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NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON NUCLEAR WASTE

(ACNW)

156TH MEETING

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TUESDAY,

DECEMBER 14, 2004

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ROCKVILLE, MARYLAND

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The Advisory Committee met at 8:30 a.m. in Room T-2B3 of the Nuclear Regulatory Commission, Two White Flint North, 11545 Rockville Pike, Dr. Michael T. Ryan, Chairman, presiding.

COMMITTEE MEMBERS:

MICHAEL T. RYAN, Chairman

ALLEN G. CROFF, Vice Chairman

JAMES CLARKE, Consultant

WILLIAM J. HINZE, Consultant

RUTH F. WEINER, Member

ACNW STAFF PRESENT:

NEIL M. COLEMAN

JOHN FLACK

LATIF HAMDAN

HOWARD J. LARSON

MICHAEL LEE

RICHARD K. MAJOR

C-O-N-T-E-N-T-S

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

(8:32 a.m.)

CHAIRMAN RYAN: The meeting will come to order. This is the second day of the 156th meeting of the Advisory Committee on Nuclear Waste. My name is Michael Ryan, Chairman of the ACNW. The other members of the committee present are Alan Croff, Vice Chair and Ruth Weinberg. Also present are consultants Jim Clarke and Bill Hinze, although Bill is getting -- oh, that's right, they're getting their badging process done this morning, so that's why they're not with us. We'll continue on.

During today's meeting, the committee will receive an update from the Director Office of State and Tribal Programs on recent activity in his office, Paul Lohaus is with us. Also one of his staff folks, John Zabko, is with us as well. Good morning to you both. We will also discuss draft prospectus documents for proposed 2005 working group meetings and we'll hear from representatives of the NRC staff, DOE and the State of Maryland, Department of Radiation Protection, and other stakeholders on the recent activities related to the control and tracking of sealed sources and we'll discuss proposed ACNW reports.

Is Neil Coleman, the Designated Federal Official for today's session? Yes? You are, okay, great. The meeting will be conducted in accordance with the provisions of the Federal Advisory Committee Act. We have received no written comments or requests for time to make oral statements from members of the public regarding today's sessions. Should anyone wish to address the committee, please make your wishes known to one of the committee staff.

It is requested that speakers use one of the microphones, identify themselves and speak with sufficient clarity and volume so that they can readily be heard. We also ask that visitors sign in on the sign-in sheets that are behind the pillar just behind me. Without further ado, Paul, welcome and thanks for being with us this morning. Good to see you.

MR. LOHAUS: Thank you very much, Mike. It's a pleasure to be with you. I had the opportunity to meet with you before and we really appreciate the opportunity provided. What we thought we'd do today is provide a broad overview on the Agreement State Program, talk about some -- maybe highlight some of the recent program activities and one of the areas that John Larkins and Howard had identified was our oversight program for the Agreement States, so we

thought we'd spend maybe some additional time and talk about our integrated materials performance evaluation program.

And I asked John Zabko to join me today. John's a health physicist in my office and he's the project manager that has overall responsibility for the agency's program, so I thought it would be a good opportunity for you all to meet John and an opportunity for John to meet you all. So he's going to be sharing the presentation today.

What I prepared today is a short three-pager which I'll talk from and as we go through, if there are any questions or any areas that you'd like to stop and talk about in more detail, any areas that aren't on here that you'd like to talk about, please stop me and make sure that we have an opportunity to talk about this because I want to make sure that any questions you have or any areas that you'd like to talk about, that we have an opportunity to cover that.

But if you'd turn to the first page, background information on the Agreement State Program, if you look at the first bullet, I'm going to sort of start with this historical perspective. But in 1959 the Atomic Energy Act was amended at state request and added a new section, Section 274 entitled "Cooperation

with States" and that was a fairly significant action in that prior to that time all of the Atomic Energy Act materials were under Atomic Energy Act jurisdiction. What this did is it provided a role for the states.

Move onto the second item. What the Act provides is that when a state is ready, the NRC will discontinue and the state will assume regulatory authority of the Commission over certain materials, what I refer to as the byproduct source in small quantities of special nuclear material. And an important aspect here is, this is not a delegation, similar to what you may be familiar with, with respect to EPA programs. In this case NRC is actually giving up authority. It's a relinquishment and the state is assuming authority under independent state laws. And that's an important distinction that we have in the Agreement State Program that you won't see in other federal/state programs.

