UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

***

RELEASE OF RADIOACTIVE MATERIAL WORKSHOP

Radisson Miyako Hotel

1625 Post Street

San Francisco, California

Thursday, September 16, 1999

The workshop commenced, pursuant to notice, at 8:30 a.m.

P R O C E E D I N G S

[8:30 a.m.]

MR. CAMERON: I hope you all had a good night last night. And we want to thank you again for all of the good discussion and attention yesterday. I think we feel that we had a really good first day of the meeting, and we expect that to continue today.

I just wanted to run through what I anticipate the agenda being and get any feedback from you before we go on. Ray Turner has kindly consented to give us a little primer, so to speak, on recycling. And we're going -- we're going to start off with him as soon as I'm done talking here.

And I have a strike through through health impacts because we pretty much finished it yesterday, but if there's anything remaining that people want to say on that we can -- we'll go to that first.

We have Giorgio Gnugnoli from the NRC staff who is going to do a presentation on economic impacts. The last presentation is Tony Huffort, and it's basically implementation issues. And implementation issues came up so many times yesterday, and we tried to keep track of them on those rather unartful flip charts over there in the paddock. But I think that an important session for us today is what we're calling "Don's shoes." And Mark started us off yesterday with "Mark shoes," but we're going to do a "Don shoes" today, and this is Don Cool, who is responsible for this -- this project. And I won't say anything more than this project.

But what would -- what would you do if you were in Don's shoes in terms of going forward with this from a project standpoint and from a substantive standpoint. And this will be our sort of integrating summary discussion to try to tie together a lot of the things that we heard yesterday and will hear this morning. So, I'm sort of excited

about getting to this -- to this point. I don't think that we'll take the whole day to do all of this, so an added benefit may be that we'll break a little bit early and give you some additional time.

I do want to just before we go make sure that we run through some of these paddock issues, because I think a lot of them will have been covered by the time we get there, but if there is anything that hasn't been covered, if anything -- anybody wants to add anything on these, we'll go to that.

So, when we're talking today, when you're listening to other people talk, keep in mind Don's shoes, okay, for that discussion. What would you do?

Before we go to Ray is there anything that anybody wants to say about the agenda or wants to ask? Any questions before we get started?

All right. Well, Ray, thank you for doing this. And I'm just going to turn it over to you, Okay?

MR. TURNER: Okay. I think it's important -- can you hear me okay?

I think it's important when we start talking about rule making and things of this nature and -- radioactive materials, that we get a little bit better understanding of what's going to happen as we recycle, primarily the carbon steels and also some of the other products, the nickels, coppers, aluminums and things like that. What's going to happen downstream from the gate, from the scrap collection point, be that a scrap dealer or be that a steel mill. Some steels are sold, some scraps are sold directly into steel mills.

I'd like to start, just kind of give you a brief scenario of each type of operation. First we'll start with a torching operation. Primarily done outside with either natural gas or plasma or propane torches or possibly mount gas and oxygen. Just somebody standing there

holding a torch, usually about three, three to four feet long, and he's standing on top of the material to torch the material. Protective gear that he wears would include like a 99 dust fold respirator for dust and fumes and mist.

The drippings, as he cuts at the torching table or he cuts the material, the drippings usually will fall to the ground. Some of those drippings will be -- you'll be able to remove them with a magnet as he removes the material that's been prepared and cut. But a lot of the material will just be in the -- the drippings will be in the form of slags, and they'll form a base on which that employee is going to be standing and working from then on. So, if he cuts a lot of the material just bear in mind that he's going to be standing on the torch drippings and working on top of those. They can be shoveled up and disposed of. Typically, they are disposed of at a landfill somewhere. I don't know if that would be a RCRA landfill or probably could be, if it's not -- if it's not contaminating material, just an industrial landfill.

The railing plate, if there's any rail involved or steel beams or plate, a lot of this material, if they're in pretty good shape, the web is actually cut out of the inside of the plate, as we discussed yesterday, and that material is either sold as reusable plate or as rerollable plate. It's never melted again, it's just reused in it's current form. They just reshape the dimensions, the width, the length, and it's reused in its current form. Again, that would come from the torching operation as well.

Usually, that type of material runs anywhere from about 50 to 70 pounds a cubic foot in its prepared state, once it's been prepared to go to the steel mill.

The next process would be a shear. Just like a huge scissors. It can either be a stationary sheer or it can be a mobile shear that's operated on rubber tires or on track -- a track crawler.

Primarily, again, it's done outside. Almost all of this scarp processing is done outside. There's a few locations in the northern part of the country where they have some inside operations, but for the most part I'd say probably 95 percent of them are going to be done outside in the open.

Just use standard protective gear when they're operating a shear. They don't use any kind of a respirator, but they do use -- they'll have leather gloves. They may have some protective clothing in the event that they have some material that's a little bit too heavy to shear, they'll torch gut that material, and of course they'll have steel-toed shoes.

The only -- the biggest position of concern probably at a shear, if you're going to be sheering, and you can sheer materials at, you know, all the way up to maybe six or eight inches. Typically, when they're running the shear we're just going to be talking about plate, structural beams. They're not going to be shearing rails because it tears your shear up too badly. They'll shear a lot of the sheet iron, a lot of the piping and stuff like that, and the shear just kind of eats that up like cutting through butter with a knife.

What happens at a shear at the mouth of the shear as a scrap comes up, a scrap comes down to a shaker table and it actually shakes down on a grate. And the scales or some of the coatings like the galvanizer zinc coatings will be on some of the piping, some of the rust and things like that will collect right below the mouth of the shear. And periodically, and it usually happens probably about once a week, they'll put some workers in there just with shovels. Same protective gear that we mentioned, but no respirators. And they'll just shovel those sludges and scales up. That material is typically disposed of at a RCRA landfill.

That material, once it's prepared, runs about 35 to 55

pounds per cubic foot. It's usually sheared in, for the most part, in two links. Either three foot long or five foot long material by about two feet wide. In the event it's sheared for a foundry then it will be sheared one to three feet long, but most of it will be either three or five foot long with probably 50 or 60 percent of that being five foot material.

The third type of operation would be a shredder. And this one, a little bit different from a shredder that would shred vegetables or slaw. A shredder is a -- it's like a huge box than you can feed maybe two or three automobiles into at one time. It has a very large cylinder that has some manganese, high manganese -- I think 11 to 15 percent manganese hammers, probably about this big, maybe 18 inches long and probably 14 inches wide, that are sitting on pins around this rotator shaft. And this rotator shaft spins about anywhere from 650 to 1,000 rpms. And these hammers, they call them shredder hammers, actually pivot and swing on the shafts, and they're all around this, the shredder shaft. Usually just beat and tear the automobile or the sheet iron or piping and things like, just literally just tear it to pieces.

You're primarily talking about the thinner materials that will be going through a shredder. They wouldn't be shredding large structural beams. It wouldn't be shredding heavy shafts because it would -- it will literally tear the shredder apart. So, you're talking about material that's probably a quarter of an inch thick and under for the most part. It can take some heavier materials and obviously does because some automobile parts are thicker than that.

Same, just normal protective gear. No respirators are used around shredders. They have some employees on the stacker belts as the material comes off of shredders -- well, let me back up just a moment. As the steel or the iron or the ferrous material is shredder it falls down onto a conveyor belt. It runs up from that conveyor belt where

it's picked up with a series of either one, two or three magnets, and roll over onto a second conveyor belt. And what this does is separate the ferrous material from the non-metallic or non-ferrous material which goes off on another conveyor belt and is stacked into bins. It separates the copper, it separates the aluminum, and then it separates what's called shredder fluff. The aluminum material is what -- copper and aluminum is what we call residue, and that's sold on the open market to copper and aluminum producers for whatever is made out of copper aluminum products.

All of the material in almost every process is stored on the ground once it's processed until it goes to the steel mill where it is again stored on the ground out in the open until it's melted.

The -- in -- both the shear and the shredder kind of destroy themselves. They self-destruct. So, if you operate a shear or a shredder, especially a shredder, for about eight hours, you're going to have maintain or perform maintenance on it for another four to eight hours in the evening or at night.

In some cases it's a one-on-one. You operate eight hours and if somebody overshreds it you're going to maintain it for the next eight, which means that you're going to have a lot of welding going on inside the shredding chamber around the shredder shaft and the hammers, and you're going to put some employees down inside the shredder box underneath the rotor, because a lot of the scales and things that fall off, like in the shear, some of the scales are not going to go on into the conveyor system, they're going to fall down and collect inside the shredder box.

So, at the end of the day and especially at the end of the week you've got some employees that are down under the roter with some shovels and have to just shovel that stuff out.

That material, in its prepared form -- oh, the shredder

fluff, by the way, which is like your fabrics or cloth or whatever would come off of a wire. Anything that's non-metallic goes to a RCRA permitted landfill, either on site -- most of them are offsite, but some facilities have an on sight landfill, permitted landfill.

Material in its prepared state runs anywhere from 60 to 90 pounds per cubic foot, and if we're talking about sheet iron we're probably talking about something that will be about 65 pounds per cubic foot in its prepared state.

It's either -- all of the material will either be magged, or picked up with a magnet, or it will be picked up with a grapple and dropped into a truck or a rail car or loaded into a barge. Some shredders have conveyor systems that they can actually just convey right out into a barge or into a rail car as it's being prepared, so then it will be handled by a magnet or a grapple when it gets to the mill.

The next category will be a baler. And this is nothing more than just a big squeeze box. It squeezes sheet iron and just makes various size cubes or bales or you may hear them called, referred to as bundles, number one or number two bundles. The material is just squeezed very tight, usually about 90 pounds per cubic foot in its finished state.

Again, repair is quite a bit of welding on the equipment because of the abrasion and materials that goes through the baler, but probably a lot less personal contact there than what you would see in a torching or a shredding operation. A baler kind of destroys itself too. Most of those are in the areas of hydraulics and things like that.

Smelting. In the event that some of the components have rather large percentages, substantial percentages of aluminum, then they may be subjected to an aluminum sweat furnace. These are primarily electric induction type furnace. Not induction, just electric, I guess, convection type furnaces where it -- the aluminum will actually be

melted away from steel. You can take, for example, an automobile transmission or some kind of a transmission, and put it in these sweat furnaces and it will melt away the aluminum. You end up with a little bit of dross and you end up with the iron or steel components.

The dross that comes from the sweat furnaces, I believe, is usually disposed of at a RCRA title landfill. Some of that material now is being recycled back to the steel industry to use for a deoxidation material. You have to use a lot of de-ox in the steel industry on every heat of steel that they make or every batch of steel that they make. So, some experimentation is taking place this year trying to use some of the aluminum drosses back into the steel industry again. Again, you're talking about just standard safety equipment.

Some of the material, if it's in a prepared state, can be taken direct to a steel mill where it will either be magged or grappled into a charging bucket and dropped primarily into electric arc furnaces is where most of this type of material would go. And there's several reasons for that I won't go into right now. But that's the type furnace you're going to be talking about, primarily, is electric arc furnaces.

Electric arc furnaces produce about 50 percent of the steel that's produced in the United States. That's where most of your recycled metal goes. It operates primarily on 100 percent recycled materials, for the most part. And the reason I say for the most part, there are some materials that are iron based, virgin iron-based materials like hot brigaded iron is made from iron ore fines that's also used in electric arc furnaces, or some pig iron may be used in addition to the recycled materials.

In the melting process in electric arc furnace, depending on how aggressive the steel mill is with their oxygen blowing practice, and they all blow oxygen, 100 percent of them blow oxygen into the steel, into the bath, to refine the steel. During the blowing of that oxygen,

that's primarily where most of your bag house dust is generated. And depending on the aggressiveness of the oxygen blowing practice it will generate anywhere from 20 to 40 pounds of bag house dust for tone of steel charged.

That material also -- it's called a KO 61 dust. It's characteristically hazard because of things like cadmium and zinc has some lead that's in there already.

So, whatever goes to the bag house, whatever is burned off and goes into the bag house, which is early in the melting stage, is going to end up in the bag house dust. If it's a substantial amount, then you're talking about mixed-waste material. If you're talking about something that's enough to contaminate a bag house, above permissible limits. From what I've heard I don't think we're talking about those levels on this material. I think we're talking about levels that may even be undetectable by the currently deployed systems that are at steel mills and at scrap yards. I wouldn't anticipate that being a problem, but I'm not the expert, you're the experts here. So, just to give you an idea of what happens there.

In addition to the bag house dust they are also going to generate anywhere from three to five percent of slag. That number can vary, it can be as much as six or seven percent slag, depending on how much lime the steel mill has to add to achieve the properties they want to achieve. For example, if they're looking for low phosphorous or low sulphur, they're going to add more calcium or more lime, either dolomitic lime or calcine lime, into the furnace, on top of the bath, and that will all go into the solution with the slag that comes out of the metals. So, it can be anywhere from three to about five, normally about three to five percent of the melt ends up in slag.

The slag usually goes through rock crushers that are onsite at most mills, and most electric arc furnaces have their onsite slag

hammers and rock crushers. It's crushed and sized and used for things like roadbed, fills, driveways, the -- what do you call the material on the rail, the railroad ballast for building railroad beds and things like that. It's also used for things like the sewer drain fields. I forget what you call those things. But anyway, the drain fields for sewers and things of that nature.

The balance of the material ends up in the steel matrix. And when that material is run through what's called a continuous casting machine, they actually melt it in the furnace then they pour it in a ladle. Then that ladle sits on the casting machine over the top of another very large trough that has some nozzles or refractory nozzles or slide gates on the bottom of that which actually open up and let the steel then flow into the molds.

As it flows into the molds of course it's in a molten state now. They have to chill it very, very quickly. And the molds are open top to bottom and they're continually moving. When the billet comes out of the bottom of the mold it's in a -- it's a very soft state, but a solid form. It's no longer liquid. The internal structure of the billet or the slab will be liquid, but then as it goes down through a bin section it's flooded with just a tremendous amount of water. And by the time it gets to the shear, or most of them are torch cut off now, it's formed about one or one and half percent scale, which is called mill scale, on top of the billet or on top of the slab or beam or whatever it may be.

That mill scale is collected in the mill scale pits, and the primary use for mill scale is probably in cement plants. Some of it is also sold back to the big integrated steel mills, where it's mixed with some other materials, iron ore fines and what we call red ore, and it goes to a centering plant to give them a product. It's primarily FE 203 and F304. It can go back into an integrated steel mill where they will

recover most of the iron from that material. I don't know what the percentage is but it can go either place. It can go back to an integrated steel mill and become part of the iron again or it can go to a cement manufacturer where it's, you know, cement manufacturers buy a lot of mill scale, that's a lot of our.

And the only other thing that I have here would be some of the material -- some of the material can be sold off and used on things like farms to make farm gates in the event that it's piping and things like that. Typically, you know, for the most part in the scrap industry that's not done. Usually when it goes to a scrap yard it's either sheared and processed and cut up. They don't let it lay around and collect and wait on a farmer to come and see if he can use any of it. It's usually chopped up, cut up and sent right out as quick as they can get it out the door to a steel mill. You don't see scrap yards carrying huge stockpiles of scrap like they used to years ago. Usually, he'll have more than -- no more than just a couple of days or a few days supply of scrap on the ground at any one time, then it goes out the door. They -- the economics of the scrap industry today are such that you just can't afford to hold it around and speculate on the market. They're going to get rid of it just about as fast as they process it.

That's -- as far as economic impact on the carbon steel grades, with the quantities we're talking about here, I don't see an economic impact whatsoever. None. I mean, we're talking about approximately 100 million tons a year of carbon steel that's recycled just in the United States. And out of 100 million tons a year we're talking about maybe 20,000 tons or so a year of this material being recycled, on an average, or 300,000 or so tons over the next 30 to 40 years. That's not a drop in the bucket, I can tell you. It is not going to create an economic impact from the carbon steel segment.

The nickels and the coppers, if there are large stockpiles

of those on the other hand, could create some economic impact on the nickel suppliers, nickel alloy suppliers and the copper alloy suppliers. Those -- those type -- well, if it's copper wire, for example, it's going to be stripped and the chopped in a real fine, probably one eighth inch long to maybe a quarter inch long copper chop, and the same thing with aluminum. The aluminum may be remelted then into what they call sows or small pigs, which will then subsequently be remelted either in an aluminum furnace, or a lot of the aluminum, then, is sold back to the steel industry where it's used for deoxidation materials, remove the oxygen. After it's tapped out into the ladle you have to remove the oxygen from the steel bath to get rid of the inclusions. A lot of this aluminum is used back into the steel industry then. That's pretty much it in a nutshell.

MR. CAMERON: Well, that's great, Ray. It also serves as a useful introduction to Giorgio's topic. But let's go out for questions or comments to Ray. And if Jim Turner or Phil want to tell us more about your processes that would be illuminating too. Any questions or -- Paul Genoa.

MR. GENOA: I don't want to let anyone down. Paul Genoa, NEI.

Ray, that was great. You just went through an entire industrial process with the vision of someone who is concerned about the workers, and potentially the public, from any contaminants that may be associated with the process.

So, that was a really beautiful step-by-step environmental health analysis of your field. And I was drawn immediately to the parallels between the trace amounts of hazardous material associated with that process that concentrate in various parts of the process and have ben identified and separated out for specific disposal requirements, because we learned that that's how the process works. And

the similarities with radioactive contamination are identical.

Some of the material that contaminates the steel scrap is just naturally included in the steel matrix one way or the other. Other is perhaps the coating on the wiring, maybe lead connectors that are used in the wiring or whatever. There are parts that you added to the product that was then separated in some fashion. So, there's sort of, you could almost say, natural analogues, between natural radioactivity and manmade radioactivity. Sort of that analysis is following through the scraps systems. And you're -- and it's concentrating and being separated and its potentially exposing workers at different steps along the way. And it's been analyzed and it's been identified that it needs to be controlled in a certain way, and at certain points in the process that material is collected and sent off to RCRA facilities to isolate it. But we all know that it doesn't get every atom of that material. As a matter of fact, there are di minimis standards below which you don't have to worry about some of that stuff. So, some of it stays with the steel all the way through the process and other is separated out.

So, there is a very clear and analogous situation to radioactive material that may be associated with it, although because radioactive materials have other properties than the hazardous materials have, they expose different risks to the workers and to the public at different stages, and of course it would have to be fully analyzed.

But anyway, I was just drawn by the comparison and I think it's worth considering. But you certainly wouldn't want to recycle steel with high levels of contaminants. I'm sure that you separate the batteries from the automobiles before they go through a shredder.

MR. TURNER: Absolutely.

MR. GENOA: You shouldn't put significant radioactive contaminated metal into the front end of a process like that either because it becomes unmanageable. The reality, though, is that there is

probably some metal that has very small amounts that probably could go through the process without harm. It probably is today. And I think you point out correctly at the levels we're talking about and below you would never be able to detect it, you could only calculate it. Thanks.

MR. TURNER: One thing -- two things. Let me address the bag house dust problem once again because I don't think I quite took that into completion.

Bag house dust, as several years ago, can no longer bear a -- can't bear a mixed waste. Much of the bag house dust, or most of the bag house dust, from electric arc furnaces go to a subsequent process where they reclaim the zinc from that dust. There is at least one, maybe a couple of processes now to claim some of the other metals, but for the most part they're just looking for the zinc that comes out of the bag house dust.

In the case of cesium 137, in mills that have had contaminating events, most of the cesium 137 ends up in the bag house dust, so that creates a mixed waste. However, when it goes through the de-zincing process we've run a lot of tests on the zinc pigs, and it -- Jim's mill, for example, ran a to of tests on the zinc pigs, and they have found no cesium 137 that carried over into the zinc pigs once it's remelted and they make large sows or pigs out of their zinc. It pretty much stays with the dust, then the dust is disposed of at a -- I don't know, industrial or RCRA landfill.

Your point about melting some high-level radioactive material. In some cases that's done if you want to use the material for things like shielding blocks where the material is going to become irradiated again anyway. You may want to melt some higher level radioactive material. You know it's going to -- is still going to be controlled and become shielding blocks or something for -- in some other kind of irradiater. Any other questions?

MR. CAMERON: Phil?

MR. GIANUTSOS: I just want to -- our facility does not melt scrap with the intent of producing a clean product in that there is no volumetric standard that we can look to right not. Hopefully that will change in the not too distant future. We do produce contaminated blocks. One of the applications right now is for use in shielding an application where there's a significant neutron fluence. So the blocks will become activated whether they are clean to begin with or not. That's an excellent application for recycling the steel in that we can take low-level materials and even high-level materials and blend them to produce a block that's easily handled, will be subsequently activated anyway, and really divert that from the otherwise clean waste stream.

I should also add that we've taken all of the processes that you've described and moved them indoors and really done extensive air sampling for both radioactive and non-rad constituents, and find, for the most part, with the levels that we've set up to accept, the overriding concern is nuisance dust during cutting operations, so we're wearing respiratory protection for that, and it provides more than adequate protection of the workers from the radioactive materials that are generating.

