, then they would send a message back what you should add to it which you could control it. Then you would send it back again. And so that was all done through a air -- a vacuum system sent all the way overhead from the alloy plant over to the technical department.

: So with all those samples there definitely has to be some records of what -- or there were some records of every heat essentially?

: Yeah. I think everything that was -- everything that was came through the alloy plant was entered. It run -- the boss of that was (phonetic), and he had like three or four men working constantly on the spec lab, the spectrograph reading all those. And right next to him was the -- what was it, the lab and that was done by (phonetic), the chief chemist of that area.

: Chemical lab.

: The chemical lab. That would -- but these buildings were all -- they were within ten feet of each other. They was all close. Then they had -- then they had the area where they would take fractures. So yeah, there were metals that were brought in to be fractured and tested and sent out.

: Okay. Thank you.

: They took samples of each billet, they made a crack. That was in the subbasement three stories in the ground. And then they would take it into a heat oven and heat it and

0234

check them. And then that stuff was taken to the lab too mostly.

: Taken to a lab (inaudible).

MR. PHILLIPS: I'm sorry. What was? What are we --

: They -- they was test labs. Like if you had --

: Test slices.

: Test slices. If you had a billet, you'd cut a one-inch piece off of it say like 12 inches around, a one-inch piece. And that would be cut off. And they'd break it in a section of four, and then they'd put it into a heat room for like two hours and heat it to a certain temperature and they could check it. And that was on the thorium metal and everything they done that before they took it out to the lab.

: They stored a lot of that in No. 2 Building.

: They would check it for impurities and dirt and stuff. They had a code, a circle 2 or a circle 1. If it got to a circle 3, you had to shut the unit down and start the cast -- and clean your pots up and start the cast over again.

0235

MR. PHILLIPS: And this was done where -- where was the testing done?

: In the subbasement.

: The subbasement where the saw is at.

: In alloy.

: It was a continuous cast.

: Continuous cast. It went down, and the saw cut them off to a certain length.

MR. PHILLIPS: Okay.

: It ran three stories deep in the floor, and it was a continuous cast. And there was a saw that would cut this way, and you could cut off any size you want.

MR. PHILLIPS: Okay.

: Like an eight-feet blade on that saw.

: Yeah.

: And it came down -- as the casting came down the blade came down at the same speed with it. And they would -- then it would be drop down.

: It was water cooled.

: It was always -- it was always wet down there, water cooled.

0236

: And that water went to the sewer.

MR. PHILLIPS: And where was the testing done on that?

: The testing?

MR. PHILLIPS: Yes.

: On the slabs?

: It was tested down there in the basement.

MR. PHILLIPS: They had a -- they had a spectrograph down there?

: Right. They had a --

: No.

: -- a building --

: Next to it.

: All they did was check it with heat and break it.

MR. PHILLIPS: Okay. Structural testing?

: Right.

MR. PHILLIPS: Okay.

: Some -- some slices were taken

to the x-ray lab.
: Yeah.
: From the basement they ran the radioactive. They would put them on pallets, and when
0237
they had so many they would pick up them up on a truck and take them down to (inaudible).
MR. PHILLIPS: So they did some kind of structural testing down there and then a portion of that they would send up for content or a spec testing?
: And for x-ray testing I think I heard. Didn't you say x-ray?
: They had an x-ray there.
: They did it right there.
: No. We took everything down to the x-ray from the aluminum unit.
: Mr. Peterson knows where that room was.
: Your slabs -- your slabs would come out about 18 inches thick, four-foot wide, and they would slice an inch and a half to two-inch slice off of that. They would break it in to six pieces, and the inspector would stand there and visually inspect it to see -- see that it was clean. But now, that also would be used -- part of that would also be used to see that it was all okay and everything. And if it had to go to -- if it had to be x-rayed, okay, then part of the sample went down there. In the case of the billets they split them in half and visually inspected to see -- see that they
0238
were -- they were not fouled up with crud or stuff like that. And they sent that -- they would send part of that -- they would -- there was a process to get a pin out of that too.
MR. PHILLIPS: I've seen the pin.
: They did the same thing in extrusion, we'd send those up, torsion rods.
: Yeah.
: Those slices were brought back after the inspectors got through them. Then one of them would throw them in a box, and we'd bring them back in and charge them and remelt them.
MR. PHILLIPS: Okay.
: Do you -- do you know all know why we're talking about x-raying things? Did they ever x-ray any of the Mallinckrodt uranium or the thorium or any of those other things?

: From Mallinckrodt I do not know.

: Okay.

: What about thorium alloys, were they x-rayed?

: Very seldom.

: So what was x-rayed then? I mean I guess I'm trying to figure what.

: If you were making -- if you were making forging stock --

: Forging stock, okay.

: -- you x-rayed it.

: Okay. All right. Got you.

: That x-raying was in -- in the block building there in alloy, right?

: Right.

: Okay.

: That wasn't out in the testing lab.

: That was the warehouse, not the casting. It was a warehouse.

: Separate facility?

: Well, it's inside the big facility, but it's wired off. It's got a fence around it and a gate. And only people that had keys to the locks went in there.

: Okay.

MR. PHILLIPS: Does anyone have anything that they think they can add?

: You better get going because we're getting older and we're not going to be able to answer your questions much longer.

MR. PHILLIPS: You're not much older than I am.

: Sir -- sir, you'd better watch yourself, they may get hungry on you again.

MR. PHILLIPS: Oh, you mean I may have to feed them dinner. Is that what you said? We're -- we're adjourned. We're definitely adjourned.

No. I really thank you very much for sharing this with us, for being willing to come down and spend all day doing this. It's been very informative for me. And it's on the record, and I'll go back over this again. And so again, I thank you very much, and it's nice to have met you too.

: Well, we thank you for your

patience and for allowing us to get this on the record.

(Whereupon, the Worker Outreach Meeting concluded.)

0241

CERTIFICATE PAGE

I, , Court Reporter, do hereby certify that this Dow Worker Outreach Meeting was transcribed by me to the best of my ability.

I further certify that I am neither attorney nor counsel for nor related nor employed by any of the parties to the action in which this is taken; further, that I am not a relative or employee of any attorney or counsel employed by the parties hereto or financially interested in this action.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 3rd day of July, 2007.

_____

[Court Reporter]