The governor must request the agreement, must certify that the state has a program that's adequate to protect public health and safety. The Commission must make findings also that the program is adequate to protect public health and safety and also compatible with NRC's program. The relinquishment of

authority is done through a formal agreement document. That's where the term "Agreement State" comes from. Under the Act and under the agreement, the Commission does retain authority in specific areas; regulation of reactors, large special nuclear material users, the import and export of material, high level waste disposal, oversight of federal facilities. Authorizing distribution of materials to persons exempt from licensing is another area that's reserved to the Commission. So there are several areas that NRC retains continuing jurisdiction, and one of these is the protection of common defense and security.

It's always important, I think, to recognize that -- moving on to eighth item, that the states also regulate in areas that are broader than the authority assumed under the agreement. They have responsibility for X-rays, naturally occurring materials and have what they refer to as comprehensive radiation control program. In other words, they deal with Atomic Energy Act materials, X-rays, naturally occurring materials, lasers, non-ionizing radiation, across the board, fairly broad programs.

Today there are 33 Agreement States. They regulate about 17,000 license. NRC regulates about 5,000. There are two states currently active in

negotiating agreements. Minnesota, we expect the Minnesota agreement to be effective in the September timeframe of this year and Pennsylvania is also active and their current schedule has them becoming an Agreement State in the late 2007 timeframe.

CHAIRMAN RYAN: September 2004, does that mean they are an Agreement State now or they're --

MR. LOHAUS: They will be. The current schedule, Mike, is the agreement would be effective in September 2004. We have an application from the governor that's under review and our next step would be to publish that for public review and comment.

CHAIRMAN RYAN: We're passed 2004, September though.

MR. LOHAUS: Oh, thank you, yes.

CHAIRMAN RYAN: 2005?

MR. LOHAUS: 2005.

CHAIRMAN RYAN: Okay, great.

MR. LOHAUS: Thank you.

CHAIRMAN RYAN: All right, I didn't want to rush into it if we weren't ready.

MR. LOHAUS: Thanks, yes.

CHAIRMAN RYAN: And Pennsylvania is a limited Agreement State now for the purpose of regulating low level waste if I understand.

MR. LOHAUS: They explored that at one time.

CHAIRMAN RYAN: I'm sorry, could you explain Pennsylvania's status a little bit for us?

MR. LOHAUS: Sure, going back, maybe -- this probably went back maybe seven, eight years, Mike, they had an interest. They did a Part 61 Rule. They had an application to become what's called a limited Agreement State which would be they would have taken on authority for only the low level waste disposal facility licensing. They chose not to pursue that and subsequently chose to go for a full agreement and they did give us a draft application about two years ago. We reviewed the draft application, gave them comments and they're presently working on preparing a final application, getting people in place, getting the regulations finished, getting the program description done and looking to submit an application in the near future. We don't have a date from them yet, but they are working getting their people in place. That's one of the key items that will trigger them submitting an application.

CHAIRMAN RYAN: Just for my own information, does a state have to have rules and legislation in place and completed prior to getting

the agreement status or can that be a contingent issue?

MR. LOHAUS: There is no contingency ability. You need to have a set of legislation and statutes in place that would enable the program, have regulations in place that are compatible with NRC's -- basically, the program's got to be a complete program including all of the necessary procedures, licensing, inspection procedures, statutes, regulations.

CHAIRMAN RYAN: Yes, thank you.

MR. LOHAUS: Several other states -- moving on to the 11th item there, several other states have interest in achieving agreement status; Connecticut, Michigan, and recently New Jersey as well. If you look historically, I think this is an important aspect, looking at the program over the past 10 years. There's been some rather significant changes that have taken place what I would almost term a re-engineering, if you will. There's two new policy statements that provide the underpinnings for the program.

There is the Statement of Principles and Policy for the Agreement State Program. There's also a new policy statement on adequacy and compatibility of Agreement State programs. One of the areas where

we had experienced a fair amount of difficulty in the past from a scheduling standpoint was processing of new agreements. And we took a look at the past experience and reflected that into a new procedure which is the state agreements, SA-700 State Agreements Procedure processing an agreement and basically what that does, it provides a road map for a state.

And significantly, what we did is we -- if you look historically, there were multiple iterations that we would through with a state. We'd look at a preliminary draft application. We'd look at a draft application, sometimes we'd look at a third iteration. We'd look at a final application and what we did is we streamlined the process to have a two-step review process. We'd review a draft application, provide a set of comments to the state on that draft application and then get a final application from the governor, so there's a two-step review process and we do a detailed review on the final application.

And in the last several agreements that we've done that have really helped, that has expedited the process, it's reduced the level of resources that the states had to devote to preparing their program description. It's also reduced the level of resources that the agency devoted to processing of new

agreements. And coming back to your question, Mike, if you're interested, that procedure basically ties everything together, has a set of criteria that we use for judging the adequacy of each of the program elements, both the statutes, the regulations, all of the various elements in the program, and also provides good guidance to the state in terms of what they need to include in their application to be in a position to meet the criteria that are there. We found that that's really what helped us a lot.