The process itself does inherently separate a lot of materials. The NUREG draft contains some of those partitioning factors. They're very significant and really need to be looked at as a process in the future. Cesium, as you noted, does essentially leave the bath, as do some of the other more volatile materials. Tritiated materials certainly are going to be cleaned up in the process. Iodines, some zincs, works pretty well. Other materials will preferentially go to the slag. So, we really need some biometric standards to look at this process for more than just producing contaminated blocks. There's a lot of potential for it there.

Now, we run an induction furnace, so the atmosphere is relatively well controlled in the building. We have no effective release. And that's a couple of things that I look at in the NUREG. The assumptions are bag house only, for example, where our bag house is treated additionally with a paper filtration. We sample the effluence. They're much lower than what would be anticipated from a normal facility. That's just some of the comments I wanted to add forth.

MR. CAMERON: Okay. Thank you very much, Phil. I think Dr. Lull, in the back, might.

MR. LULL: Just a point of clarification. At the end of your comments you mentioned the volume of potentially contaminated material to be recycled versus a total amount that's being done and recycled, and that this is a pittance. Does that mean, then, that one really can't make a strong economic argument that there is -- that we have an obligation as environmentally attuned people to recycle this material, that it really doesn't make much difference whether we recycle this contaminated stuff or not, and the big picture of steel being recycled. And does that take away an argument from us in terms of that this is a good thing to do?

MR. TURNER: In terms of the carbon steel, let me clarify myself here. The 20,000 tons or so a year, which is primarily carbon steel, is a drop in the bucket compared to the overall scheme of things. And I can tell you in the scrap businesses I do there is absolutely no impact to 20,000 tons of steel hitting the market. No economical impact there at all.

Let me again clarify. When I say there is no economic impact, I am talking about to the scrap industry. It's not going to compete with other grades of recycled scrap metals that are non-radioactive or non-hazardous. It will not compete with the scrap industry. Twenty-thousand tons is not going to make that much

difference.

In the steel mill the point that Jim is making is if it was contaminated highly enough to contaminate that mill then it certainly would be an economic impact on that individual mill if they had to shut down and do a decontamination on the mill.

MR. KARNAK: Yeah. EPA did our economic analysis. We found exactly that, that there was not enough material that it would impact the industry, wouldn't really make much of an impact on mining new steel, primarily -- I had learned a lot about economics in the process of looking at this -- primarily because it's a matter of trade off. If this material were not available there might be other recyclable material with only slightly higher cost that would go into the stream. We couldn't do it one for one against new steel. And the -- at one tenth of one percent of the flow of recycled steel it really didn't amount to enough to cause a significant impact.

MR. CAMERON: Dr. Lull again.

MR. LULL: I guess, then, you could end up then talking about sort of a specialized recycling of material like was described where you're taking stuff, and if it's very expensive to dispose of this material in specialized low-level radioactive landfills or some FUSRAP type of facility, presumably recycling it around again, like you're describing with your specialized process, might make economic sense within that economic realm. Although it doesn't impact the total steel industry in a way or the economics of mining, it still makes a lot of sense for society to be recycling this into a use where it's just going to get recontaminated again rather than contaminating brand new steel and having to dispose of more stuff.

MR. CAMERON: You know -- oh, go ahead. I'm sorry, Ray.

MR. TURNER: Another point that I'd like to make here is that one of the processes I mentioned earlier this morning is a mobile

shear, both stationary and mobile shears. A mobile shear can really be loaded onto a low bed type of truck and transported to a DOE facility, for example. And the material can actually be sheared on site at the facility without any fear of then contaminating somebody else's scrap yard with the scales or whatever. All the scales or whatever falls off would remain there at the facility and could be cleaned up at the facility.

MR. CAMERON: Okay. And Paul.

MR. GENOA: Yeah, to follow that thread. And that's exactly why we need a standard that's at that very low level that would allow you to say that once that shear came on we know conceptually, absolutely, that there will be some contamination from using the shear on the DOE site. Not how much, very little. Have to have a way to say that that shear can come off the site now when it's done. Not that the shear is ever going to hurt anybody from whatever little bit of the contamination it may have picked up doing that job, but there's got to be a way to say it came in and now it can go out safely. That's what we're here about. We're not here about trying to set levels where we can ship radioactive material into the public domain.

MR. CAMERON: Okay.

MR. TURNER: It's not extremely difficult to decontaminate a shear. I've gone through some exercises where we were actually shearing some bales looking for some sealed sources that were lost and encapsulated inside of some steel bales. And I worked with the company that lost the sources, and that's what we -- we literally took a mobile sheer on site to the steel mill and sheered about 1,900 tons of steel bales. The company that provided the health physicist and the radiological workers, all done on very careful scrutiny. Also provided a decontamination process in the event that the sheer became contaminated worse case. And even worse case wasn't extremely difficult

to contaminate -- decontaminate the sheer. Unfortunately, we never found the sources. They weren't there.

MR. CAMERON: Bill Kennedy.

MR. GIANUTSOS: I just wanted to elaborate a little on what Paul said. Relative to equipment being cleared, that's a good example. There are pieces of equipment that could be used that cannot be cleared with present technology. A good example would be anything with a hydraulic system with oily film on it, alpha emitters can't be monitored. The current requirements are that surface contamination monitoring be performed. There's many inaccessible surfaces. You drop stripping, electric motors with ventilation holes in them, et cetera, and generate a large amount of waste, not because it's actually contaminated but because we can't prove that it isn't.

The assumption has to be this is, in fact, a contaminated piece of equipment. We don't have any tools right now that will allow us to do either a volumetric or a mass based survey and release those items.

So, there are some pieces of equipment that either will not be used or processes that will be abandoned as a result of the secondary waste cost.

MR. CAMERON: Okay. Great. Thanks a lot, Phil. Bill Kennedy.

MR. KENNEDY: From yesterday's conversation I understand -- I think I understand that, historically, when sources have been dropped and gone through the mills that you had to do extensive decontamination, shutting down the plants and attempting to collect as much of the material as possible.

MR. TURNER: Sixty-five times to date.

MR. KENNEDY: Sixty-five times to date. What are the clean up levels that you use as targets?

MR. TURNER: Initially, there was no acceptable level of cesium. We'll just address cesium. Cesium and cobalt have been two of the bigger ones. Initially there was no acceptable level of cesium. If you found it in the bag house dust or in the steel mill in the slag, it had to be disposed of. It had to be removed.

That being the case made it an impossibility to melt steel in the United States because all of the bag house dust in the United States has trace amounts of cesium, even in mills that have never had a contaminating event. Just from fall out. All of the materials they use that are refractor materials. Even in the lime, believe it or not, has trace amounts of cesium. The zirconium sands that they use in a lot of the mills and refractory sands have trace amounts of cesium. I went to work with -- not for -- but helped some steel mills try to establish a level or a clean up standard, which is what it's asking for, cesium and cobalt in bag house dust.

The level -- the clean up level today is two picocuries per gram. Well, it was two picocuries per gram. I think that was raised about a year ago now two. It was 100 or 130 picocuries per gram. The material could go to a landfill. Jim could -- Jim Turner.

MR. TURNER: At the facility itself, the clean up -- the removal standard is two picocuries per gram for the dust, and I think soil is five. And then when you have to cleaned up and you want to dispose of it, if it's up to 130 picocuries per gram it can be treated for the hazardous constituents and sent to a subtitle C landfill if you can find one that will accept it. And above that has to go to Envirocare or be divested and sent to a low-level radioactive waste site.

MR. TURNER: The other thing that has to be cleaned is the duct work. The bag house, the bags have to be changed and disposed of. And the dust work, these might be 15 or 20 foot diameter vacuum tubes or

ducts that come from the top of the steel mill and run to the bag house. Those literally have to be scraped down, washed, and then your standard 5,000 fix, 1,000 removal criteria take over inside the structure.

MR. CAMERON: Okay. Let's -- I want to thank you, Ray, for taking the time to -- to inform us of this, and also thank Phil and Jim Turner for their comments. It's a great introduction for Giorgio for his presentation. And let's go to Giorgio and then we'll continue this discussion of economic impacts.

And I guess we -- we need to thank Giorgio for doing the Powerpoint for all the presentations, and now he's going to entrust it to Alan Summorville from my ICF. Okay.

MR. GNUGNOLI: I'm sure that Bill Gates appreciates the commercial for Powerpoint, even though we're using Corel Presentation.

The other side of the equation, if you will, in terms of looking at impacts, is trying to give some sort of value to compare them.

The first question is basically why do we consider the economic and cost benefit. I'm sure that I'm preaching to the choir in many of these things. But there's basically an Executive order that was signed by President Reagan that said that, in effect, federal agencies have to consider this. The wording is pretty stringent in that federal agencies must consider cost benefit in their evaluations of alternatives for major rules or regulatory actions.

But one of the main points out of that particular order that has impressed me is that it directs executive agencies to prepare a regulatory impact analysis for all of these actions, and it's important that these actions should not be undertaken unless they resulted in a positive net value to society. So, already we're sort of put in terms of an evaluation role in terms of considering the impacts of the various alternatives.

The NRC has sort of coalesced these -- this particular executive order's impact in terms of its own regulations and its own practices and policies. And in effect what the BR0058 is is it tells you, okay, this is how we have to do this, this is what we have to consider.

If we could go on to the next slide. While it -- what are these economic impacts? And we've talked about this pretty much all of yesterday and beginning today is that if we have to do radiologic surveys to verify permissible levels, this is a cost. This is something we -- that depending on what the alternative it is and how stringent or how unstringent it is, it effects the amount of cost outlay to confirm the fact that you are operating in a safe manner.

The next bullet talks about the economic impact on scrap metal and other industries. And I guess Ray's done a pretty good job in terms of laying all that process out. And so certainly you have manufacturing process surveys of both, I guess, incoming and outgoing, to some degree. And the last point or last sub-bullet is this false alarm aspect. It behooves the organization to have to verify that, okay, is this a false alarm or do I really have something in here like a seal source to worry about. And the impact there is that particular mill facility has to then stop operations and then has to deal with its particular loss of income associated with stopping things and such.

The last point is on the replacement. Obviously Ray pointed out that it isn't a big deal in carbon steal, but for other metals it might be worthwhile to recycle the materials. And so it does present a fact -- or a perspective from benefits and costs in terms of seeing -- if we can get this in without having to go out and process box side to get that aluminum if there is enough of a value to just melting and reusing it.

Continuing on the costs. The disposal costs, again, have

been mentioned before. If you have the possibility of sending it to a public landfill or solid waste landfill I guess it would be per volume, possibly less than if you had to send it to a low-level waste facility. So, there is some benefit in terms of whether it's recyclable or the material can be cleared to a great extent.

I believe we mentioned it before, but the next item is sort of the incidental industries, the ones that really basically you feel that didn't have much of a stake about recycler clearance, all of a sudden they're going to be effected by the products coming out. And certainly the film industry and the electronics industry. So, they're effected here in almost -- you could almost call them commercial victims.

The next item is the possibility for buildup. We really aren't too sure about exactly how to handle this. We will sort of have to be looking into the future trying to see, well, is there a buildup or could it be the other way that there's enough dilution. If you look at the numbers that were cited before about the quantity of material that's contaminated in the carbon steel sector, you sort of wonder if you'd even notice it if you really uniformly melted the stuff and such.

The next item is the socioeconomic impacts, and any sort of evaluation of impacts from major regulatory actions, you have to look at how communities may be effected, jobs lost, jobs gained, et cetera. And we need to factor this in when we do this evaluation of alternatives.

The other thing is that this is not, by any means, a totally inclusive list. So, there are other things to be concerned about. And again, as I mentioned yesterday, this is not your typical NRC cost benefit analysis. We're sort of going to have to do things a little bit different in the case of recycle and release and clear the materials going out to the general use.

Next slide. This is sort of a no-brainer here in terms of

what's really involved fundamentally in a cost benefit analysis. We evaluate the potential health and safety environmental impacts and then against the cost required to achieve them or preserve them, depending on what the impacts are, whether good or bad.

We look at all the benefits of each alternative. Next point we look at the detriments, including the costs from each alternative, and then we have to sort of weigh them. It's almost sort of like a righteous final point on this, but in effect we go back to the initial Executive Order. It says we have to have a net value to society, and that's really the bottom line. It doesn't have to be totally quantitative in effect. There are other aspects we consider. As I mentioned yesterday, the environmental justice aspect. And we even look at aesthetic effects when we're doing a cost benefit analysis in terms of a regulatory action. So, that's pretty much it.

The thing we're looking for here now is not just comments about how -- how to assign costs or value, but really now we're at the point where we're ready to start this evaluation. We're going to look at each alternative. What are the advantages. What are the disadvantages. And again, to sort of reassure you, number one is the protection of public health safety and the environment. That's above all the most important thing. And secondly is, in terms of cost benefit analysis, we're not trying to make a moral judgement. We're trying to use this as a tool to help us make a decision. And in this use of the tool we're not going to be assigning a value in sort of a moral arrogance in terms of whether a particular item is more important than another one or the value of a human life is only this or that. It's just a tool to help us make a decision to distinguish the results of these alternatives. And so we need this. It will help us make the alternatives different so that we can evaluate and judge them.

So, with that, we'd like to hear from you.

MR. CAMERON: Thanks, Giorgio. And it might be a good place to start to see if we have identified all of the different types of economic costs. And let me just through one thing in from the paddock that Terry brought up yesterday, which is we had a bullet up there that talked about sensitive industries, I think was the description. The film industry. Whatever. Terry's point from yesterday was the potential economic impact on the steel industry from public perception, I think was the way it was phrased, of these products are -- may have radioactivity, may be defective. Terry, do you want to say anything more about that at all?

MR. CIVIC: That's basically it. You have to remember -- people have to remember that the steel gets used in a wide variety of applications, including food. Tin cans. So, you start looking at that market as, well, I don't want to buy anything in tin cans, we'll buy stuff in plastic or some other kind of can, aluminum or something. But some of the food stuffs can't be packaged in anything other than steel cans. So, it becomes a consideration for the NRC.

MR. CAMERON: Okay. Thank you, Terry. How about other -- other types of costs that we might not have identified? Ed?

MR. BAILEY: Luckily, I've only been involved in one of these meltings, but this particular company, and I don't know whether it would be an industry practice or not, basically there was a loss of income to the company, but there was a very dramatic loss of income to the employees of that mill. They essentially did not get paid for -- the bulk of the work force did not get paid during the time the mill was shut down.

The company's primary product was water pipe. Luckily, I guess, for them, it never really became a widespread issue, but I imagine had a lot of the people buying water pipe realized that this -- this mill had been contaminated, they would have had a hard time selling

it. Directly across the driveway was a bulb farm that was growing bulbs for, you know, to sell for flowers. It could just have easily had been a farm of some kind. We did a minimal amount of sampling in the bulb farm, but if that had been a -- that particular year they had been growing lettuce there, we would have done a whole lot of sampling and it would have been hard to convince anybody that the cesium that we found in the soil wasn't from that accident, I think.

So, those are the kinds of impacts that probably will be hard to quantify, but I guess the main one is -- is again the individual workers that really lost a lot during that week or two that the mill was down.

MR. CAMERON: Okay. And that, I take it, was from an accidental smelting of a radioactive source that got out in commerce of some kind. And Don may want to mention later on how that issue is being addressed at the NRC. It's a related issue. Do you want to -- do you want to talk about it now? That's good. Great.

MR. COOL: Well, we can go ahead and talk about that just a minute. One of the things that the Commission and the states has been putting a lot more attention to is the whole issue of sources and the control of sources and maintaining accountability of the sources. Because there are a large number of cesium, cobalt and moresium sources which are out there in industry mostly as gauging devices, thickness gauges, for a variety of things. They could be used in the steel mills, gauging the thicknesses of the mills. You'll see them in paper. A variety of different kinds of gauging and measuring types of applications.

And as the mills observed, as we've already talked about here, there have been instances where those sources have no longer been where they're supposed to be. They may have dismantled. They may have remodeled the facility. Owners may have changed over the course of

time. And the licensing structure that's currently in place for most of these sources is one of the things that we've in fact put up there, a general license, which means that all of the requirements are in the regulations, but there is not a lot, or in fact very little or not communication back and forth on a routine basis between the regulatory agency, either the NRC or a state, and the particular owner.

So, as you might expect, all of us, you could actually sort of forget that it's out there. You may even have people marketing here's the straight thing little measurement for you, put it up for 20 years and forget about it. Well, that sort of -- you sort of tend to do just that.

So, we in fact have a proposed rule, it's currently in the formal proposed rule stage, which is examining and posing a number of additional requirements which will amount to registration of these devices. It would impose some additional information for the vendors to provide to the regulatory agency, provide some additional requirements in terms of tracking that through the process, and would, for the first time, institute a process where there is a -- we're proposing yearly contact back and forth where the owner of the license would get a little card or a sheet or a letter from me that says, "I think you have the following one, two, three, however many devices, please verify that you have one, two, three devices, that they are the serial numbers we think they are, that you still know where they are, you've seen them, you've checked them, they're still labeled properly, and send me your check for $400.00 or so to keep the whole process going."

Now, a little bit of a monetary incentive because that tends to help a little bit, not really unlike what you do with your car and your driver's license. You get the little registration card, you fill it out, you send it back in, yeah, you send them a check.

And so the Commission is in the process of putting in place,

that some of the states, in fact, are out in front of us there, have been doing this for several years trying to learn from their experience in this process to try and reduce the number of sources that get out into the commerce in this possibility.

MR. CAMERON: Okay. Thanks, Don, and I just would mention for people's information that the NRC is going to hold a workshop on October 1st in Washington, D.C. that's going to use a roundtable of the vendors of these devices to discuss implementation issues related to the proposed rule that Don mentioned, and if anybody is interested in that workshop just please talk to either Don or me.

Andy, do you have something on another type of economic cost?

MR. WALLO: I think you covered it. I just wanted to stress the difference between the economic impacts associated with melting of source versus economic impacts with implementing a standard, and I think that --

MR. CAMERON: Good. Good. Yeah. It's good that we clarified that. John, I've got one here for you.

MR. KARNAK: I just wanted to add the point that EPA did a preliminary economic analysis and it is available on our website if anybody is interested in taking a look at that:epa.gov/radiation/cleanmetals. And you'll find it there. Okay. Epa.gov/radiation/cleanmetals. And if you just -- if you forget that, just go to radiation and go down the left side. There's -- there are -- you can hotlink on the thing.

MR. CAMERON: Yeah, I think that is a pretty important reference for people to look at because I imagine it has all sorts of information and data on it.

MR. KARNAK: Just bear in mind the data is about three years old now.

MR. CAMERON: Thank you. David?

MR. BELK: David Belk, University of California. I'd like to change the subject a little bit, actually, to pull up something on the screen, the disposal costs and the relationship to disposal facilities.

When you do your analysis, make sure that you do more than just look at the use of the facility. How much does it cost to send something to a disposal facility. The example I'd like to give you is some of you -- excuse me -- some of you from California may know that the University of California was recently charged with running a commission or a committee to look at the alternatives to the dispose -- to the Ward Valley facility. Well, setting up such a commission is not free. Dealing with the public when it comes to trees is not free, as was referenced yesterday. So, there's cost to the public relations when it comes to disposal and handling of materials that may not necessarily be automatically included when you analyze low-level radioactive waste or public landfill facilities.

So, just to bring that up, that there's additional costs that appear to be hidden, but they're real.

MR. CAMERON: Yeah, and I think that's sort of a good thing for the NRC to keep in -- in mind generally, not just with disposal costs, but there may be indirect costs, derivative costs that flow out of these. And Giorgio, go ahead.

MR. GNUGNOLI: Before we continue in that, I just want to thank again Don and Ed for bringing up the point about these sources and things getting out. And maybe one of the things that might be helpful from the group gathered here is perhaps some advice to us about how we can deal with the fact that we do -- we do run into these situations. I think a number of people feel that no matter what regulation level you may choose, whether it -- if we do put a rule in place that's .1

millirem per year or one or two, that these kinds of things can still happen. Someone makes a mistake or it's poor quality control.

It would be helpful for us to hear that what, besides choosing a number, let's say a millirem or a set of concentrations or whatever, would help us in terms of providing a degree of confidence or assurance that maybe -- that we would have almost a commensurate drop in terms of incidence of this loss of control. I don't know if that's even a possibility, but that might be something worth investigating.

MR. CAMERON: And that -- that is, I think, probably legitimately discussed under -- under implementation. Some alternatives may obviously have less of a -- some alternatives may deal with that problem more adequately than other alternatives.

Let's hear from Heather.

MS. WESTRA: Okay. Well, my -- my comment is related to the -- to the previous one, the costs of assuring the public, you know. Will there be increased monitoring costs, sampling costs at the mills, et cetera? Increased costs to protect workers, public relations, all of those things, I think, need to be considered in the -- in the final analysis.

MR. CAMERON: Okay. Thanks, Heather. Can we follow -- are there some follow ups to Heather's point? Jim.

MR. TURNER: Yeah, I would agree with that. There's a -- you're going to be required to train your personnel, you'll have to do exposure monitoring, I would imagine, and the only other one I would add -- and I don't know how likely it is that -- and I think this opens up a potential for sabotage or illegal disposal of a source in a, say, a car of -- that's known to contain radioactive scrap. That would be a good place to hide one. Or maybe the person would think, well, it's going to -- it's radioactive already, so what could this hurt.

MR. CAMERON: Okay. Thank you, Jim. Paul, you were

registering some -- do you have anything to say about follow up on this? I would give you the mic.

MR. GENOA: Yeah. Follow up to the monitoring. I hope we don't get to a point where we're going to allow radioactive material out to the public that's going to require your workers to be monitored. That would be wrong. Okay. So, that's how I feel about that. It shouldn't happen.

What I do believe about what I heard is that there should be a standard that allows you to evenly and uniformly determine whether material that needs to be controlled is being controlled. I think that will help the sealed source issue. Two, I think you need to have clear regulations that control those sources and you'd have clear communications as to what the obligations of those source users are, and then you need punitive controls to punish people who don't control properly, because this is a huge impact on public health. And that's what you need to do with sealed sources. But let's not confuse that discussion with this. This discussion should be focussed on what is a safe level, as low as reasonably achievable, for controlling radioactive material where it is, ensuring that material that could harm someone doesn't get out. I mean, that -- I hope that's where we're going to get this discussion.

MR. CAMERON: Yeah, we -- we are going to end up there. I think that we still need to make sure that there are no other comments on types of costs. And I think that we may want to get into a discussion of people's perspectives on the relative importance of some of these costs. Rob Lull, in reference to Ray's presentation, was talking about the replacement costs, and he sort of -- for the metals. And he -- he framed that issue in terms of is it important to have a -- to recycle this type of material because of replacement costs. But let me make sure that we got all types of costs out. Trish.

MS. HOLAHAN: Trish Holahan. I just, I guess, want to ask and go back to a number of alternatives were raised yesterday, and whether or not folks think that there are perhaps unique costs that need to be considered for some of the other alternatives.

MR. CAMERON: Okay. Let's -- let's think about that, and while we're thinking about that particular issue let's go to -- to Rob Lull.

MR. LULL: I would -- I would really support these comments, last comments, about the political costs and the costs of dealing with individuals and peoples. I've seen the process in California develop -- trying to develop a low-level waste disposal facility escalate for years, and many organizations have sprung up whose people -- who -- who are people -- were salaried people, lots of legal people have made huge amounts of money, and all of this has gone to increase the cost of disposal at the facility where it used to cost people $40.00 a cubic foot for disposing of low-level radioactive waste, which we're talking about a higher level of waste than what we're discussing at this meeting. The costs now are escalated up to five, six, seven hundred dollars a cubic foot, by some projections. And the longer the delay goes on, the higher that is, which leads to another point, and that is when you talk on -- maybe a subset point onto the low-level waste disposal facility because it's obvious that some of the people who aren't in attendance in this meeting will use political pressures to try and drive all of this material into a low-level waste disposal facility, rather than the ability to go through a less expensive recycling process. And one side effect will be that those who are low volume users of the low-level waste facility where the total cost depends on the total volume coming in will actually perhaps benefit from that measure after everything is forced into the volume. The total volume going to a low-level waste facility would significantly increase, and

thereby the unit volume cost would decrease. So, there actually may be a benefit for some of the low-level waste disposal people, and that would be another force that one would have to take into account in terms of the economic pressures on a proposed system here. I certainly think that's not a good way of using society's scarce physical resources, but that certainly might be a direction that might flow out of the economic realities here.

MR. CAMERON: Okay. Thank you. Terry.

MR. CIVIC: There may be another economic impact here that we ought to consider. And I'll use Proposition 65 as an example.

MR. CAMERON: If you could just make sure everybody knows what that is?

MR. CIVIC: Oh, California published a rule a couple of years ago now, indicating that there were -- the State of California determined that there were certain chemicals that could cause cancer or have reproductive effects, and that if a material had that, any of these listed chemicals, you had to put warning labels on everything. From the steel industry's perspective we were swamped with any customer that bought steel indicating that we had to put certifications that we met Proposition 65. We looked at trying to do risk assessments associated with the steel, et cetera. So, there was horrendous cost associated with responding to customer inquiries, developing certifications, that type of thing.

In this scenario you'll have a public that will obviously be concerned about radioactive activity in steel. They will cause the manufacturers of the products to come to us and say, "Certify to us that your steel doesn't contain radiation above natural background." And we will have to do that. They -- there are -- so, there are costs associated with actions by governmental agencies that effect us.

The steel industry will probably go to the suppliers of the

scrap and say, "Tell us, certify to us that you don't have any -- that you're not giving us any radioactive steel that came from DOE facilities or nuclear power plants or whatever." So, there's -- there is going to be a trickle down effect associated with then evaluating, finding out where the steel came from, where the scrap came from, and significant cost associated with that.

MR. CAMERON: Okay. Good. Good point, Terry, for us to consider. And we do -- I do want to get to Trish's issue for the group. But Bill, do you have something on types of cost or?

MR. KENNEDY: The previous cost -- this is Bill Kennedy again. The previous cost is a little difficult for me to grasp because currently steel does contain radioactive materials. So, if the blanket question is certify to me that the steel does not contain any radioactive contaminants, then you can't make that statement. What's missing is a standard against which you judge the trivial concentrations that you encounter. And to me that's the central part of this whole discussion. The same thing with hazardous chemicals. You can't say there are no hazardous chemicals in something, pesticides or whatever, but you have safe levels identified against which you measure and can answer the question honestly that the material has been deemed safe by a given standard. SO, to me it's a matter of degree.

The steel already has radioactive materials inherent in it because of life since World War II. The question is are those levels acceptable against a given standard, and that's what missing is the standard.

MR. CAMERON: Great.

MR. TURNER: I'd like to respond to that one if I can.

MR. CAMERON: That centers us again, I think. And Jaz, you want to amplify on that?

MR. DEVGUN: Yeah. Jaz Devgun. And I want to add on to

Bill's comments, also, a question for Ray that since in the steel trade, it's open trade, I mean, there's international steel coming into the country on a routine basis and probably vice versa. How do you take into account like the difference in their standards may be, and if there are requirements like the gentleman just mentioned here, how do you ensure that that steel does not have any higher radioactivity than ours?

And as a side question to that is you mentioned if they take two picocuries per gram as the -- factor standard, I guess in the bag house dust maybe. But even if you take five picocuries per gram there are standards in other countries, like in Germany, which would be 0.6 becquerels per gram, which comes to about 14 picocuries per gram. So, what if they release the steel or any material with that higher level, how do -- how does that connect?

MR. TURNER: I don't know if we have any atheists here or not, but atheists in a suit in a casket is like somebody all dressed up and no place to go. Just need to be careful that when we make some regulation here that you don't make a rule that's not going to go anywhere. The mills are going to have to accept it. And even though some of the European countries may be adopting some higher concentrations in the steel products I can tell you that if it sets of a detector at the export yard in European countries it's going to be rejected at that yard. It's not going to be accepted there. There may be a rule that says you can have higher concentrations, but if it rings a bell and these things get more and more sensitive, they won't accept it.

The gentleman mentioned something about background radiation, and I think we're talking about no radiation above natural background in the steel. We know there is some radioactive material in just -- in everything. But if it does not increase the background radiation or doesn't increase the signal enough to make the bell go off,

then typically the mills consider that as radioactive free, radiation free material. I think it's important here to address what is background, how background is measured in scrap and steel facilities. And when we think of background, typically we think of it's five or 10 microrems per hour in natural background just right outside the building with a hand held survey meter, that may be the case. But when you are monitoring you have portamonitors in steel mills, you have a fixed monitor on both sides of a scale and sometimes over top of the scale. And either -- most of them are plastic scintillator base systems now. A few of them are still sodium iodine, but almost all of them are plastic scintillator systems.

When you pull a truck or a rail car, that 10 microrems per hour background disappears. There's no more air between those detectors and it may drop down to two microcrems per hour. And these systems are constantly monitoring and changing, you know, sometimes up to 50 times per second. And they typically are set at three standard deviations above that newly adjusted background. So, although your background radiation level -- long story short impossible at this time -- may be 10 microrems per hour, these systems alarm at four microrems per hour, after the truck goes through. So, we're talking about extremely low, extremely low sensitivities. And they're not going to get any less sensitive. The reason they're not going to get any less sensitive is we've run some tests and we're going to run another test the latter part of next month on some newer systems. What we've found is that beyond certain levels in shredder scrap, or in scrap that has density greater than about 50 or 55 pounds per cubic foot in a truck, not a rail car but just a truck, when you get 22 inches and beyond inside that load, no commercially developed system today can see it, not even fixed gate. They don't see it today.

So, the systems are not going to get any less sensitive,

they're going to get more sensitive and more sophisticated.

MR. CAMERON: Okay. Let's keep following that. I think John Karnak from EPA has something. John Karnak.

MR. KARNAK: Yeah. I want to go back a couple of years to when EPA first started looking at the possibility of -- looking at the technical aspects associated with release of this kind of material.

When this came to the attention of some of the environmental groups they were at our doorstep immediately, and we said, "Well, look, guys, you know that there's some material that's going out of these facilities now." And they said, "We didn't know that. Go get it and bring it back."

Putting a standard like this out is going to alert everybody that something is happening. And, you know, before three years ago a lot of these groups didn't know it was happening. And I think this is the point that Terry was making is that now we've brought it to everybody's attention and now you've got people that are going to start getting excited about things.

So, the fact that there's radiation in material today, the fact we're recycling stuff from DOE facilities today and NRC facilities is all just fine. The more attention you bring to it, the more people get excited.

MR. CAMERON: That's a nice optimistic on that, John. But let me just -- since Trish has brought up the aspect, the whole issue of alternatives and looking at the alternatives from yesterday that the NRC put up, the alternatives that all of you developed and looking at any unique economic costs associated with any of those, this is an alternative that we have to make sure is considered, that I don't know if we did or not. But bring it all back. Get it. Okay. I think that we've heard from that. So, let's make sure that that is an alternative that's on the record that was sort of indirectly offered by John Karnak

from EPA. I mean, you told us about it here. I'm not trying to put the onus on you for that.

MR. TURNER: Chip, I'd like to respond to one other statement. Ray Turner.

MR. CAMERON: Oh. Sorry, Ray.

MR. TURNER: I'd like to respond to one other statement that was made earlier today by Giorgio, and that's about false positives causing work stoppages or causing steel mills to have to shut down and wait until the material is removed.

There's only three steel mills, electric arc type steel mills that I'm aware of in the United States that has a system where that would be the case, and these are three what were called comsteel practices. One of them is owned by Jim's company that Jim works with, and two others are owned -- one is built and operating right now in South Carolina, the other one is in construction, where the scrap actually floats across a conveyor and directly into the furnace.

Aside from those three, two which are operating and one is being built now, at least two of those mills have already stated that they don't want any of this material whatsoever, so that brings it down to one mill in the U.S. that has a comsteel type practice.

If you have a false positive on scrap that comes into a steel mill, it really doesn't effect the melt shop because this is something that occurs at the gate, at the monitor, outside. And the impetus here is to prevent it from ever getting to the melt shop so you don't have that work stoppage. It really doesn't create a work stoppage in the melt shop itself. It just requires some time on the part of the RSO or people that are doing the cleanup of that shipment and having that.

MR. CAMERON: Okay. Thanks, Ray. I think it just underscores the need to carefully explore these costs, because it may

look on the surface that there's a cost, but when you really get into it, it may not be.

What I'd like to do, at least start to do, before we take a break, is let's run -- let's go to Trish's question and let's run through these alternatives. And she used the word "unique" cost, but I think maybe we should say notable cost that anybody wants to tag on to these alternatives. And perhaps the best way to do it is just do it systematically. And continue current practice alternative up there. Anybody want to offer a -- any information on what they think is a notable economic cost associated with that? Okay. Phil.

MR. GIANUTSOS: Ray noted the increasing sensitivity of these gate monitors. Right now it's quite -- quite easy to release materials under the current practices, end up with a roll off material or a large truckload of that material and have it rejected. That is a real cost and it's increasing as more of these monitors get out there. The generators at that point are blending the material, shipping it in smaller loads, taking steps to get through the gate monitor. This material is, in fact, released under acceptable standards, it's just the gate monitors themselves do not have an alarm set point that's anything other than a fluctuation in background. That's -- that's really unacceptable and will get worse.

MR. CAMERON: Okay. Thank you, Phil. Acceptable dose levels. Brian has a comment on that.

MR. HEARTY: This is Brian Hearty. One of the things that I saw yesterday when we were trying to balance health impacts, and what is brought up in the issue paper in several places is that NRC currently has limits on air and liquid effluent releases, and those are set up based on 50 millirem each, adding up to the public dose limit of 100 millirem.

I guess what I see is when we see this there is -- this is

another dose, another type of effluent, another type of release that is going to start a public dose. So, when we're setting a dose level, I guess one of the things I was looking at is that going to be balanced with the 50 and 50 millirem for air and liquid so that we end up with still 100 total. And then if it comes to be cost beneficial to possibly reduce the air and gaseous levels where it would be more beneficial to do that than to maybe set lower levels for solid release, and if those can be balanced somehow in an analysis.

MR. CAMERON: That's an interesting point. Does anybody want to talk to that point, either from the NRC or from the -- our participants? Bill Kennedy, do you want to say something on that?

MR. KENNEDY: This is Bill Kennedy. Although the MPCs in the tables that are in 10 CFR 20 are calculated at 50, remember the practice is that level plus alara.

Also remember that for air there are separate regulations under EPA where you have to certify an operating plant at a much lower level than 50 millirem. Also remember that other regulations apply.

So, if you take all of that into account and the plus alara consideration, I think it's possible to set a clearance level in terms of a dose standard with a plus alara and not have the sum of the three types of effluents even approach the 100 millirem.

MR. CAMERON: And I see Debra McBaugh at least is agreeing with Bill. Since Bill made the last comment, why don't we -- anything on adopting the ANSI standard, any unique or notable economic costs associated with that?

Okay. How about restrictions limiting release of solid materials to certain authorized areas? Anybody have a comment, anything they think is notable in terms of an economic cost associated with that? Bill?

MR. KENNEDY: I don't say it quite in jest, but back to

number one, part of the cost of adopting the ANSI standard might be a cost savings to the government for having to develop a numerical standard. You know, you still have to go through a regulatory process, but you wouldn't have to apply costs for the development of the standard. So, it's kind of a negative cost. It might be a savings.

MR. CAMERON: I think that's a legitimate point to make. Paul Genoa.

MR. GENOA: Yeah, on number two. Again, this is just conceptual, but if you were to come up with a threshold for sorting safe material from material that needs to be controlled and then you were to postulate a series of restricted applications that would isolate this material from the general public but allow other alternatives than a low-level waste disposal site, you would have to set up a regulatory program for that. You have to do analysis. You may choose to license certain activities. Or you may just allow it to continue within existing licenses, like the GTS Duratech facility or others. But -- but it's possible that there might be some licensing and rule making activities in the future that would allow or set a stage to allow restricted release applications.

MR. CAMERON: Okay. Thank you, Paul. That's following along in the same vein of Bill Kennedy's comment.

And let's just go freeform, I guess, here on this alternatives and notable costs. Brian?

MR. HEARTY: This is just a quick comment on Bill. I know that we have alara still in the paddock. I don't think that that's been totally resolved that alara is part of, you know, what's going to end up in the dough standard.

MR. CAMERON: Okay. Thanks for reminding us of that. And we do need to -- we had a little bit of a discussion connected to Mark's point yesterday about sort of a self-generated alara concept, but we

still need to go back and address that specifically. Frank Cardile?

MR. CARDILE: I wonder if we could follow a little further with the restricted use cost. I wanted to ask a question of the, I guess, the industry. I guess the license industry and the steel industry. All the different industries that are out here. I think the point I was just making, how far would this licensing of perhaps scrap yard owners or steel manufacturers have to go to make a restricted use work? And what cost would that include?

MR. CAMERON: Okay. There's a question for you. Debra, do you have a comment on that?

MS. MCBAUGH: Just a feeling from looking at it from the State's perspective, the restrictive use is sort of an uncomfortable area for us because it really appears that we would be spending more time and money, our resources, having to track that, because I can't see that we would just let it go. And even if NRC was to license it, we're an agreement state, but even if -- I mean, some things are done under NRC that we don't have a lot of jurisdiction in, but I think we would be very concerned about what was happening if a restricted use happened. So, I think there would be a lot of money involved there for the states.

MR. CAMERON: So, it would be this continuous monitoring cost for people. We have some follow-ups on that? Okay. Ed, and then we'll go to Jim Turner.

MR. BAILEY: Back years ago we licensed a facility that had phosphogypsum to incorporate phosphogypsum into roadbeds, bridge abutments, pipeline bedding and those kinds of activities. And we did a dose assessment and all this other great stuff only to learn that we didn't really know how roads were built, we really didn't understand how pipeline bedding worked. And this stuff -- stuff kept appearing in public and school yards or parking lots and on and on and on. And we ultimately decided that that was really a stupid thing we had done

because we were eaten alive by complaints, by actually having to go out and see how the secondary user actually used this material, because you could buy it and do what you wanted to with it.

I also remember a case where Exxon had a light hydrocarbon plant. And for those of you who are not familiar with a -- with the oil and gas business, they did an analysis and found out that, hey, natural gas has some naturally occurring radioactive materials in it. And when they sold that to a plastic plant, the MSDS, the materials data whatever you call it sheet, had a cryptic note on it that this gas contained, among other things, a naturally occurring radioactive material. So, they were selling it to a place that used the plastic to make diapers. And you talk about one atom of radioactive material. The company that was making that did not want to use that natural gas from that plant which had that identified.

I think the labeling cost, too, could be quite extensive. Thorium coman gas lantern mantles. I think all of us realize that at least up until a point they contain thorium. If you look at one bought in California it says, "This product contains material known to cause cancer in humans." And that labeling goes on there regardless of what NRC regulations say about that being an exempt product.

So, I can see some states, some jurisdictions, coming up and making you label it whether you said you wanted it labeled or not. So, that could be additional cost.

MR. CAMERON: Okay. Jim, do you have a similar comment on that? We'll keep going with this one.

MR. TURNER: No, I just wanted to follow up on the lady's comments while we're here. We maintain, for certain purposes, traceability of out steel, and that's a rather expensive process. And all it does is as you go out if a building collapses or something and our steel is in it, we can trace it back and find out where it came

from, when it was made and so on and so forth. And what you're talking about, I think, is probably more expensive because now you're talking about tracing where it goes. And, you know, a bridge might be out there for 30 years. You have to have a program in effect that's going to track that bridge for 30 years. I don't know how you go about that. But I think there's probably a significant program development cost in there.

MR. CAMERON: Okay. As a -- in juxtaposition to the point that I think that Paul Genoa and Bill Kennedy have made, that an unrestricted release based on a standard that has basically been sent as a safe standards that material would no longer be considered to be called radioactive at all. Is that -- I just wanted to make sure that that's what you were saying, right Paul?

MR. GENOA: Yes.

MR. TURNER: Chip, I'd also like to respond.

MR. CAMERON: Go ahead, Ray.

MR. TURNER: If I understood your comment correctly, were you asking what would be the economic impact or how much would it cost to retrofit or to build facilities that would capture these emissions, how much would it cost to modify a mill? Was that your question?

MR. CAMERON: And are you talking to -- who are you talking to?

MR. TURNER: Trish.

MS. HOLAHAN: It was more are there specific considerations that we should take into account for certain alternatives, that we, for example, at what point -- for which alternatives might we need to take those into consideration.

MR. TURNER: In response to that comment, the general electric arc furnace steel mill in the U.S., we've got mills now that are being built today, most of them are on the order of about one and

half to maybe 2.2 -- maybe 2.4 million ton per year melting facilities. They're generating huge volumes of dust because -- simply because of the amount of steel that they are producing. They are not in a captive environment. It would be really economically infeasible to place that type operation, a captive environment such as you would have at GTS Duratech. You're talking about a much, much larger scale in the general steel industry today. I don't believe it would be economically feasible to do that.

MR. CAMERON: Okay. Thank you, Ray. How about -- I guess that we'll call this alternative here the "Mark shoes alternative" from yesterday. Anybody -- anybody want to say anything about costs associated with that? Including mark, do you want to offer anything on that beyond what you said yesterday? Mike Glesnick has the microphone if you want to make a comment. No? Okay. Paul, though, I guess. And Eric -- Eric, go ahead.

MR. GOLDIN: I'll make a quick comment. That alternative, one of the costs that would have to be considered is the fact that you would have vastly larger quantities of low-level waste, and the prospect of low-level waste facilities in this country does not look too good. So, the cost of storage or whatever could be pretty steep.

MR. CAMERON: Is this alternative the one that would really -- the notable implication of this is that there would be a lot and question mark of low-level waste that would have to be disposed of? I mean, what is that -- what is that amount of low-level waste if you adopted something like this that would -- that would be generated?

Let's go to Paul on that and then we're going to go to Rob Lull in the back. Paul?

MR. GENOA: Paul Genoa, NEI. I don't have a number for you, but I think, you know, that's written as if these are stagnant facilities and you walk into the facility, it's like walking into your

living room and your couch and your coffee table and your bookshelf. Because it's a nuclear facility, it's going to be low-level waste. And that's one way to look at it. And that would be a huge cost, and it would be hard to justify because they may or may not be -- have licensed material, and they certainly wouldn't, or in many cases, wouldn't have health risk. So, I'm not sure about your authority as well.

But beyond that, that's not really how these facilities work. You have materials moving in and out of these facilities constantly. And all of those materials. How could you say that the fixed materials have to stay, but the mobile materials don't? That would be disingenuous. So, then you're saying, "Well, anything that comes in has to stay in forever." The end result of that is, you know, you can't -- the technology goes away. You can't operate an industry in that fashion.

Also, you're disingenuous because you seem to be ignoring the people. You know, the people who go in there breathe the air, incorporate some minute amount of radioactivity into their bodies, have it on their skin. They can't leave either. You seem to just very easily ignore the people, you know, because it would be too hard to deal with. But you're saying, you know, they're radioactive waste, too. They've got to go be buried at Barnwell. I mean, that's what you're saying.

[Laughter.]

So, I mean, carried to extreme, it becomes an absurd approach.

MR. CAMERON: There's a bus that's going to be leaving for Barnwell outside if -- Dr. Lull.

MR. LULL: Yeah, I agree. I think that we need to rewrite that alternative. That alternative, as it stands, is really ridiculous. First of all, you would be at least surveying things to prove whether or

not they have any radioactivity on them. And things that are not radioactive would not need to be kept. I mean, that's -- it's crazy to do that.

The other thing that it doesn't take into account is when you take radioactive sources and move them into some other place, like industrial radiographers who are taking radioactive sources and radiating buildings for building reconstruction or remodeling. Are you going to make the whole building, now, a low-level waste disposal because it had radiation use there? As this is written, that's what it would stand. So, we need to rewrite this. As it's written it doesn't take into account the simple act of doing a survey to prove that nothing has -- no contamination has been placed on the material that's come in or been in an area where there's radioactive use going on. And the other thing is it doesn't take into account that you take radioactive sources into other places, and that you don't leave contamination behind, that you can measure that.

And so the measurement by survey ought to be included in this, and that would reduce the amount, even though -- even so, making everything that has any small trace amount of radioactive contamination on it going -- and forcing that to go and be defined as low-level waste, no matter how low the level, would be tremendously expensive and would create a real problem because, as you've heard, we are having major problems establishing low-level waste disposal capacity in this country. And the cost of disposal at what's available is very, very difficult. This would create a -- really major problems and major costs. So, I recommend that we reword that as an alternative.

MR. CAMERON: Okay. Thanks for that recommendation. And I think that let's -- let's have one or two more comments and then let's take a break and I think we'll come back and do implementation. There are other alternatives that you generated yesterday. Anybody have

anything on those or -- Eric, go ahead.

MR. GOLDIN: Just one last quick comment regarding this no release that -- of materials that have been in a radioactive material area. I know that the focus of the meeting has been on nuclear power plants, because that's a focus of a lot of the environmental activists, but there are lots of facilities. I work across the hall, on occasion, from a biomedical laboratory that uses unsealed carbon 14 and tritium labeled compounds, and everything in that lab, which is half the size of this room, would then be subject to that same restriction, which means glassware and all kinds of chemicals and all kinds of stuff. And it would basically stop biomedical and microbiological research.

MR. CAMERON: Okay. A final comment on this, Ray?

MR. TURNER: I think we could go on a brainstorm all afternoon, but I think there are huge implications here when we're talking about material that has been in the area, radioactive material not being able to leave that area. A new process that I've been working on for several years, for example, with a company right here in California, which we've now developed and are offering commercially, actually radiates scrap using neutron generators on a conveyor system so that we can tell the exact chemistry of that scrap before it goes into an electric arc furnace or any type of furnace or any other vehicle. We can look at manganese, chrome, nickel. We can look at carbon, I think. Things like that. So, we know the exact physical chemistry of that scrap heap before it's ever melted. That could no longer -- that type of technology could no longer exist.

And I would have really been ticked off last night if I couldn't have finished my beer that finishes that level that, by some Amerasian gauge, and tops it off at a certain level. If I couldn't drink that beer, I really would have been ticked off last night.

[Laughter.]

MR. CAMERON: I guess now we're getting to the bottom line, right? This is it.

Any final comment on some of these other alternatives? I think we've -- we've heard enough about the "Mark shoes alternative." Any -- anybody have anything to say? Okay. Craig from Envirocare.

MR. THORLEY: I was just going to say, based on what Paul said, maybe you could change the name of that from "Mark shoes alternative" to the "Hotel California option."

MR. CAMERON: Okay. Thank you. Thank you. All right. Okay. Well, let's -- let's take a break and come back at 10:45.

(Off the record from 10:30 to 11:00 o'clock a.m.)

MR. CAMERON: NRC is a fee recovery agency. What are the implications of the various alternatives for fee recovery in terms of assessing licensee costs? And I know that that's one that I haven't heard any discussion about from -- from the staff, and I would just like to see if we get any commentary on that from any of you out there.

And does someone from the NRC staff want to say anything about that? And I'm looking at Don. Don doesn't want to -- do you have anything to say on that fee recovery? But it is -- I mean, it is something that is a potential cost that should be considered. Anybody have anything on the fee recovery issue? I mean, you can -- you can imagine that under different alternatives there could be more costs that the NRC would have to recover because it would involve more regulatory time. Debra.

MS. MCBAUGH: Well, I would just have to ditto that. We are a fee recovery as well and we get absolutely no state funds for any of our programs. So, everything has to come from licensee fees, which is why restricted use is more of a problem for us, because we have no funds to pay for something that isn't directly related to a licensee.

MR. CAMERON: So, you'd have to figure out how you would

assess that sort of continuous monitoring.

Scott, am I in your way or do you have something to say? All right. Yes, Eric.

MR. GOLDIN: Yeah. Eric Goldin. This may be -- should have brought up as an alternative, but I suppose one of the options is for -- for material that is known to be very slightly contaminated and would not be released into the public domain, one of the options that I described as waste management yesterday is to apply for a 2002 exemption or the state equivalent. And in that case, again, there is no fee recovery process that I'm aware of for either the NRC in a non-agreement state, or the state agency, to do the work to make those exemptions occur.

MR. CAMERON: Okay. Thank you very much, Eric. Well, let's -- let's go to Tony for a presentation, for his presentation, how should control solid material be assured under various alternatives. And Barbara, are -- signing at me. What is going on?

BARBARA: I'm passing out two documents that -- one was referred to yesterday. And actually, maybe Tom would be willing to give a brief orientation to the health physics considerations. And it's an EPS waste information. Sort of a graph approach, I think. And Tom could tell you more about that.

MR. MADDEN: Yeah. I mentioned this yesterday. It's what we in NNR use for 2002 review -- 20.2000 reviews, the methodology or the overall approach. Several of you have expressed interest in the -- in this. I had it faxed to me and this is -- this is a copy of it. It doesn't really go into any detail as far as the methods that are used for the staff to analyze. It gives some examples of materials that have been -- that have been approved for disposal. It's not really an exemption to our regulations. It's an authorized path that's prescribed in part 20. An alternative means. And -- I'm sorry. I'm sorry. It is

not really an exemption, as was just characterized. It is an authorized method in part 20. And the other -- the other probably more detailed discussion of it as Bob Nelson referred yesterday to NUREG 1101. But I just wanted you to have this. Several have expressed interest. And so now you have it.

MR. CAMERON: And if you do have any questions on it, get together with Tom during one of the breaks, too. Thanks, Tom. And Thanks, Barbara. And Tony, if you're ready to go, why don't you take it away?

MR. HUFFORT: Thank you, Chip. The title of this is, "How should controls be assured under various alternatives?" We've already discussed implementation and restrictions.

Sure. Not a very sensitive mic.

We've already discussed implementation and restricted use to a certain extent already. During this session maybe we can focus on how these concepts would be contained in a draft regulatory guide if we were to develop a draft regulation.

And before we discuss what future controls should be considered, I'd like to review what controls are in place right now during -- with our existing regulations.

Our existing regulations require licensees to make surveys of solid materials to evaluate the potential radiological hazard, as we discussed yesterday. And as part of the licensees rad safety program they develop procedures for controlling solid materials, which includes radiation monitoring, to evaluate any materials before they are released. And presently there are some issues related to the existing survey programs. Not a licensees use the same survey instruments and procedures to monitor solid materials. This can lead to variations in detection sensitivities in different equipment being used to measure the radioactivity present. This, in turn, can lead to differing levels of

control, which in turn results in non-uniform levels of protection.

Another issue is that existing guidance on conducting surveys is really geared towards surface contamination. It is not geared toward volumetric releases. As Phil from GTS Duratech had pointed out earlier today, some equipment may have small amounts of radioactivity present in cracks or holes of the equipment, and it's very difficult to do a surface survey and assess where or how much that material is in the internal parts of this. If we don't have a volumetric release standard, it is very difficult to make that type of assessment.

There are also some physical limitations for measuring volumetric contamination. Because it is simply very difficult to measure certain types of radioactivity that's contained in a solid object, especially when using the typical hand held survey instruments that are present at most licensed facilities.

The overall consideration here in controlling these materials is how to detect or measure radioactivity in the material itself and then compare it to a predetermined level, either a dose level or a concentration level.

And it's likely -- can I have the next slide, Giorgio? It's likely that this survey method that will be chosen for controlling solid materials is going to be dependant on the alternative that we eventually choose.

Currently, we're considering a range of alternatives, and this requires the NRC staff to technically evaluate a variety of survey approaches. Because the alternative that's chosen in fact determines the survey method that's used it follows that if we have a dose criterion that's very low or zero above background, we might have to consider using very sensitive survey instruments and methods. And when we're shifting to these types of newer survey methods or equipment,

there are associated costs and practicalities when we decide to use that.

Certainly, as we discussed this morning, monitoring costs might be increased, and the staff is planning to evaluate that.

Another consideration in controlling solid materials is restricting a release to only certain authorized uses. For example, the future use of the material could be restricted to only industrial purposes, as we've already discussed, where the potential for public exposure would be perhaps smaller.

For a restricted use I'd like to discuss what are some of the controls that are needed and some of the options that are currently on the table. Should we consider licensing the first user and the processor of these materials? For example, we've already talked about these materials being used for bridge supports, railroad tracks, shielding blocks, and I've heard, prior to this session, also the discussion of radioactive material being contained in tank treads for military purposes.

If we decide to use restricted use, what kind of process should we have for public review and involvement? As Andy Wallo had stated previously from the DOE, they have public interest groups that they're aware of and they interface with at their sites. Should this be appropriate for us? And as far as the length of the time for restricted solid materials, what is the appropriate length of time? Should it be tied to the radioactive half-life of the material? Some radioactive materials have relatively short half-lives. They decay quickly. Should it be based on the radioactive half-life? Should there be a cut-off? Or should it be tied to the lifetime of the equipment? If you build a bridge and the bridge lasts 50 years, let's say, during the first use would we be considering some types of controls over that bridge? Would we have NRC inspectors go out to take a look at it? Should there be

labels on this bridge support? Should there be a stamping of some type on the metal that's used in the bridge support?

And I'd like to open it up, just open it up, Chip. What other options should be considered that we already have not discussed?

MR. CAMERON: Okay. Thanks, Tony. Tony talked about surveys and he talked about restricted use and noted that there has already been some discussion on this. Besides those two topics I think that there were some implementations brought up yesterday that we can pull back in at the end. But Tony, does it make sense to sort of let's focus on survey, the survey issue first?

MR. HUFFORT: Especially if we could think about how surveys would be incorporated into a new draft rad guide if one were developed, that might be helpful.

MR. CAMERON: Okay. That's a good -- good question. Let's talk on the survey issue and what sort of guidance would be needed. Who wants to start us off on that? I know there were some comments yesterday that dealt with this issue of surveys and detectability.

MR. HUFFORT: Yeah. One of the questions that I had from the discussion this morning was the issue of NRC having their licensees conduct surveys prior to it being released, but it also appears that some of the scrap metal facilities have very sensitive detectors already in place. If we have these very sensitive instruments out there already, is that more or less setting a standard already for us, a de facto standard for measurability? And what would be the correlation between the surveys at a licensee's facilities and that of a scrap metal dealer, for example? Would there be inconsistencies?

MR. CAMERON: Good -- good question. And we'll start with Ray.

MR. TURNER: Ray Turner. Is this on?

There have been significant changes just over the last five

or six years -- just over the last three or four years -- in the sensitivity of the systems that are there today. And some of the tests that my company has been involved in -- in conducting -- show that in the very short distance inside a truck, as I discussed, I think I discussed earlier this morning, you still can't see a gauge. I know we're not talking about gauges here, but you still can't see a gauge when it's more than 21 inches or 22 inches inside a truck and is shielded by a scrap that's 55 pounds a cubic foot or more. Most of the scrap that's going out by rail, for example, is going to run 70 or 80 pounds a cubic foot by the time they pack it down into the rail cart and maximize on the freight advantage.

So, I think -- I'm confident, in fact, I'm sure that the application of the systems, the sensitivity of the systems is not going to get any less, it's going to get greater than it is today. So, implying that what we have today is being extremely sensitive be the standard, we're talking about material that's going to be released over 30 or 40 years, and I think we'd have a standard that would be very short lived.

MR. CAMERON: If you based that standard on current technology detectability.

Debra, do you -- do you want to say something? All right.

MS. MCBAUGH: I guess I just want to clarify whether in this -- I'm reading back through it again. Whether we're really only talking about metals and scrap. I mean, we talk about several other materials in the document, but it seems to me we've been focussed on recycle and reuse of metals only. And I have other concerns, but I don't know if those are something we really want to deal with, but we have the issues of just normal trash, how it gets surveyed. This happens at Hanford as well as licensees. But how that normal trash gets surveyed and then released to, say, a landfill. And that seems to me that this is

something that we would use for that as guidance. But I'm not sure if this is the place to talk about that.

MR. HUFFORT: I -- I think it is. Is this on? I think it is because one of the things we're trying to assess in this process is what is the scope of the rule. We're currently looking at, as we discussed yesterday, metals, concrete and soils, and it was brought up yesterday that we need something possibly more encompassing. At least that's one of the comments I heard, that we need to look at everything, including trash. So, although I'd agree with you that the discussion, especially today, is kind of focussed on metals, we need to look beyond that because the comments that we're hearing, at least today, are that we -- we need possibly a broader scope than what we thought of.

So, certainly, from our standpoint, at least now, we're looking at soils and concrete in addition to metals. But if we're going to broaden to other materials, then I think your point -- your point is well taken in any regard.

MS. MCBAUGH: Then -- because there are processes that have been put into place for doing trash. I know we have methods that have been set into place. What kind of surveys and how frequently you survey and equipment to use. And it is also being used at laundries for surveying out the protective clothing once they've washed it. So, there are methods out there that we could include.

MR. KENNEDY: Yes. Bill Kennedy. Obviously, during the development of this ANSI standard we have looked at a lot of implementation issues, and the Health Physics Society and ANSI Committee N13 are currently committed to the development of a second standard that would deal with implementation issues, and it would be far beyond metal recycle. As we know, there are a lot of things impacted by this potential rule making.

If you think in parallel to how surveys are conducted, I'll

hit a few highpoints. We talked yesterday briefly about process knowledge. If currently licensees know something or don't have a reason to suspect it's radioactive, a lot of times they will either not survey or minimize the survey requirements on those items. And that is a -- a cost effective way of screening when you would do a survey.

There are a lot of issues dealing with instrumentation selection which have to be tied to any numerical standard that you're looking at for the matrix, the geometry, the type of material involved. We heard the examples about the plastic simulator detectors at scrap metal yards, but you can multiply that by every different geometry or type of material that you would have. In other words, very carefully selected, specific procedures.

You touched briefly on surface versus volumetric measurements, and how the size or shape of a material might be involved, the density of the material and what it is you need to again monitor against.

Other options are like concentration averaging. Even using reg guide 186 there are -- it is recognized that materials may contain hot spots, and where the average concentration of the material, of the residual radioactive material, is less than the hot spot. There needs to be some consideration about what is a hot spot and how does it influence a decision making process.

You know, we look at things like summing fractions because it's likely not cost effective to try to identify every radionuclide that's there, but to use known isotopic ratios and to be able to use, perhaps, a sum of fractions (phonetic) approach at deriving the total activity associated with an item or material.

We looked at, again, the debate about removable contamination levels versus fixed, but I think the standard has come down on a single standard that is the combination of both. However,

there may be situations where measuring the removable amount may serve as a surrogate for determining the total activity present on an item.

Variability of background we talked about. If indeed you set a standard that is either not distinguishable above background or in the lower dose ranges less than 10 millirem a year, fluctuations in background become very important, and statistical measures would have to be put in place to determine when a reading is significant or not, since radiation is a random event. You would have fluctuations over time.

How to get representative samples. And in a QA sphere you might look at testing the null hypothesis as a question here. And, you know, there may be direct or indirect sampling or scanning measures that would be appropriate, depending on the situation encountered.

I think what's happened in the industry is often times although attempts are given to provide guidance, it's the challenge to licensees to develop specific monitoring, trainings, record keeping programs, quality assurance programs, in a manner that convinces the NRC that they have a credible quality program for operating their facility. And I think release of materials falls under that blanket as well.

MR. CAMERON: Thanks a lot, Bill, and thanks for bringing that issue from the paddock and that Mark raised yesterday about when do you not have to do a -- a survey. Okay. Bob Meck.

MR. MECK: One of the things that we've touched on is the reuse of equipment, and I think most people would think that tearing down equipment given certain operational knowledge doesn't make a lot of sense. And so past history or process knowledge seems to be an important factor, as well as what the equipment is going to be used for, you know, say a pompers (phonetic), and so on.

And so -- and Bill also touched on this, the question to air, I think, a bit, is how can the NRC, you know, incorporate common sense with the requirements for surveys in terms of process knowledge

for equipment and so on? Thank you. Bob Meck.

MR. CAMERON: Okay. Thanks, Bob, for putting that out. Any comments? Let's go to Andy, and then we'll got o Ray Turner. Andy Wallo.

MR. WALLO: Andy Wallo, DOE. I guess I wanted to comment a little bit as we're trying to resolve the difference between the way we would survey for clearance versus somebody receiving this material either at a mill or at a waste dump, and the -- the gamma devices they have there.

The problem is the difference, particularly at the steel mills, is they're trying to find sources that might cause problems for them, and so they -- they have this self-shielding problem. They have to look at alternatives in how to deal with that. And frankly, if you look at the physics, ultimately, the only way they're going to solve that problem is by reducing the self-shielding. You're not going to get the instruments any better to detect something that's buried in three feet of steel. That's what we use to shield the radioactivity, so if you're going to try to find a source, you have to remove the shield.

Now, we do a lot of -- of release surveys and have a lot of automated systems at the DOE facilities. Some of the green is clean programs where they survey everything that goes out to a landfill to make sure that it's not contaminated involved conveyor belts and some of the large scintillators that you all use at the plants. And we do find problems with those in terms of unusual things getting into regular garbage. We closed down a system because somebody cleaned their boots that was uncontaminated mud that got into a regular trash system that shut down the system because the radioactivity in the mud was higher than we'd allow to go to our trash dumps, based on the way the alarm system was set up.

And that's the same thing that's going to happen here. When

we do a survey to release something, we're releasing with hand held, we're checking all of the material. The way the systems are currently set up at the mills is they're looking for a differential. They look for any alarm that sees a little change in activity, rather than a total volume of activity. And recounting that on, for instance, DOE non-reactor scrap metal, probably 95 percent of our carbon steel is uranium related material. Of that 95 percent of the scrap that we're dealing with, I would say 80 percent is clean. There is nothing can be detected on it. Of the 20 percent that you might find something on, most of it is spotty. And the spotty stuff is easily removed down to current release levels, and would be easily removed down to what I imagine might be proposed as a result of a standard. But the result is that when you remove that you still have some residual spotty contamination.

When you put it through these detectors at the mill, that spot, if it's on the surface right next to the scintillator, is a differential inactivity. So, when it -- the truck scans through, it measures a very low background, it gets a very low activity spot, but it is a differential. And that difference alarms.

And the problem between how we survey for clearance and how you survey to ensure a source isn't coming into a facility, is something that's not going to be easy to resolve, and it's something that needs to be thought about. And we see this, as I say, as we have automated systems versus hand held surveys that we get these kind of alarms.

I'm not sure -- the -- the other thing is I'm kind of surprised that the steel mills aren't seeing more other materials that we've said several times here that over the past 50 years there's radioactivity getting into the steel. Well, actually, if we look at the amount of material that we have in our stream now, Ray mentioned that it's a small fraction of what's recycled every year. But what we

released over the past 50 years is even a smaller fraction of what's in the recycle system now.

But as I noted, most of our material has uranium on it. The surveys I've done at phosphate mills, the surveys I've done at vanadium mills, at non-uranium mills, copper ore mills, iron ore mills, have the same levels of uranium that we're talking about here, and higher, sometimes, than what we would release. It surprises me that if -- if we have a concern with the release standards we're proposing here, why some of the recycled steel from phosphate industries, from the copper industries, from the ferrous ore industries, why they aren't alarming at the mills as well. And I think it's something that we ought to look into.

Again, we talked about the fact that this is not just 50 years of nuclear industry radioactivity, this is 200 years of industry. These industries have been around. They concentrate materials and they concentrate uranium and radium which, by and large, are what's in the fuel cycle materials that we're surveying out.

MR. CAMERON: Thanks, Andy. And I guess on that I would see if Tony and Bob have anything to say on that before we go to Ray. But on your last point do you think that the -- the NRC's presentation on this issue, whatever the ultimate outcome is, do you think there should be more attention paid to giving, perhaps, a broader overall perspective to the public on the nature of this problem by talking about some of the things that you were mentioning?

MR. WALLO: I think that's probably of some benefit, though I'm not sure the folks that are interested in not allowing release are that concern with that fraction. But I think it's for the general public probably important. But what might be more important is to recognize that these industries have to be aware that there may be some fallout from these positions on the nuclear industry as well.

If I take a chance to comment on a federal guidance that EPA attempted to issue back in '97, I guess, or was it '96? The federal guidance, John. John can correct me. I think it was December of '96. Basically adopting 100 millirem standard across the board. The comments didn't come in obviously from the nuclear industry opposing it. The people that commented were the oil industry, the phosphate industries, many of the normal ore processing industries that said this 100 millirem standard is obscene, it will cost us billions of dollars to implement and you can't do it.

Now, if we take that another step further and somebody looks that's saying, "Well, gee, if you're controlling radioactivity from the nuclear industry at these levels, are you going to have fallout and force us to control it in the t-norm industries as well?" That's something that -- that I think is maybe one of the costs or benefits you have to consider, is their fallout from a standard.

MR. CAMERON: That's -- and you're using fallout in terms of something bad that results? Okay. So that people don't think there's actually radiation that comes from a standard. But -- okay, may be good, not bad.

And just to -- we sort of touched on the issue that David brought up about an implementation issue, this whole idea of what sort of educational efforts go with a standard.

Before we go to -- to Ray, Bob or Tony, do you have anything to say with regard to what -- the points Andy raised?

MR. HUFFORT: Other than they're all valid points, I thought.

MR. CAMERON: Okay. Thank you. Ray.

MR. TURNER: Ray Turner again. In response to Andy's comment and also to the lady over here, probably there is enough

sweeping data and information and discussion that could tale place in each area, be it soles or concrete or recyclable scrap metals, probably enough to justify separate meetings for each one of those. We've been talking primarily about recycled scrap metals for the most part in this whole meeting, and it's taken up the whole meeting.

But in response to Andy's comment, a couple of things. We do see, every day, other elements coming in besides gauges and besides norm pipe. In fact, the concrete we're talking about will set off the radiation detectors when it comes in. If you send a shipment of concrete -- not a shipment, but just a few pieces of concrete or a football sized piece of concrete let up against the side of a rail car, that will set one of these detectors off.

In addition, if the rail car or the truck trailer has been welded with thoriated welding rods, that will set them off as well. So, a lot of times trucks -- they won't allow certain trucks to come into steel mills because they've used nickel thorium welding rods for the welds, and that sets off the detectors. Bauxite ore from aluminum plants. Zirconium sand. The white sand on the beaches down in Florida. Just that sand alone will set them off when it comes through. Phosphate. Thorium.

Dirt build-up in the bottom of a rail car. It gets six or eight inches deep in the bottom of rail cars. Our company also has the largest private fleet of gondola cars in the country, and we're constantly having to clean out the bottom of those cars because just the dirt build-up in the bottom of the cars will set off the detectors. And in addition to that, the air filters on the trucks pick up enough thorium and stuff that they'll set off the detectors. So, we are seeing a lot of other things come through.

MR. CAMERON: I thank you. Thank you, Ray. Paul.

MR. GENOA: Yeah. Paul Genoa, NEI. This whole discussion

is really the crux of the matter, the difficulty. And I think you asked a question -- you asked a question that I wanted to address, which is is there something about how the NRC should communicate what they're trying to accomplish here that will influence the outcome, and I think the answer is yes, absolutely. And I think it's a touchy thing. It's difficult. But I think you really need to think about how this whole thing is presented.

From my perspective, you're trying to solve a problem. And the problem you're trying to solve is how -- recognizing that materials flow in and out of nuclear facilities every day, and recognizing that there are all of these natural radioactive materials in the environment and all of these detection sensitivity issues, how do you set a level that assures the public that you are safely controlling those activities so they won't be harmed. And your technical dilemma is how do I set a level. You seem to have packaged this as how much radiation is okay to go out. That's not how you need to package this. There is no level that the public thinks is okay to go out. It's how strong controls do I impose to ensure that stuff doesn't get out, recognizing the technical limitations.

So, you're on the backward side of this whole -- the whole issue, and I think it's scaring people for a lot of reasons. And I don't know how to help you. I'm trying to think of it because it --

MR. CAMERON: Paul, even -- you know, even that is helpful. And let's -- let's explore that issue. David.

MR. BELK: Yeah, I just wanted to add that we're not just talking about, quote, "nuclear facilities." We're talking about universities, high tech areas, biotech. So, don't just focus on that. And I think that term, although I understood what you -- what you meant -- needs to be very carefully handled. It gets back to this whole thing about how you present -- present these issues, because they're much

broader scope than metals, sand, that kind of stuff. It's much, much broader scope.

MR. CAMERON: Okay. Thank you, David. Frank, do you want to ask a question?

MR. CARDILE: I just wanted to go back to the question or the points that you were raising at Ray. If NRC proceeded and set a standard like, say for example, one millirem as the -- as the dose standard that we had in the regulation, and the licensee surveyed all the material that he might have at a particular time and then put the material in a truck, as far as the NRC is concerned, at least for that licensee, the process is over. I mean, the material has been certified, surveyed to a level that was safe according to the regulation. But as you point out, a number of different things will set off alarms.

So, I'm not -- I don't know what question I'm asking, but it seems like we've got a -- a dichotomy or a disconnect where NRC may be setting a standard for its licensees to survey at to demonstrate, you know, for sure that the standard has been met, and yet other factors are going on at your facility, your steel facilities, setting off alarms or -- or that would have an effect on whatever standard we have.

I'm not sure what question I'm asking, but it seems like we're trying to proceed to set a standard for our licensees, I think, as Tony mentioned, to survey that material, and yet, when it gets to your facilities, all kinds of other things are going on in other radioactive materials, like norm from the oil and gas industry are perhaps coming in, setting off alarms. And perhaps a truckload comes in from a nuclear power plant that sets off alarm for no reason related to the material from the facility. But I'm just curious how you and, I guess, how Paul sees that kind of situation.

MR. TURNER: Probably the right term again -- probably with the exception of the refractories that line the vessels inside the steel

mills, all these other items are being rejected when they set off the detectors. They don't just go in the mill and stay. If it rings the bell, it's going to go back out. It's not something that's going to stay there.

Now, the difficulty that I see in working with the concrete issue, for example, is if the NRC says, "Okay. We've cleaned it to a certain level, now, and it's okay." It's going to start off a detector -- I don't know if I care, but how do I know if it's the licensable NRC material that hadn't been cleaned out low enough, or how do I know where to draw the line when it's the natural radioactivity setting off that detector in the area of concrete? And that's why I said earlier there's a lot of issues here that could spawn subsequent meetings or meetings within themselves just to discuss concrete. I don't know how you address that problem or that issue.

If I'm running a concrete plant and you send me a shipment and say, "Well, this is clean. It meets all the release standards." It's going to -- it's going to ring my bell, how do I know what I've got?

MR. CAMERON: Jim, do you want to tie on to that?

MR. TURNER: I think so. Yeah, I see -- for the general public and so forth, I think the way you're talking about controlling the material may be all right. But from a paranoid recycler, I guess it would be, that's been bit, I think that this also goes back to the cost. There might be a cost in providing an assurance to the steel mill that -- that this material has been controlled from the time you surveyed it out until it gets to the mill, until it gets to the furnace. And I think you would want that from your standpoint as well, because although you surveyed it and certified that it's empty, what if another load of scrap got in with the source and in that same heap. Now, you're going to say it wasn't yours, but the mill manager is going to say something

different.

MR. CAMERON: That's an important implementation problem. Paul, do you want to comment on that or --

MR. GENOA: Well, I did. I guess -- I mean, I see two different problems. If -- if you're setting levels that are as low as reasonably achievable, they're not going to be setting off your detectors that you're setting up any more frequently than natural background materials are. And I guess I don't understand, Ray, when you set the detector off, I guess you're just rejecting the load and sending it away. You're not actually going in and trying to find the source that may be in there, because you're trying to solve the problem. You're trying to find orphan sources. You're not trying to find radiation, you're trying to find orphan sources that could damage your facility. That's sort of a different problem.

MR. TURNER: We're talking not just about orphan discreet sources but we're also talking about contaminated metals like steel that may be contaminated with cobalt, for example, that can also set off the detector.

In response to your first statement, in most mills or in many mills they do call some body in or they call the state or they have their RS will go out and sort through the shipment and sort through the load and determine what is setting off the detector and remove that one component.

Then the requirement is that the responsibility they caused to the disposal of that component goes back to the shipper of that shipment of scrap or that load of scrap. Along with that goes a cost that average anywhere from about $250 to $450 per truckload of material for the crane time, for the personnel time that it takes to do that.

But in some cases they are being sorted out. In other cases, where mills have had one or two contaminating events and have

spent $12 or $15 million and have been shut down for three weeks, I can guarantee you that they're not even going to sort through it. They don't want it on the property. They're going to send it out and let it be dealt with at point B, which may be the scrap recycler the ship had begin with, or it may be another location that it will be decontaminated.

MR. MECK: Ray -- Ray, are you saying that the properly cleared material has -- that you've had problems with material that's been properly cleared, shipped to your facility and set off an alarm and you had to do something with it, or are you talking about improperly cleared material that's gotten into a shipment and you've had to find it and send it back to waste, or is it -- is it both?

MR. TURNER: I'm talking about any material that comes in and sets off the alarm in the mill. You cannot assume that you do not have a nuclear device or a discrete cesium or a cobalt source buried in that shipment. You have to verify that, okay, yeah, this is -- nickel, for example. Thorium nickel.

MR. MECK: Let's -- let's exclude the source question here. Are there a large number of occurrences where you've received contaminated steel, not from a source but just contaminated steel that has resulted from an improperly cleared supplier?

MR. TURNER: Yes, there have been. There's one being cleaned up right now in Lexington, Kentucky. There have been several places. One in Ohio that had to be cleaned up.

MR. MECK: It's just not inadvertent sources, that it is in fact material that's been improperly cleared by a licensed facility that has come into your way, come into your feed stream?

MR. TURNER: No, not by a licensed facility, but by somebody that held a licensed device at some point in time and let that device get out of hand somewhere, and it was erroneously melted into a heat of

steel and contaminated heat steel.

MR. MECK: Okay. I'm just trying to separate the source problem from other contaminated material. I'm trying to get an idea of the significance of one versus the other.

MR. CAMERON: Okay. Let 's -- Jim, do you have something to say on -- to try to help Bob with that clarification? And we have Scott and I think Paul. But let's make sure that Bob has the answer.

MR. MECK: We have two issues, here. We have a separate issue of improperly controlled sources, and that's an issue we're trying to handle separately from the clearance effort. Where we're looking at clearance is trying to -- in my mind, anyway, is determining whether we have a problem with material that's being released that shouldn't have been released in the first place, aside from the source problem.

MR. CAMERON: Let's focus on that second aspect that Bob brought up. So, if we could have Jim say something about that, and Scott, I don't know if you can -- and Paul, you wanted to address that issue also? Do you have some information on that? And perhaps Ray and Ed. Let's address that. Go ahead, Jim.

MR. TURNER: That isn't what I was going to address.

MR. CAMERON: Well, give the mic to Ed Bailey for a second.

MR. BAILEY: The problem, as I see it, is -- and we've had both gauges detected and also just contaminated material such as -- as wall fill (phonetic) piping, and then in one case a rail car that was made with contaminated steel, setting off alarms.

The problem is that when that appears at that steel mill, they don't know the difference. And so what it means is -- and we've been involved in doing this -- is you literally take each piece of material off and you survey each piece of material. And if you're real unlucky you get down to where the car is empty and there's dirt or -- it's been used to hall fertilizer, and the fertilizer that's accumulated

in the bottom of the facility or the car is actually what has set the alarm off.

There is one agreement state located very close to us that has a policy of not going out. They just turn the car around. I mean, they tell the mill send it -- send it back. They don't go out and survey it. The mill doesn't have anybody come in and survey it.

The Conference of Radiation Control Program Directors has a -- authority from USDOT to sort of exempt the shipments from all of the normal radiation shipments. Every time they ship one of those back the cost from this state is about $5,000 for that return trip just right up front. That shipment, one of them came back to Sacramento, surveyed out, loaded onto another car, the same waste went right back. So, there's about $10,000 extra cost on that one shipment which didn't contain a gauge, and it didn't contain contaminated material.

MR. CAMERON: John, do you have something to add to that?

MR. KARNAK: I think the thing to keep in mind -- John Karnak -- is that we all, most folks here are technically trained and we no statistics and we no probability and we no uncertainty.

Bear in mind that any system -- and I think this is what Ray Turner was coming to -- any system has the possibility of failure. And if that alarm goes off at Ray's or at a scrap yard, they don't know and they don't care whether there's a source in there, whether there's dirt at the bottom of the car or something else in many cases, there is a problem and there's a problem that's going to cost them time and money at this point.

And that's, you know, you can't separate the source. It's true, there may not be a source in there, but you can't separate it. It doesn't make a difference. It doesn't appear that way to the guy that's trying to solve his problem because now he's got a load of stuff there that he can't do something with. And, you know, what -- nobody knows

whether the guy forgot to put the batteries or turn on the alarm or kick the switch on the plastic scintillation detectors as they went through the scrap yard or whatever. Something may have happened, and there's a dozen or two dozen or 500 things that could have happened. They don't know and they don't care.

MR. TURNER: I understand that the end result is the same, what I'm trying to determine is what's the source of the problem.

MR. HUFFORT: Can I offer a suggestion? An observation?

MR. CAMERON: All right. Go ahead, Tony.

MR. HUFFORT: I think one of the sources of the problem is identification or signature of the radionuclides. Much of the equipment -- and please help me out here, Ray -- is that they're going by gross counts, that it's simply a gross count rate that they're seeing at background when the truck comes into the detector area, as you mentioned before, it drops down and then if there's an increase in the gross counts, they say there's radioactive material here. They don't say what it is. They don't say is it natural, is it from the oil and gas industry, is it from a nuclear power plant, is it a source that is shielded that has been unfortunately released improperly. We don't have a signature on this material.

Also, Ray, you mentioned before that there are new studies that are going to be performed and that the future of these material, these detectors, are evolving. What I'd like to throw out here is would signature capability be helpful to identify the material itself? For example, coming from a nuclear facility, if you have a certain number of radionuclides that that facility owned, possessed or used, and then it was released and surveyed, it would only have those materials in that load. If you had the ability at the scrap monitoring facility to determine what radionuclide was present, you could say yes, this is naturally occurring soil, this is fertilizer, but this over here is from

a nuclear power plant. Would that be helpful?

MR. CAMERON: Okay. Thanks for putting that on. And let's get a response from Ray and Paul -- we'll go to Paul next, and Scott needs to say something over here.

MR. TURNER: Ray Turner. In some cases it would be helpful, it would be probably more helpful to the states that have to spend $5,000 per response. I don't know why it would be that much. I think you're overpaid. Oh, the cost of the freight. Oh, I apologize.

MR. CAMERON: Still wants to --

MR. TURNER: In terms of a signature, you're talking about something like a gammaspec that would identify the radionuclide that's inside. In some cases it would be useful in the event it was, say, thorium or radium, naturally occurring norm material -- norm material. It would help to identify what you've got and a little bit more about what to look for. It doesn't mean the steal mill is going to accept it. They probably won't. But it's my understanding that a portion or a large portion or some portion of the material that we're talking about releasing here is cesium and is cobalt, and those are the main contaminators of steel mills, and they're not going to let those pass. If they see cesium on the signature or cobalt, it's not going to pass. In some cases it would, but not cesium and cobalt.

MR. CAMERON: Paul Genoa.

MR. GENOA: Well, I was trying -- Paul Genoa, NEI. I was trying to do the same thing that Bob was trying to do, separate the two issues. And I guess the linkage is that, you know, my approach would be that if you set these levels low enough that it doesn't matter, it doesn't effect your issue. The only way it could, I guess, is that it perhaps raises this background and makes your job of finding a source, which is the problem, harder. And so I guess there is an impact there, potentially. But that's where I was trying to separate out.

If your clearance levels are set low enough, there should be no effect upon your actions or activities at all, because this has been going on for 30 years or 50 years, and you've already, you know, you're already dealing with it. There shouldn't be any net change in material coming out to you if this thing is done right, in my opinion anyway.

MR. CAMERON: Okay. Thank you. Scott.

MR. PETERSON: I wanted to -- Scott Peterson from NEI. I wanted to digress a little bit back to the communications issue and really second David's point a couple minutes ago that I think it is important in how we discuss this issue to talk about the large community of industry, education, medical uses that this rule potentially could benefit.

And, you know, we've heard from the recycling committee on the impact on the steel mills when you potentially recycle this material. But I think it would be beneficial to, at some point in these meetings, to hear from folks like Dave or from Bob who represent biotech medicine, university research, that community on what this would mean to their programs going forward, whether it's clearance of this material to disposal facilities and the potential impact it would have on their storage issues, particularly with the lack of low-level waste disposal facilities.

MR. CAMERON: Good. And we'll try to integrate that into the discussion that we've been calling "Don shoes," because I think it fits in with some of the questions that Don is going to pose to you right after we come back from lunch for our final discussion. Jaz.

MR. DEVGUN: Jaz Devgun. I have a quick suggestion. I think as we are seeing so far, the discussion has, at least today, focussed on the recycled metals. And I'm a little bit disturbed about that because I think in planning for the future meetings, perhaps you could some kind of -- have some kind of allocation to other materials,

too. Because they are of great concern to the industry. And as I think Debra pointed out and some other. Not to -- not to discourage discussion from one issue which is really important -- recyclable material and metals is very important -- but to be able to also talk about concrete and other materials, as we kind of mentioned yesterday. And -- and because there are significant issues there also.

I -- metal, of course it's important because it can -- it has no barriers. It can go in from household products to anywhere else. But for concrete, for example, I may have a limited scenario where I just simply want to use these large amounts of concrete cleared for a local landfill or quarry fill or something of that nature. And when Bob Meck drives his -- the standard from those bear standard could be the same, whether it's one millirem per year or anything else. But by the time we drive it to the guideline value in terms of the materials, whether it's sulphurous based or volumetric based, it's going to be different, for metals different, for concrete it's going to be different and how we apply it. I think we need to talk about that.

And this is a suggestion for you that as we -- the discussion in terms of threads is really excellent because there's a continuity to it, but some kind of mechanism to switch to other materials. Thank you.

MR. CAMERON: Okay. Thanks for that suggestion, Jaz. That will -- we'll try to incorporate that into future agenda plannings, to not just exclusively talk about metals but to also deal with concrete.

Let's take two more comments here and then get Bob Meck and also Craig and Bill up so that we can break for lunch and come back.

Let's -- let's take Jim right now and then we'll go to Mark.

MR. TURNER: This will be quick. I just want to clarify my earlier point about there maybe being a gap in the control between the time the scrap was released from the facility to the time that it

reached the steel mill.

The problem wouldn't be so much in setting off the alarm, because we never melt a source that sets off the alarm, it's the ones that -- so, assuming that your material got through, assuming there was a source put in it or assuming that some other material got through with a source in it and they wound up in the same melt, that's a -- that's where I see we need to have some type of control, other than release maybe, between the time that it's released from the facility or the time you're talking about releasing it from the licensed facility to the time it reaches the recycle facility, whatever the recycle facility is.

MR. CAMERON: Is that clear to Bob and Tony?

MR. HUFFORT: No, it's not clear to me. I'm not -- I don't understand why, if a licensee surveyed their material properly and properly cleared the material, what additional control would be required on that material before it came to your facility.

Now, the scenario I see is that after that licensee's material is released it might get mixed with a broker or somebody with some other material that was no properly cleared, but then the problem stems back to the individual, the single individual who released the material, not the licensee who did it right, the licensee who did it wrong. But it's still the control at the release point that I see as critical. If it's released properly, it's released properly. There shouldn't, in my mind, have to be anything else that happens downstream.

MR. TURNER: How does he know that it was released properly?

MR. HUFFORT: I guess -- I -- I don't know. I can't answer the question other than the fact that the licensee has done the job right. Paul?

MR. GENOA: Well, I guess that I'm trying to get back to that point because things are released today and they come to you, and they don't give you a problem unless they incorporate a source, and

that's something that is outside this discussion. Now, the only linkage I can see is if somehow the material being cleared somehow increases the background around your detector and limits your sensitivity to detect the source, which is the problem. But if the levels are right, you don't care whether this stuff comes to you.

MR. CAMERON: Can I make a suggestion here? Let's -- Debra may be able to shed some light on this, but perhaps if you could do a little caucus during lunch and try to square this away and maybe give us a little report about whether it's been squared away or whatever so that -- do this sort of offline and we'll come back with it.

So, we can -- we'll get Debra on and then we'll finish off with Mark, who I think has another point to make. Debra.

MS. MCBAUGH: Well, we've had examples of licensees that have done the proper procedure and have surveyed, and still you can have something that shows up. And I think it's because we can't survey 100 percent of anything. And when we set up a procedure that is a free release procedure, it says, "This is how many surveys you do and this is the percentage that you look at and you look at the history of the item and you say, okay, this is how much you survey." And so you aren't going to have 100 percent assurance that there isn't something that is going to get out there that gets caught. And -- and I don't think it's because -- it isn't because the licensee hasn't done the proper procedure.

MR. CAMERON: Okay. Thanks. That's a useful end point to that, perhaps. Mark.

MR. CARVER: I thought Tony asked a question that was very important to me in this slide here. NUREG 1640, by my reading, necessarily sets very low acceptance criteria for these surveys. If I follow the methodology of the NUREG it postulates that surfacially

contaminated metal will end up being transported by a driver of a truck, and in order to keep his exposure less than one millirem a year, the surface contamination levels are very low. And my reading of the tables in the NUREG produces numbers that are so low necessarily that I don't think I have instruments at my power plant that can detect those levels of radioactivity in certain circumstances. And the reason that -- you already know that.

The reason I wanted to speak up again is to underscore a point that I think Paul and Mark Somerville made yesterday and again today. We're not just talking about scrap metal. We're not just talking about decommissioned facilities. We're talking about very large nuclear facilities, like nuclear power plants, that operate every day by moving trucks of material in and out of the plant. Today it's very difficult for us to do. We're spending lots of money with lots of people and lots of equipment, as you know, to screen and survey the things that go in and out of our plant necessarily. My reading of 1640 makes that job almost impossible with the -- with the materials and people that we have today. And I'm not criticizing the report. It has to derive numbers that low because we need to keep the dose to the truck driver less than a millirem as he does trucks in and out. You know, these conservatisms produce these very low numbers.

But you've asked a very good point. How do we do those surveys with these numbers? And my reading is I can't. So -- so, some people may think that means, "Well, that means you can't decommission your power plant. Too bad." Well, no, that means I can't operate my power plant, and that's -- and that's important to me.

MR. CAMERON: Good. That's a great introduction to get Bob Meck up here for his five minutes, but it's also a nice statement from your perspective about what the nature of the problem and the need here is, which is also something, that's what we want to focus on, one of the

things we want to focus on when we come back after lunch for our final discussion.

Bob, could you do a short presentation on 1640 and then I'm going to let Craig from Envirocare -- and I keep stumbling over your last name, sorry -- and Bill Kennedy from Health Physics Society say something. We'll close out for lunch and come back.

MR. MECK: Okay. I've got the clock running and it's only 15 minutes? Hurry up. Hurry up. Hurry up.

Know your audience. How many folks here have spent more than two hours looking through 1640? Okay. A good majority. How many have no idea what this document is about, more or less.

[Laughter]

That's right. That's right. Andy has a way about him, you know. He's always got a different twist on things.

The position that the Commission is in is if there were a net benefit, as we've talked about, a net benefit to having a change in the regulation, it's to weigh what the risk would be that would be acceptable for that net benefit. And so there's no point in taking on a risk unless there's some perceived potential for getting a benefit of it. And we've been talking about there are some in the audience who think that -- that there is a benefit likely and we need to draw the line someplace.

And so the challenge the Commission has is if we were to draw such a line, where would we do it and how would we go about doing that. And the line is a risk line. What kind of a risk would we have and what principles would we have.

Yesterday, I talked about how 1640 is oriented toward the individual. What kind of risk from radiation alone would an individual get? Well, we're talking about a broad spectrum of materials and we're talking about a complex society where materials get used in many

different ways. And we're talking about a large number of radionuclides. So, how -- how did we go about that, saying, well, what can an individual get.

So, the philosophy overall is if we can identify the group of people who would generally get the most radiation from -- from clearing material, from just letting it go out into the commerce, what -- what would that person get? And that's what NUREG 1640 is about. Now, there's a follow on, a document that's going to be produced to talk about the collective does, and we talked about that yesterday and got into a pretty active discussion, and I'll mention that later.

But suppose -- I'm going to take a specific example for the illustration of what 1640 is, but basically we looked at what are the -- in terms of bulk and mass, what are the likely kinds of materials that would come out of our licensed facility, and that would have some potential for tracking where it would go? And we choose ferrous metals, copper, aluminum and concrete to analyze. Okay. So, I'm going to take one of those. And the radionuclides that we used we choose from manifests. We looked at manifests that go to low-level wastes and say what radionuclides are in there? We also looked at those that the EPA analyzed. And we also looked at the European Union and what what were of interest in that. And we analyzed, for each radionuclide, all of those radionuclides.

And so I've got one minute? Okay.

So, what did we do? We say, "Okay. A consumer product would have this kind of a dose, and there would be a distribution of how, you know, how -- what kind of doses that somebody from a consumer product would get." A slag worker from the release of this may get this kind of a dose. And out here someplace the transportation worker may get this kind of dose.

And so we looked at 89 scenarios across all these materials,

and this is what we would say is a critical group. This person gets the most or this group of people get the most dose. And so what NUREG 1640 does is to identify all of these scenarios, but also it's aimed at finding out where the critical group is and what kind of a dose it is. It does not set a limit. Okay. It says if for a unit of radioactivity in the -- in the material or in the scrap that's released from the facility, what would be the dose to the critical group per unit. But we have not -- we have not set whether that is going to be any unit at all or some range of units.

I'd be happy to answer questions.

MR. CAMERON: Great. Well, I think what we will do is Bob will be available to discuss any questions that you might have on the document during lunch and after the meeting today. And are you going to tell us about your summer vacation?

MR. MECK: We went to eastern Oregon and it was very lonesome.

On the follow on work, as part of the process of enhancing participation, we've got a contractor meeting and we've decided to open up the -- the development of the technical basis when we are meeting with contractors so that the process can be more visible to people and will also open up a certain portion of that for public comment. That meeting will occur next week in Washington, D.C. in our Rockville offices September 23rd and 24th. On Wednesday it came out in the Federal Register. I just wanted to alert people here. I've got more details if you want them.

MR. CAMERON: Okay. Thank you very much. We all like to kid Bob, but he did a tremendous job on this, and if you do have questions for him, please talk to him.

We're going to also go quickly to Bill Kennedy from the Health Physics Society and also to Craig. Does it matter which one --

Craig, do you want to come up? Okay. Go to that mic, please.

MR. THORLEY: I didn't want Paul to think that this was just his mic. Craig Thorley from Envirocare. I just want to state for the record, to start off with, that my two oldest kids have braces, so I'm -- hopefully we can be in a situation where I'm not getting beat up on all sides, which is what we often feel like at Envirocare.

I can empathize with the situation that the power plants are in with the regulators, with the steel companies. I know that this is a tough issue because you've got a lot of competing considerations. We are going to be submitting written comments, but we, as Envirocare, we support the idea, understand that there has got to be some level at which you draw the line. But as you might expect, we would support very strict standards for release or for clearance.

The reason for that, if I can give you just a little bit of history about my company, we are a licensee of the Nuclear Regulatory Commission for 11E2 disposal uranium mill tailings (phonetic.) That process took us four years to go through and cost us millions of dollars. The first thing -- the first issue on that license was do we have to do an environmental impact statement, because the DOE had just done probably the most comprehensive environmental impact statement process ever done for the vitro tailing site which is right at our location. The NRC came back to us and said, "No, that's not good enough. That was on the other side of the fence. You've got to do your own, completely new environmental impact statement."

And so we went through that process from 1989 to 1993. We were licensed by the State of Utah for low-level, norm and mixed-waste disposal at similar levels of scrutiny for our low-level disposal. For example, anthronorm disposal, we were required to submit our application in -- in accordance with NUREG 1199. It was reviewed under NUREG 1200. That means that we were licensed as if we were going to be a full

fledged class A, B and C low-level radioactive waste disposal facility, as if we were going to be taking millions of curies of waste. In the 12 years we've been operating, we have taken less than 1,000 curies. It's probably in the range of 700.

So, we were held to a very high standard compared to the operation that we have. Not just in the licensing of our facility, but in terms of the operation of our facility. We are held to very strict standards. We get violations for things that I'm sure folks from the power industry would -- could tell you some similar kinds of stories. But I want to tell you about just a couple so that you understand the level of scrutiny that we have and the costs that are imposed on us that we have to incur in order to meet those compliance standards.

We've had violations in the past for on a form where a question was not applicable drawing a line at that, at that blank, rather than putting n/a down, as the regulation said you had to put n/a down. Our operations manual, which had been approved by the State, said you could draw a line through it. So, that was a violation.

MR. CAMERON: Is this a therapy session for you or does this have some connection to clearance? All right.

MR. THORLEY: This has a good connection to it, in my opinion, anyway.

The -- I mean, I could go on and on with those kinds of stories, but what I'm trying to tell you is it's expensive to run our facility. It's not expensive as Barnwell. Hopefully not as expensive as Wip or Yucca Mountain would be. But you get what you pay for when it comes to waste disposal industry. You could take your trash and dump it out in your backyard, but that's not what we do. We send it to a municipal landfill, hopefully. And you could take your hazardous waste and dump it in the municipal landfill, but that's not what we do. And the same thing with low-level waste, supposedly.

The reason I've told you all of that is because we have been held to very strict standards by the NRC and my perception of the trend, I would generally be in favor of what you're proposing to do, but the trend, it seems to me in the last few years from NRC, has been towards a deregulatory trend, and that troubles me, number one, and number two, it makes me skeptical about what you're trying to do.

And the -- and on the issue of the deregulation, for example, first of all, Caveara Mining was allowed, and Mr. Treby knows a lot about this, they were allowed to amend their license so they could take 11E2 in commercially. And they were not held to the same standards that Envirocare was in order to get into the business. But that didn't last long because they were quickly undercut by NRC who then suddenly determined that any 11E2 which had been generated before 1978 was magically no longer subject to UNTRCA. And so now that waste is going to other places, like Button Willow and Envirosource. These are RCRA landfills. And that's what the Corps of Engineers is doing. And I don't blame these guys. That's their job. Their job is to clean up, meet minimum standards at minimum cost, and they're going to do that if they're allowed to.

The cesium 137 is another situation that -- that I thought was interesting. Mt. Turner and Mr. Turner know about that. The -- when the branch technical position came out from NRC the justification for it was -- there were a couple of justifications. One was that the NRC had not adequately controlled sources. The other was that it -- the steel companies thought it cost too much to send it to Envirocare. And that was news, I'm sure, to the more than half of universe of waste that had already come to Envirocare. But that's just another issue on the deregulatory trend.

The next one is this unimportant quantities of source material, and under 10 CFR 40.13, and that's why the Corps asked about

that, because they are sending waste to waste control specialists today under that, essentially an exemption which was never intended to be a clearance standard or a standard, a regulatory standard for waste materials, as the State of Texas through a fit in a letter in March 18th, 1999 to the NRC on that issue after the NRC gave it the green light, and then it was elevated to NRC Commission and they said, "No big deal. Go ahead."

And so that's -- that's what's going on to date. That -- that is -- it makes these kind of issues that you're talking about fairly innocuous compared to some of this other waste that is going out.

And then, lastly, a letter from Greta Diakis (phonetic) to John Dingle (phonetic) a few weeks ago that basically said, "We think that for lots of hits stuff, that RCRA landfills are just as good as low-level landfills." Well, that was news to me after the scrutiny that we had to go through to get out license and then to have an NRC commissioner saying RCRA's just as good as a low-level, we haven't really done any studies on it, but we think that that's the case.

And then finally, with DOE sending some of 11E2 to International Uranium Company for recycling, they spent $2 million to send it to them. The company says, "We're doing this to recycle $50,000 worth of uranium out of it." And the NRC is willing to accept that at face value that they're really doing that for recycling purposes rather than taking the $2 million to dispose of the waste material.

Those are some of the reasons why I am troubled about the trend at NRC, and I'm skeptical about what's going on because it seems like it is, in a sense, a return to the BRC which Congress ordered the NRC to withdraw those policy statements. And if you've -- if you know about the withdrawal of the policy statement, it said, "Well, we're going to withdraw it because Congress ordered us to, but we don't really -- it doesn't make any difference because we can do whatever we want

under the Atomic Energy Act anyway."

MR. CAMERON: Okay. Can we -- thank you very much, Craig. And --

MR. THORLEY: Well, I'm not --

MR. CAMERON: -- I think you raised the issue of consistency, and I hate to -- to cut you off just right now.

MR. THORLEY: Just one more minute and then I'll be done.

MR. CAMERON: Okay. One more minute.

MR. THORLEY: Okay. On the issue of competition. If you lower the standards then that's one way to increase competition, but that's not the way to go about it. In the same way that the -- if the -- if the Major League baseball thought, well, we saw what Sosa and Maguire did, that was great, why don't we move in the fences 100 feet and then everyone will have a 70 home run hitter and we can pack the stands. That's not what would happen. That would ruin the game of baseball. Just if you lower the standards here too much is what I see you're doing is lowering the standards in the industry that I'm in. Holding me to the high standard, but telling everybody else that they don't have to meet it.

MR. CAMERON: Okay.

MR. THORLEY: So, that's, you know, we'll submit written comments, but those are the reasons why we're concerned.

MR. CAMERON: Okay. We'll look forward to those written comments. And just let me clarify for the record, is the NRC is not setting anything here today. We're gathering information on what course of action the NRC should take in regard to the release of materials.

Let's finish up the morning session with brief remarks from Bill Kennedy, Health Physics Society.

MR. KENNEDY: Thank you. I have a prepared statement from Health Physics Society that I've turned over to the meeting organizers

that will appear in your handouts at the end, I've been assured. I will hit a couple of high points, but I won't read it into the record. Has it been passed out? I didn't get it. Okay. I think she's about to pass it out.

Well, just a couple of high points. As you know, the Health Physics Society represents about 6,000 dedicated professionals focusing on radiation safety issues. The Society believes that the definition of clearance level is an important part of the standards process to provide for the safe handling use and disposal of radioactive materials. In previous society position statements we, number one, have supported regulations for radiation protection that are based on the National Council of Radiation Protection and Measurements recommendations for dose limits to individual members of the public.

Item two is that we recommend that constraints be applied to all regulated, non-medical, non-occupational sources of radiation exposure to the general public, excluding indoor radon, such that no individual member of the public will receive in any one year a total effective dose equivalent exceeding 100 millirem or one millicevert from all of the sources combined, and we recommend that the dose limits be applied only to individual members of the public, not to collective dose from population groups.

We further recommend that the regulations for radiation protection be based on consensus standards of the American National Standards Institute, or ANSI, issued by the Health Physics Society standards committee, in keeping with the intent of public law, 104-113, National Technology and Transfer Act of 1995, and the OWB circular A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards."

We recommend that the primary radiation protection standards be an all pathway total effective dose equivalent standard, with

screening levels related to quantities that could be measured, such that compliance with these levels will result in the primary dose standards being met for all reasonable and likely scenarios.

We recommend that the screening levels be derived consistent with the principles of alara or as well as reasonably achievable.

And the Society supports the adoption of the ANSI standard, N1312, issued in 1999 entitled, "Surface and Volume Radioactivity Standards for Clearance." And that that standard is consistent with the previously mentioned positions of the Society.

As I mentioned earlier in the meeting, the final clearance standard was approved by ANSI in August of 1999. This standard provides both the individual dose criteria of one millirem per year for clearance, and derives screening levels for groups of similar radionuclides.

The standard also allows for clearance when justified on a case-by-case basis at higher dose levels when it can be assured that the exposure sources, including those not covered by the standard, will be maintained alara and will provide an adequate margin of safety below the public dose limit of 100 millirem per year, total effective dose equivalent.

Now, we recognize that there will be several complex issues that make it difficult to fully implement the standard, and as a result, some of those things were excluded from the standard. They included naturally occurring radioactive materials, radioactive materials in or on persons, release of licensed or regulated sites or facilities for unrestricted use, radioactive materials on or in food stuffs, release of land or soil intended for agricultural purposes. Materials related to national security and process gasses or liquids.

The full position paper, I guess you'll have an opportunity to read at your leisure following the meeting. Thank you very much.

MR. CAMERON: That's great. And thank you, Bill. And thank all of you for your patience and attention for this morning. When we come back we're going to go to the "Don shoes' issues, and I'm going to have Don set that up. And it basically is going to try to do integration of all the things that we're talking about. And for -- in terms of your schedule, we'll start at 1:30. We will be done by 3:00. It's possible that we'll -- we could end earlier than that, but at the outside, we'll stop at 3:00 so that you can schedule around that. Okay. All right. Thank you.

[Whereupon, at 12:21 p.m., the workshop was recessed, to reconvene at 1:45 p.m., this same day.]

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

[1:45 p.m.]

MR. CAMERON: Welcome back to the final push on this meeting. And this session should be a lot of fun for us.

And before we get started, let me just -- John Karnak wanted to make sure that some material that was given to you was understandable.

MR. KARNAK: Okay. Barbara passed out this morning this document that says, "EPA's mixed waste regulations." The two rules. So, I'm not directly responsible with them, but I put my name and phone number on the back, and I'll make sure that you get the name of the folk that you need to talk to about those two. And it talks a little bit about the one under RCRA and the one under AEA that we're working on.

The other thing I wanted to mention is that we have some extra copies of the work that we did and the reports we published in 1997. And if you'd like to get copies, either technical or the economic reports, just give me your card and write "reports" on the back and I'll make sure you get them.

MR. CAMERON: Okay. Thanks, John. And I guess Debra McBaugh has been suffering some anxiety over the lunch hour about something that she said, so we're going to let her get rid of that anxiety.

MS. MCBAUGH: And boy, does that make it sound exciting.

I was just a little bit concerned, and I sort of was right when I said it, but when I made the statement that licensees can do all of the right procedures and still end up with something that can get out, I wanted to make that very clear that we have never seen anything get out that is a hazardous problem. We've only seen things get out that were an annoyance because an alarm could go off. But we're not letting things get out that are -- that are a health risk. So, I just

-- yeah, sure. So, I did want to make that clear that it was an annoyance level thing, not.

MR. CAMERON: All right. This discussion that we're going to have is meant to try to integrate the various pieces that we've talked about over the past two days and give you an opportunity to give us opinions on this whole business. And Don is going to talk a little bit more to set this up for you. But think about being in his shoes. And he has some questions here about what do you see as the need to take action? In what time frame should action be taken? What additional information is necessary? And what action would you take? And you can sort of wrap all these together and make a statement on it. You can address one particular issue and we'll try to -- to follow some discussion threads there, too. But I'm going to turn it over to Don to amplify on this.

MR. COOL: Okay. Thank you, Chip. I don't know whether this is on enough for you to hear me or not, so I'll just try and talk a little but louder into it. And Giorgio, you can take the "Don shoes" off of the top of the slide. To answer what are probably the obvious questions, they're nine wides. They're wingtips. They're Rockports, so that you can still do a lot of running and walking in them because you have to be fast and quick on your feet. This issue over the last few days has clearly indicated that there is a fair amount of legwork -- pardon the continued analogy -- that has to be done.

But in thinking about how to try and, at this point after a day and a half with lots if very good discussions with a whole variety of things that have been laid out, with additional alternatives that have been put up on the table and other things, try to find a way to summarize and pull together some of that information because some of the next steps are with this meeting and then the Atlanta meeting and the Washington meeting, to sit back and analyze, see what we have learned,

determine if there are some common threads, to use Chip's term, that sort of pull together the information that we've received out of those three meetings.

All the information, the things that are in the transcript, are going to be put into a database and sorted and categorized to see what we have here so that we can then go to the Commission, both to tell them what all we've heard and to give them some recommendations, next steps and more details in terms of the schedule activities.

Operating in parallel with that will have to continue to be all of the technical development work that you've heard referenced to throughout the course of the meeting, and that will be proceeding along on a parallel track.

And having a little analogy yesterday -- and I guess it was Mark's shoes -- and having done this once before I don't even remember which set of workshops it was, got to thinking in terms of, all right, maybe it would be interesting at this point to give you an opportunity to say if you were now in charge of this rule, if you were now responsible to go back to your office and do something, a rule, not a rule, make a recommendation, what would that recommendation look like, based on all the things that you've heard, all of the interactions that you've had back and forth, all the things that your fellow participants have been saying over the last day and a half.

And I thought of a few questions. You might have some others. But to stimulate some thought. What's the need to take the action? You know, what particular drivers do you see as important to less important in this process that should weigh into the decision making process? What kind of time frame? Are there issues? And the second and the third are sort of linked together. Are there specific additional pieces of information that you would feel like you needed to have that you haven't heard here being referenced or available or

otherwise that you would find important in order to believe that you had come up with a good recommendation? And then the sort of question of all questions, the real bottom line, what kind of action would you take? If you had the Commission sitting in front of you, what would you suggest on the basis of these discussions that they do? Would you recommend that they do a rule, would you recommend they not do a rule? Would you recommend additional guidance documents? The whole suite of different things. What kind of level might you pick? That's a lot of questions, but that's to amplify this.

And what I was in hopes was that a number of you might be able to sort of pull together in your own mind those thoughts, because I think that would be very interesting. I know it would certainly be interesting to me because, in fact, when I walk out of here I will have to be in my shoes. And while to some extent I can say, well, it will actually be Bob's shoes and Trish's shoes and Frank's shoes and Tony's shoes and everything, in the end it does boil down to we have to go back and we have some things that we're going to have to do. And so what I would like over this last hour or so is to hear from you on the basis of all these discussions as a way of summarizing. What would you do?

MR. CAMERON: And let me just add one thing to -- to what Don asked you to do is that like the NRC we're gathering information to decide what should be done. There has not been a decision. You may not have a recommendation on terms of what should be done, rule, no rule, whatever. Like the NRC, you may need further information. There may be additions to the process to bring new information from a varied sort of interests into the decision making time frame. And Don did not mean to exclude that.

So, with that --

MR. COOL: But of course if you send in written comments I guess I'd prefer that you not entitle them "Don's shoes." Just as a

matter of appearance.

MR. CAMERON: Let's put a human face on this federal bureaucracy, though. I like Don's shoes. You know, we could just spend the rest of the time making jokes about you. That would be relaxing, at any rate.

Does anybody want to kick this off and address all, part, whatever? Let's go to Heather Westra.

MS. WESTRA: Well, one of the questions that's been on my mind is why are you doing this? What is the need? You know, under NEPA you have to -- if you're going to take an action you have to describe the purpose and need for that action. And in my mind I don't think that's been clearly articulated. So, perhaps I could hear back from the NRC as to what is the need for this action?

MR. CAMERON: And maybe it would be useful to hear from others, too, what their opinion is on that, that first very important issue. Don.

MR. COOL: Okay. I will give you a little bit of an answer, but, in fact, what I'm hoping is to hear from you whether or not you see a need.

The Commission believes that there is a need, that there is an arena where we are not acting in a systematic manner, where we need to take a hard evaluation in terms of applying the appropriate controls to assure that materials that don't get out, don't get out. And a number of other things that are going on nationally and internationally which are playing along the same lines of -- for which we believe we need to participate.

I've heard a lot of things today which perhaps could be construed as need, but if that -- those are the fundamental issues that we see being present. A part of my reason for tossing out the question was, in fact, to see if you could reflect back what you see is the need

or, as I think you've just suggested, is there the need, and articulate that.

MR. CAMERON: Okay. Let's have some other views on Heather's question. No? Anybody want to talk to -- I mean, we do have things on the record, obviously, that people talked about, scattered throughout on need. But does someone want to put an emphasis on why they see a need for action to be taken? Paul?

MR. GENOA: Paul Genoa, NEI. I guess the basis -- the basic conclusion is that, you know, sound, effective, efficient public policy requires clarity, consistency and predictability, and these are qualities, frankly, that are lacking in the current situation. And that has actually recently spawned Congressional interest in why there isn't a national standard to handle these things. So, from that and the practicality, the practical reality that materials move in and out of here and they're judge on a different and inconsistent basis, as well as the international implications of an inconsistent basis, I believe requires that action be taken.

MR. CAMERON: All right. Anybody else? Debra, do you want to talk to the need? Okay. Let's go to you and then we'll go back to Robert Hull.

MS. MCBAUGH: I guess from a State perspective when we try to deal with things that have unintentionally gotten somewhere and we get an alarm, it would be helpful to have guidance in the form of a standard that was there that would help us to evaluate, instead of doing a case-by-case. So, I do see a need from that perspective. I'm a little worried by opening Pandora's box. I guess that is a concern I have. Because it seems to work as we do it now. It's just not very comfortable. And I don't like being inconsistent in using reg guide 1.86 or that sort of approach when everything else we're trying to do is dose-based and trying to sort of deal with the health risk. And so,

trying to explain that to the public is a little iffy, I think.

So, I guess I see -- basically, I do see a need for it. I do have some concerns on how it was done, actually. And as I've been listening the last couple of days, you were sort of asking what -- I haven't quite formulated what I'm going to go back and recommend, but I have some interesting questions that I didn't think I would have before. And one of them is I'm looking more and more to wanting to go with the one millirem rather than with a higher number because it would be much easier to justify that in anything that we have to go out. And we have to get public comment anytime we adopt a rule, an NRC rule into our regs. We have to go through a full process as well.

And I also -- I'm thinking really strongly about whether we do restricted use, whether we would -- I'm hoping that that wouldn't be a matter of compatibility, that we would be able to make our own decision on whether we wanted to go with the restricted use, because I'm certainly going to take back a lot of questions to everyone to discuss on that issue.

And I guess I'm also looking -- one other question that came to my mind during this whole process is do -- I had always thought that it would be something we would address all -- everything, like I had brought up with the landfill, and just that it would address anything. But there is a possibility it could be a limited scope and only address certain issues, which is kind of a restricted thing in that way. So, that's something I'm going to discuss when we get back.

MR. CAMERON: Good. That was a good -- a good summary of your thoughts on that, and it did raise an issue that we haven't talked about is what's the proper breakdown of authority between the NRC and the agreement states on this issue in terms of compatibility? Should agreement states be allowed to set more stringent levels, for example? Do they need to adopt every part of the rule uniformly? But we may come

-- we may want to come back to that. I want to go to Robert Holden, now.

MR. HOLDEN: Just beginning on that point in terms of requirements, regulatory authority and standards. You know, a few years ago in San Diego, outside of San Diego, a reservation had sought to serve as a host for solid waste repository for the City of San Diego, and there was a huge outcry from -- from citizens in the state legislature in California regarding their effort. It was just primarily economic development motives. But, you know, the outcry ranged from, you know, what's wrong with this picture, the Indians are supposed to be environmentalists, and -- and there's a -- there's nothing to prevent them from accepting hazard waste, radioactive waste, or for that matter, it's going to be highly unregulated.

A friend of mine that was an attorney was working with a tribe and he spent many hours talking to legislatures and citizens of communities, and by and large what came out of this was that people learned that the standards that the tribes were going to set were much higher than California, which were certainly not lax. But it was just one of those nuances where, you know, tribes had to respond to. But, I mean, I don't know what the analogy is, but I guess, you know, familiar with certain variances and the things that tribes have to go through to get special regulations or special efforts made to allow them to do what they ordinarily have a right to do because, you know, beginning remarks I made before, certain communities regarding emergency preparedness and regulatory authority throughout the United States and just state the fact they used to be -- this is former police and fire jurisdiction for Indian nations of Indian nations.

But having said that, I guess I'm not -- what I'm not sure of is, you know, in setting a standard, the standard is what it is now on a case-by-case basis. I mean, is that not good enough? I mean, from

what I'm hearing, the scope and magnitude of -- of these products, of this material, it's -- is it to the volume that much time and business should be spent on pursuing this by the folks that I work with. I mean, we have to, because of the importance and because of the potential, the potential harm. I say potential harm because, you know, for one thing, they don't know. But if something is allowed into the environment, as I spoke of the incidence yesterday, that we've come across this in so many instances. And that was just one instance. So many industries, so many businesses have dropped, so left or defrauded tribal governments and tribal people out of not only dollars but of dangerous products left in their midst. You know, I won't go into the litany of things -- of instances this has happened. But it's just something that we need to think about.

But also, when I think about terms of time and response that the Nuclear Regulatory Commission will need to put forth to give notice, communication to tribal governments, because as was noted, you know, there is an Executive Order that -- from Ronald Reagan, that calls for this cost benefit analysis to be done.

There's also an Executive Order in place that calls for consultation with tribal governments. And in that Executive Order it enumerates many things that should be done and have to be done to apprise Indian country as to what these actions mean, who's involved in them, and what the, you know, what the potential liabilities are, as well as benefits.

So, I'm not sure. I mean, this is probably more in the way of a comment than -- than any answers. I'm not sure.

MR. CAMERON: Thank you, Robert. Let's hear from terry, since we're right here, and then we're going to go over to Ed Bailey.

MR. CIVIC: That's why I grabbed the microphone, and so it was right here.

I could possibly address what action would you take. I, like Debra, would like to go back and mull through my notes and all this material and look at what was discussed here. I think we all should do that, and particularly the NRC people.

I think one action that you must take is to eliminate the perception of a bias. And your bias is evident with 1640. It's one MR free release of material. And there is -- hasn't been anything else looked at or evaluated in -- in this context.

So, as a member of the AISI and the steel industry and the metals industry, we oppose the free release of steel, and I think you need to look at that strongly from the perception standpoint, from the impact on our business as well as what you want to do with the other materials.

And we laid out a lot of different options, and I think you need to look at the various options and -- and maybe before the next meeting come back with a different set of framework of discussions, as opposed to trying to go back down the same road again. Because I would imagine that most of the people in this room are going to be at the other sessions. Maybe a few other people. So, why beat a dead horse? That's all I have to say.

MR. CAMERON: Okay. Thank you. Thank you, Terry. And I think that the caution about eliminating biases could be more broadly applied than just to 1640, perhaps.

MR. BAILEY: Is this working? It is?

MR. CAMERON: Yeah.

MR. BAILEY: Okay. I'm sorry.

When we did introductions yesterday, one of the -- I didn't mention that I'm also the chairman elect of the Organization of Agreement States. And why -- why -- whereas we are not here officially representing them, I can tell you that there are going to be some

questions that are raised by the agreement states. And two of them I'm just tossing out so that perhaps you can look into them.

One is whether or not if you had a policy adopted, whether or not this would be a carte blanche to a licensee to develop their own procedures and just go do it, or whether it would require pre-approval of those procedures prior to implementation of this. I have my own preference, I think, that it would have to be a pre-approved process, that there has been some review of how it was going to be done.

The other one is going to what Debra said. What's the compatibility level? I think that there will be states, and I think California may be one of them, that may have difficulty politically adopting an identical rule. And then that begs the question, if -- if California or some other state cannot adopt the rule for political reasons, does that set up a possibility of Diablo Canyon or Saul (phonetic) shipping stuff to Oregon, which has adopted the rule, and clearing it out to that second state? I mean, they create a company. I mean, we've got a company here in California that decoms reactor equipment. There wouldn't be any reason why that company couldn't decom down to whatever level was required in their particular jurisdiction and release it.

And those -- I don't expect any kind of answers to those today, but I think those are some of the issues that will come up with he agreement states in looking at adopting the rule, presuming that you all adopt one.

MR. CAMERON: Okay. Thanks, Ed, and that -- that perhaps need or the issue for the need for national uniformity also influences what type of compatibility level was set by the Commission in the rule. Bill.

MR. KENNEDY: Bill Kennedy. Thank you. I think what Paul said in terms of he credibility, the consistency, I think that's kind of

the motivation I look at. I look at when reg guide 1.86 was developed it was for surface contamination only, it was for decommissioning only. That particular reg guide contained a lot of things beyond the surface contamination numbers. It looked at options for decommissioning. It looks at certain license termination. Kind of conditions well beyond what has been applied for primarily, and that is the surface contamination guidelines that are in there.

It didn't contain volume contamination criteria, nor did it contain things that would help ease the special case situations, you know. I always tell this story. When I was in college I went to calculus class and they taught you how to differentiate. And they taught you all the general rules. And when you took the test, it was on all the exceptions. It wasn't on the general rules you learned, it was the special cases.

But in reality, everything isn't a special case, and there needs to be a framework within which decisions are made that have credibility, have consistency, and can, across the board, be applied to the majority of situations. There will always be special cases, no matter what rule is applied, but what you want is something that has credibility for all of the other situations that can be handled in a good manner.

I think that -- that we're not just talking about recycle of steel or the potential contamination of consumer products, we're talking about every day operations at licensed facilities, ultimately by implication we'll be talking about DOE facilities as well, and those go far beyond contaminated metals. And I think that to me there is a crying need for consistency to have a regulation in place. There is also a crying need because you take the situation of agreement states where there will be loopholes and ways around by sending materials to other states. Potentially, internationally, the same thing could be

happening.

If you think about the U.S. role in a global economy where some countries can clear materials at given levels, and if you look at how people will attempt to make a profit by their activities, there may be incentives for people to do things away from this country, not just from one state to the other, to achieve a positive economic result for themselves. And so to leave it unregulated and with an inconsistent program that's handled on a special case basis I think simply, you know, leaves the framework open for a lot of misuse in ways that perhaps today we haven't experienced but may be very real coming down the road.

So, I just, I say I think there's a very real need. The time frame was 40 years ago this should have happened. It didn't, but it's not too late to fix it today.

MR. CAMERON: And when you say four years ago, you're talking about the EPA?

MR. KENNEDY: Forty years ago.

MR. CAMERON: Oh, 40. Forty years. I was trying to get you involved in this, but you don't want to get involved. All right. How about some other -- other perspectives? Not that the perspectives that you've already given in the last day and a half aren't noted, but.

MR. MASCHKA: Paul Maschka from General Atomics. One of the problems that I have seen here is I really do not understand what the standards are that you're going to release to. Unless you can make these into a nice clear table that's easily measurable by my health physics technicians that I can easily evaluate, I'm not going to send anything out unless I can really say it meets that value. If I have to do a calculation or an estimation of a dose rate that's going to occur to some body down the road, and that can be opened to question, I'm not going to approve anything going to landfill, going to recycle. It's all going to go to low-level waste.

So, one of the things that really needs to be done is a nice, clear values numbers that can be easily measured and can be shown to be true.

MR. CAMERON: Okay. Thanks, Paul. Jim.

MR. TURNER: I would just say that -- if you want a recommendation, what I would say to do when you got back would be I would suggest that you identify all the possible outlets for these materials, whether it be paper, steel, glass. I guess we're talking metals, concrete and dirt. And then perhaps meet with groups of those outlets and see what it would take for them to -- what it would take -- what you would have to do to get them to take it.

MR. CAMERON: Okay. Thank you. Ray.

MR. TURNER: Just in response to Debra's comment a while ago about the certificate, that it would help to have a certificate in terms of responding to a detection, assuming a detector went off somewhere. And I think that's what you're saying would help you identify where that material came from and what level it had been surveyed or cleaned to.

MR. CAMERON: Let's get some clarification on that. Debra, do you know what Ray is talking about?

MS. MCBAUGH: No.

MR. CAMERON: Okay. No.

MS. MCBAUGH: Were you referring to my statement I just made right after lunch? Okay. Yeah, I think -- I don't recall saying anything about certification. All I tried to say was that when a licensee uses a procedure to clean -- to release something, and if something gets released it's not a health risk that gets released, it's an annoyance. So, it will be something that could set off an alarm at your facility, but if we went -- when we go to look at it, it's not a health concern.

MR. CAMERON: Do you want to say anything about

certificates?

MS. MCBAUGH: Yeah. Okay.

MR. CAMERON: Okay. We'll come back to you for some compatibility discussions. Okay. Here you are, Ray.

MR. TURNER: I understand. I think I understand what you're saying. I think -- still think we're saying the same thing here. We have to continue to bear in mind that when this material goes for recycling purposes. It may go to a scrap dealer or it may go to a steel mill. And if it goes to a steel mill, that very well might be true, it might be more of an annoyance thing. But if it goes to a scrap facility somewhere and it's commingled with other processed scrap, I'm -- I've heard two stories here now. One says the levels are going to be so low, you won't be able to detect them.

But I've heard another one that says there may be some hot spots, and if those hot spots are right against the side of a truck or a rail car, they'll set off the detectors. And if that hot spot is cesium or cobalt and it's been commingled with other material from a scrap facility, then that's a problem.

You can't loose sight of the fact that once it goes through the detector or once it's out your gate it's out of sight and out of mind.

MR. CAMERON: Let me ask Paul Genoa a question related to that. Paul and several others have advanced the proposition that set a clear dose level for this material and below that it's not going to be considered radioactive material. It's still going to set off Ray's alarms.

MR. GENOA: So does concrete and dirt.

MR. TURNER: Concrete and dirt -- it's not cesium and cobalt.

MR. GENOA: What's the difference?

MR. CAMERON: Do you -- does that give you -- what would you do -- what would you do in a situation like that? It sets up your alarms but it's below the standard and someone says, "Well, it's not radioactive material. It's below the standard."

MR. TURNER: Okay. I don't disagree with what you're saying, but what I'm saying is you cannot assume that it's not a gauge that's been commingled with that shipment. What I'm saying is you can't assume that it's a nuisance alarm coming from a hot spot on this material that may not be a radiological concern. It's just a nuisance alarm. But if it's been commingled with other scrap materials, we're not talking about radium or thorium or dirt, something that's going to be in the bottom of the car, you're still going to have to go through that rail car and sort out. And as Ed Bailey pointed out earlier, you're going to have to look at every piece of scrap that comes out of that car to determine that it, in fact, is not a nuisance alarm and ensure that it's going to be safe to melt.

MR. GENOA: And I acknowledge that and I'm sympathetic to the challenge you have of trying to detect sources that could come in, or perhaps contaminated metal from abroad, that would set off your detector, which is really based on trying to protect your furnace from a source. So, I'm sympathetic.

My problem is I don't think -- you've got that problem today, and if this clearance rule goes through properly, it shouldn't change the problem you already have today. And I'm sympathetic to that, and I don't think -- and I don't know how to solve the problem.

But -- but if I could follow up on essentially what your proposition was.

MR. CAMERON: Okay.

MR. GENOA: The proposal.

MR. CAMERON: And then we'll go to Giorgio. Go ahead, Paul.

Follow up on it.

MR. GENOA: I think what we've heard for the last couple -- the last couple days. It feels like a couple of days. What we've heard is that we have a regulatory structure in place that tends to identify what is an acceptable level of safety for the public from radioactive materials, man made, and that's around 100 millirem, and that you're considering some kind of standard, some kind of controls that people should impose on the clearance of material coming and going from facilities, and that is a problem that needs to be addressed. And you've articulated that that level ought to be well below any health risk. Some small fraction of that standard. And we've heard of all the difficulties with natural background and all of that. And potential impacts on certain communities and nations and people and all that, and I appreciate all that.

But what we've heard is that, one, that we're probably not talking about a level that's a health risk, we're talking about sort of what's a public acceptable risk and what's a politically acceptable path forward. And I think what we're really dealing with here, we've heard that the steel industry and the recycle -- the public does not want radioactive material put into their consumer products, and the nuclear industry doesn't want to release radioactive materials into general commerce that ends up in the public domain. And I guess -- so the question is but we still need to clear materials from our facilities, and we understand the challenge that you're faced with is how do you set a criteria that we can all agree is safe and essentially clean, with those little quotes around it, so that we know that the public is protected, so that we can guarantee that the material that is not clean is not going to enter the public domain and be recycled, and how do you implement that?

And I propose that you implement it on a consistent

standard. I think we've heard about the reason for a health-based standard, a dose-based standard. I believe that you should promulgate such a rule. I believe that you'll have to go ahead and put together regulatory guidance to help implement the rule, because this is a complex issue. And I agree that we need numerical values that are crystal clear that you can compare. I don't think they should be in the rule because that takes a lot to change and we may want to change those values over time, so it ought to be in guidance. And I think you ought to really give due consideration to an ANSI standard, that I haven't read yet, but I believe, knowing the scrutiny those standards go through, and the length of time that they've been developed, that they probably have a pretty good technical basis, so I would encourage you to look at that as perhaps some sort of an implementation.

But the number you pick is a policy decision, what is acceptable to the public. My belief if it ought to be as low as reasonably achievable. The level ought to be as low as is practical for us to implement. But please recognize there are practical limitations to what we can implement. So, I guess that's what I'm trying to say here.

MR. CAMERON: Okay. And we may go back to you for those practical limitations on what you can do. Giorgio?

MR. GNUGNOLI: This is -- this is just a question on clarification. On the third bullet there we have the identifiable possible outlets. Jim Turner, I think, brought that up. I want to make sure what we talked about was outlets in terms of release points, intermediate points where the material may change ownership, or are you talking about first user or end user or all of those? Just a clarification point.

MR. TURNER: I was talking the recyclers.

MR. GNUGNOLI: Okay.

MR. TURNER: Or the next user.

MR. CAMERON: Heather. Thanks for the clarification, Jim. Did you want to say something else? Okay. We'll be back to you.

MS. WESTRA: Okay. I don't mean to be beating a dead horse, but just going back to one with regard to purpose and need, I think Paul just said it is that the need is to clear materials from facilities. And I think that if you're going to be working with the public you need to state that, and that the purpose is to provide clarity, consistency, et cetera. But the need, I think, has, as it's been stated, is to clear materials from facilities. And you need to describe what you're talking about in terms of the magnitude of the problem. How many tons of materials are out there that could be potentially cleared and released. I don't think that that's been part of the discussion yet as far as quantifying what we're talking about in terms of tons or whatever it might be.

MR. CAMERON: Okay. Thank you, Heather. Mark, do you want to -- do you have a comment on what Heather just said? All right.

MR. LEWIS: It seems like the debate is kind of being framed in a way that sounds like the industry -- and I'll only speak for power plants -- seem to be trying to figure out an outlet to get rid of some of their excess activity or some of their contaminated materials, and pass it off somewhere else. And I don't see that as the issue.

What I see is we're trying to find a level that defines clean, and we all kind define that for ourselves. And if something is above clean then we'll send it to Phil or somebody like Phil. Phil appreciates that.

MR. GIANUTSOS: Or Envirocare.

MR. LEWIS: Or Envirocare.

MR. GIANUTSOS: Is this a contract?

MR. LEWIS: Yes, it is, as a matter of fact.

But if it's below that level then we 'll release it and we won't worry about being second guessed. And the thing that keeps kind of popping into my mind is that there's work that's been done in the NCRP. There's work that's been done in the NUREG that sort of de fines what's out there in the environment, from bomb testing or from life as we know it as far as concentrations of activity.

And years ago in the Health Physics Newsletter there was the concept of defining a new unit called background. And it's almost useful to go back to that concept and say if we're in the background range, if what we have is indistinguishable from an activity standpoint from the natural radiological environment, then obviously we're not changing anything.

So, that's kind of the way we're looking at it is we're not looking for a way to save money, as Dan Hursch said, by not having to deal with the activity by giving it to consumers. All we're trying to do is say above what level should we send it to Phil, and below what level should we go ahead and -- and be reasonably assured that it's clean.

MR. CAMERON: That's an interesting -- I think that's a very important issue, tieing it back into the letter that we received from various citizen groups. And I think that Heather, the intent of what you were saying was the more the proper perspective and context is placed around this issue, the more we get away from attributing motives to the NRC for acting in this area.

Would it make people more comfortable if the utilities donated all of the money into some conservation fund? I mean, if we want to think outside the box. And I'll just stop right there because it's probably too far outside the box, but there you are. Ray. Can we -- why don't you -- we seem to be having a little trouble with that. Why don't you just take this guy.

MR. TURNER: I'll just offer up one scenario that can fit, I believe can fit, and I've said it a number of times, and it would fit not only in the steel recycling industry but in the soles, the dirt, the concrete. Whichever industry we're talking about releasing this material to be a restricted or a free release, and that's the way with all the what ifs except one.

What if I've got a steel mill and I am agreeable to take this material and do a control melt and nothing but this material, without commingling it with any other material, and if the NRC/DOE or whoever the federal agency may be is so confident that it is not going to be a problem in my industry, in my plant, then why not belly up to the bar and say, "You do a control melt and melt this 2,000 tons a month, or whatever it's going to be, and if it does cause a problem, I'll decontaminate your plant and hold you harmless for all the loss production that it may have caused you"? That will solve your problem.

I'm talking about on a real time basis. If you're confident that it's going to work and you really trust your numbers, then guarantee me that if it contaminates my steel mill you'll pay for the decontamination and lost business and lost production. And I'll guarantee you the steel mills will melt it down if you'll do that.

MR. CAMERON: I think we're still outside the box. That's good. That's good. Dave.

MR. BELK: Oh, yeah. Dave Belk, University of California. Once again, I'd like to bring it back to, hey, we're not a steel mill, okay. Usually, when I go to public meetings or talk to people I tell people just about anything in industry, the University of California does at some scale somewhere within the state of California. But now I'm not sure we have a steel mill anywhere. We may have a small one on a bench top.

But in any case, to get back to that issue but also to the

issues mentioned before, from the nonrecycling point of view, we are concerned with how clean is clean or, in this case, what is clean. That's the issue that I would be looking at. What is clean? And that's, I think, a fairly simple thing, I would assume, for you guys to determine. What is clean? Ignoring a -- nothing personal against you -- ignoring issues when it comes to manufacturing. What is clean? If you -- if you can tell us what clean is, then all these other issues, I would think, would fall away.

MR. CAMERON: Okay. Thanks, Dave. Paul, go ahead, then we'll go to Brian.

MR. GENOA: Yeah. Paul Genoa. Again, I think we need to get the issue back to clearance, which is why we're here, and I think that if we do with clearance, just as this gentleman has pointed out, you ought to be willing to belly up to the bar and guarantee to him that it won't effect his facility, because it won't, you know. And if you can't guarantee that, you can't go forward. You need to be able to accept levels that are acceptable and clean from a public health and safety point of view, and that they aren't going to cause residual problems, like out in the environment. And think you can't, and I think the numbers prove it out.

MR. CAMERON: Okay. Let's go to Brian.

MR. HEARTY: Brian Hearty. Basically, just to reiterate again, we need a level, we need some type of promulgated regulation that we can use when we're releasing solid material from sites. And realize that not just licensed facilities, but that when federal regulations are promulgated, they can also be used under CRCLA at sites that might not contain licensed material but is relevant and appropriate for setting clean up levels or determining how clean is clean.

The other point I want to make is the guidance that has to come with this, if you do a dose-base rule. Now it just has to set

maybe the concentration levels. But the big thing is how to implement, how to measure it, what statistical basis do you use to prove it. I'm talking something similar to like the marsium for -- that's for surfaces for doing some type of guidance for clearance of the materials.

MR. CAMERON: Okay. Thanks, Brian. Let's -- let's go over here to Jaz.

MR. DEVGUN: Yeah. Jaz Devgun. I want to go back to the question that do we have a consensus that for any clearance, for any numbers to be derived and used in forms or tables, do we start with a dose criteria of one millirem? Have we guidance consistency on that, have a consensus on that, basically? Because form what I have seen, I have conducted how clean is a clean workshop, our waste manual for six, seven years. Every year once a year we get -- usually get an industry government representative, sometimes overseas.

There isn't a consensus per se, but we all know that one millirem is a very -- it's negligible, I mean, as compared to any other risks, any other like we have had. How do they know. When like a flight across New York to L.A. would have given you a full millirem.

So, we are talking, really, extremely low dose. We all agree with that. But is there a consensus, is there something there which you can refer to and start from there? We need a mile marker, saying, well, this is going to be our tritadium, and then we'll go ahead and then develop the methodology, whether it's 1640 or anything else and drive those numbers which we can use in the field.

MR. CAMERON: Let me explore that in the context of a question to Paul Genoa that Paul, you were talking about levels before and you said there at e practical limitations on what we can do. Can you or would you put that in the context of -- would you explain that a little bit more? My -- it raised in my mind, well, what levels cause what types of practical limitations? And I don't want to put you on the

spot if you -- if you, you know.

MR. GENOA: Well, I mean, I think we spoke today. I think we're -- we adhere at the practical limitations of the steel mill, you know, that they have a detection system set up to capture radioactive material that could enter the facility and injure it by contaminating it, but there are limitations on it, that routine, uncontaminated concrete, contaminated only with natural radioactive material sets off their detector if it's in a certain configuration. That dirt in the bottom of their container sets it off in a certain configuration.

In fact, I understand that even if the steel is stacked up the wrong way that that would set it off, you know, because of the difference in densities and background and all that.

So, there are limitations on how hard you can practically look to determine that there is no radioactive material. And it's a ridiculous game because everything has radioactive material in it at some level. So, you have to just accept that the world is radioactive. I mean, that's how it was born. That's how it's always going to be.

So, then you get into, well, let's se up a safety, a health basis. And you've already done that. You've already said 100 millirems is safe. But the public is not going to accept 100 millirem from this activity, so you apportion some small amount of 100 millirem. Well, pick a number, I don't care, you know, but there comes that implementation. How do you measure that? And I mean at a nuclear power plant. I mean, I worked at the Crystal River Plant in Florida. We set our detectors so that people come and people go, and their equipment comes and goes through the facility.

In the morning at that power plant we had four fossil plants nearby. If we had a damp morning or a cold weather with inversion, we have the wind blowing the wrong way, the radioactive material being emitted by the coal plants comes over and sends off our detectors.

That's a fact of like. It's kind of like Ray trying to, you know, measure the stuff coming into his facility. So, here we're trying to operate a nuclear plant and those coal plants are giving us trouble next door. Well, it's natural material, you know, you just have to accept it.

So, there are limitations to what you can do with detection, particularly if you drive it down to levels that are so far below a health risk and so far down into some portion of the natural fluctuation and background that it becomes indistinguishable from background, and an implementation nightmare.

MR. CAMERON: Okay. Thank you. Let's go to Don and then over to Bob Nelson. Don?

MR. COOL: I just wanted to reflect back a little bit on -- on what was said. I guess from where I'm sitting at the moment, I don't see a single view yet. I've heard this view. I've heard some other people support that. I've heard what I think is a very different approach, although it might end up being the same number. I don't know, at the moment. And that's part of what we're trying to do here, in fact, is to see what are the ways to go about it.

A perfect, wonderful outcome of all of this would be that Bob's modeling and Ray's detectors would come to the same place. Now, I probably should be taken off for a four cause drug test for even thinking that, but that's part of the exploration process that we're in.

MR. CAMERON: He thinks that this hasn't been talked about by the staff before, unrelated to your statement. But go ahead, Bob.

MR. NELSON: I had the same point that Don made, that we haven't reached a consensus on any standard at this point. That's why we're having these workshops. Those need to continue. And we won't be there for a while.

MR. CAMERON: Okay. Bill.

MR. KENNEDY: Yes. Bill Kennedy. In developing the ANSI standard we wrestled with this very issue about how do you set a dose limit and then do a back check to see if you've just now driven technology to wear it likely might not have gone normally because you set limits that were not detectable.

As we all know, detectability is a function of how hard you look, how long you count, how much you invest in training and instrumentation. We looked at generally available instrumentation and we found that at one millirem a year the doses would be detectable with field instrumentation for the majority of radionuclides. For the special case radionuclides often times it's not the only radionuclide you're looking at, it's one of a mixture. So, you can use isotopic ratios to -- to detect what or to estimate what's there for the things that may be non-detectable. But certainly a good survey program would have to establish those isotopic ratios and have a quality assurance kind of level of protection there. Much below about a millirem a year you don't -- you run into real detectability problems for most materials.

If you think about one millirem a year and you think about a 2,000 hour work year as the basis of the calculation, if my mouth is right we're talking about a half a micro R and hour differential in dose rates. For an external pathway for a photon only dose. And I believe, if I remember the detectability of the smelters, you were talking a change of -- I'm not sure if you said two or three micro R an hour difference, given a background of 10.

Right. And so, I believe this further supports Paul's contention that at the kind of levels that logically come out of this discussion, using today's technology, you likely wouldn't ever see an alarm unless a mistake was made and somebody through in more material than they should have, and in that case you should be seeing an alarm.

So, I offer those things for consideration.

MR. CAMERON: Okay. Thanks, Bill. Rich, you haven't said much, so.

MR. BURKUN: Yes. I don't want to endorse the ANSI standard at this point because I haven't read it yet, but I would say that it seems to have a number of features that seem to me -- that are very good.

First, it seems to be very protective of the public.

Second, at least for the isotopes that I'm interested in, the levels seem both measurable and generally achievable. It's important that we be able to achieve -- to achieve those levels, as opposed to just being distinguishable from background.

And third, it allows for a special case exceptions if the scenarios that were used in developing the guide, for instance, don't apply to -- to your particular situation.

So, I think the NRC -- I would urge again -- it has been said before that the NRC take a good look and consider very hard the ANSI standard.

MR. CAMERON: Okay. Thank you, Rich, for that opinion. I did want to make sure that we gave our sister federal agencies an opportunity to -- to chime in on this. And we heard from the Corps. And now I think Andy is going to give us some opinions. And I would like to check in with John Karnak from the EPA, because of their very important role in all this, before we end today. Andy?

MR. WALLO: Well, actually, I was tieing more to Bill's comments and the comments on the one millirem standard. I just wanted to note that in general I think the levels that were in the proposed ANSI standard, at least, were certainly detectable by one means or another. But the one millirem statement, whether one way millirem is detectable depends a lot on how you calculate one millirem and what the

level comes out of it.

So, if you deal with concentration levels, yes, there are levels that are detectable and at the one millirem level. Depending on how you calculate it they may not set off.

On the other hand, these things deal with volumes. And a very small volume that would never give one millirem could be sufficient concentration to set off your detectors. This is -- it's not a simple cut. Nobody can say one millirem is fine to measure, you won't detect it at your plants. It depends on a whole configuration of assumptions and techniques. And I think that's something this measurement issue has to be looked into in more detail to take a look at this. It's not a health and safety issue it's, as Debra said, it's an annoyance issue that we need to resolve and look at from a technical standpoint.

I think that was the primary comment I wanted to make there. I don't really, at this point, have anything to add on all the other questions. We'll probably provide things in writing or talk at some of the other meetings.

MR. CAMERON: Okay. Thanks, Andy. And the one thing that you did bring up is that I think you were saying is that there is a need for additional information in terms of how we solve this, how the detectability issue is solved before any sort of a level could be set; is that -- that's correct? All right. Andy said.

Let me ask John if he has anything to add to this from the -- the EPA perspective. Now that you've sort of broken your silence at the beginning that you promised your boss. So, you might as well go all the way.

MR. KARNAK: Well, I expect I can go on record as saying I'm glad this is NRC's record and not EPA's.

Someone mentioned earlier about one being a predisposed number, and Id I'd just like to mention that in the NRC, or excuse me,

in the EPA analysis -- and I must defend NRC, that they were apart and helped us with this -- we looked at one tenth of a millirem and 15 millirem, and we choose those numbers simply because we needed some number to be able to do an analysis. It wasn't -- we didn't presuppose that any one of those ought to be the level to pick, but rather, one millirem, kind of in line with what has been talked about at the other levels, a tenth just drops an order of magnitude so you can, you know, just kind of take a look at what's happening. And 15 was what we were looking at as a clean up standard for sights. So, that's kind of the reason why we came with those three.

And we did not show a zero or no release in there because we figured multiplying by zero really just didn't get us very much. So, we didn't bother -- we didn't go to an analysis at that level. And I just want to say that the NRC did look in on some of these things with us. So, I hate to defend NRC but nonetheless, I'd like to suggest that they did have a look at this, too,

MR. CAMERON: Okay. Thanks, John. I take it from what you said at the beginning that EPA has no intention of doing a generally applicable standard on this issue at this point?

MR. KARNAK: Since we're on -- since we're on the record, I don't want to say on the record that I hate to agree with NRC. We, in fact, do agree on many occasions and we work together quite well.

We, right now, are now looking at a generally applicable standard, as I mentioned earlier at the outset. We thought about it and felt, you know, based on the information that we collected at the time that we wanted to work on orphan sources and try to help the states get those out of harm's way. And we felt like that we ought to look at the international area because a number of issues have been brought to our attention, and the possibility of that material coming in at much higher levels, and we felt that was a place to concentrate our efforts.

MR. CAMERON: Okay. Thank you very much, John. We have -- do we have other comments? Frank, do you want to put a question to the -- to the group? All right.

MR. CARDILE: This is Frank Cardile. Before, I guess, 3:00 o'clock, is that -- before we leave, I don't know if we've really gotten down to number three, this is what additional information is needed, but we're getting late in the day, and I guess this is in the form of a request to the people in the audience who will be providing us comments. We talked a little bit, to get back into a little bit different subject, back to the restricted use, we had put it up on our list of alternatives as a viable alternative rate -- potential viable alternative. It somewhat came out of the license termination rule where that was one of the alternatives we use in there as a method for terminating a license.

I heard conversation yesterday which seemed to support a license, a restricted use. I thought I heard some conversation this morning where it was -- it would seem to be some of the problems with restricted use were raised.

So, I guess the question I'd like to ask everyone, and I don't really want us to get into it today, you don't have to start discussing it further, but what would be useful to the staff would be in your comments to us to provide your thoughts and viewpoints on restricted use. Whether you think it would work.

I wrote down a couple of quick notes here that, as you probably all well know, in the license termination rule the NRC license, of course, would be terminated while the restrictions stayed in place. But there would be deeds and zoning ordinances by which the restrictions would be, you know, kept in place, and they'd be held at the local, sat, government office.

And of course it would be relatively easy to go buy a site where the land was and confirm that the land was indeed being used for

its restricted purpose, mainly industrial use versus a farm.

And of course we identified a few things this morning that are different here. And I thought I heard a little bit of these may be major problems. For example, you'd have to have a new licensing scheme for, perhaps, scrap dealers. Well, that's different from the license termination rule.

And of course it would obviously not be particularly easy -- I think somebody pointed out this
today -- to make sure that the material is indeed being used for its restricted use.

So, I guess to cut it short, but what I'm really asking for is this is something that's a little harder to calculate for NRC staff then, for example, Bob to keep working on NUREG 1640 and different dose modelings.

So, we're looking for your comments to aid us on this as we go forward on the restricted use and whether it's viable for this type of situation. But we really don't have to follow that further right now.

MR. CAMERON: Okay. That would be a long thread to follow, I think. But I just -- Frank reminded me of something that should be said here. The NRC would welcome written comments, but don't -- don't get the impression that the comments that you provided over this -- these two days, are not going to be considered as if they were a written comment and grist for the NRC's mill. And we are getting -- we are getting close to 3:00, so we're going to start to wrap up here. Andy.

MR. WALLO: I just wanted to clarify your clarification of my comment after I thought about it. I did want to agree that there is no general consensus on the one millirem necessarily everywhere, but it is -- but the number is someplace down low like that.

But the comment on my comments on the measurement system and

needing more information, it's not so much that you need the information about the steel mills and the landfill measurement system to decide on what's a safe level, you probably do need it to decide on what are appropriate standards on a concentration basis.

But I think you can separate deciding on what's the appropriate safe level, the partitioning of your 100 millirem separate from deciding what you need to measure to make sure you're not causing these annoyances out in the other communities. So, they're related but not necessarily tied, as I think you summarized.

MR. CAMERON: Okay. Thanks, Andy. I can see that there's a new word creeping into the lexicon here: annoyances. So, thanks for that, Debra.

I think I want to give Don the last word before we close. I don't see -- I do see.

MR. KARNAK: Just that you list the website with the material associated with this project.

MR. CAMERON: Okay. Can we -- do we have a special website address at this point? Trish.

MR. HOLAHAN: Currently the issues paper is listed on the rule making form website, and I'm sorry, I don't have it to rattle off the top of my head. What I mentioned yesterday is that we're going to have a web page specifically for this issue, and that hasn't been established but we'll hopefully get it in very short order and then we'll have all documents associated with this effort, to include links to the technical basis documents, the 1640 and the likes on that.

MR. CAMERON: Okay. Thank you. Before I turn it back to Don I just -- I just wanted to thank all of you for the discussion. It was a -- it was a really nice group for all of us to work with, and I know it was beneficial for the NRC, and we hope it was beneficial for you to start thinking about this. And I wanted to thank the people from

Meridian for all the convening support and logistical support that they gave for this effort, it was really invaluable. And thank Nancy of Jackson & Associates for the stenography help. And Hoite, wherever he is out there, that's our uniformed police officer from the San Francisco Police Department.

And Don, I'll turn it back to you for closing.

MR. COOL: Okay. Thank you, Chip. I think most of what could be said has been said in one form or another at this point. Every time you start into one of these processes you always do it with a little bit of trepidation because you, quite frankly, have no idea. There's no good way to stick your toe in the water and find out exactly what the temperature is. You have to jump in. I very much appreciate all of your participation. I think there has been a great deal of valuable information and exchange of information. I would encourage each of you to think hard about what you've heard here, think hard about the things that have been laid out, do some reflecting, and communicate the results of that to us. That is as much a value coming out of these workshops as the actual transcript. And certainly that's not to demean what we've got here, because there's a huge amount of information to go -- go and sort our way through. But there is the great added value of now going back and being able to think about it, on the plane or as you're driving back up through, if you happen to be going sort of back north into wine country or something.

So, let's -- to just continue to process along that in formation as you go. But I do very much appreciate each of you for -- for participating. And I look forward to continuing to hear from you on your thoughts and ideas. And with that, thank you very much.

[Whereupon, at 2:55 p.m., the workshop was concluded.]