CHAIRMAN RYAN: Has that kind of then filtered into your follow-up in checking Agreement State programs and a lot of oversight and so forth?

MR. LOHAUS: Yes, it does. As a matter of fact, that's a great lead-in. If you'd move onto the second page, the first bullet at the top, the -- sort of in parallel, we also developed a new review program, the Integrated Materials Performance Evaluation Program and both sort of fit each other. If you look at what we do in processing a new agreement, when you look at what we do in terms of the review program for existing Agreement States, there's good parallel and good consistency between the two.

In other words, if you were to take a new Agreement State and do a review against the impact

program, that program should come out fully satisfactory in meeting all the review criteria in the Management Directive. So there's good parallel between the two and John's going to come back and talk further about the IMPEP program.

CHAIRMAN RYAN: Great.

MR. LOHAUS: One of the other areas of change and I think this is a very positive area, has been increased opportunity and involvement of the Agreement States in NRC activities. That procedure that sets that out is Management Directive 6.3. There's a number of other staff procedures that tier off of that Management Directive but what it does, it provides for the establishment of working groups. You've probably seen or had presentations by some of the different working groups, but what this does, it provides an opportunity for state staff and NRC staff to work together, take the expertise that we have within the staff and put them together and what we find is, we're getting better products, there's better acceptance on the part of the states for those products in terms of their having the opportunity to participate in developing the products and it also provides for a sharing of the resources that are needed to develop those products and we interact very

closely with the Organization of Agreement States in the Conference of State Radiation Control Program Directors in the establishment and the use of the working groups.

If you look at any one point in time, there may be anywhere up to 20 or so working groups that are in place. For example, a good example is the working group that's working on the trading and experience criteria for Part 35. There's -- it's a good mechanism that we have. One of the other things I thought we'd highlight is, if you look over the program and look where we are today, you're going to see increased Agreement State involvement in the administration of the program.

There's an Organization of Agreement States, it used to be sort of an informal coalition. They're now an incorporated organization. They have a board of directors, elected leadership. They serve as a representative organization for the Agreement States collectively. State staff participate on our review teams for the Integrated Materials Performance Evaluation Program, so we have peer reviews and as John is going to talk, those reviews are done uniformly, both for our regional programs and for the state programs. So you have the state staff

participating with NRC staff applying a common set of criteria in reviewing both what NRC is doing in terms of its materials program implementation and what the states are doing in their Agreement State programs.

I mentioned earlier the participation on working groups. I think this has been very effective and since 1997, the states have taken the lead on the annual Agreement States Meeting. Prior to that time, it was really an NRC meeting. Today, if you look at the meeting, it's truly a meeting of the Agreement States. NRC continues to actively participate, but it's truly a meeting of the states that they run, they host the meeting, they work the agenda with us and really take the lead in setting that meeting up and carrying that meeting out.

The last item I've highlighted here and this has been an area of concern and I think continues to be an area of concern for the states but it was a tough decision the Commission made but the right decision, is that we stopped funding of Agreement State training. In the past, what we did is we provided both tuition cost and travel and per diem cost reimbursement to states for attendance of NRC training courses. Given fee equity concerns, you have NRC licensees that were covering the costs for that,

the Commission chose to change that and place responsibility on the states, which I think is rightfully a responsibility they have, to train and qualify their staff. They still actively participate in NRC's training courses, but they do pay tuition and they do pay their travel and per diem for attendance at that training. So it's a responsibility that really the states have to train their staff comparable to the responsibility that NRC has to train its staff.

Move on to the 13th item, I wanted to talk a little bit about the National Materials Program. And maybe the first point to emphasize is in many cases we talk about the National Materials Program as being a future program or a future state of the program and to me, the National Materials Program is a program that's in existence today. It's basically what is represented by NRC and the collective Agreement State programs. It's not a static program. It's an evolving program. You're going to see the program continue to evolve.

For example, Agreement State participation in working groups and participation in helping develop regulations and guidance is an evolution in the program. As the number of states increase, the role and responsibility for the states in helping maintain

the infrastructure of regs and guidance is going to continue to increase commensurately. So what we have today is the collective program and that program will continue to evolve as we go forward.

I've highlighted a recent SECY paper 04-215. We recently completed a series of pilot projects in looking at National Materials Program issues, the ability of states to take on and address guidance development responsibilities, further demonstration of NRC and the states to work together in working groups to produce products that can be used both by NRC and the states and that paper provides a final report to the Commission on the results of the pilot projects. So if you have interest, you may want to take a look at that paper.

CHAIRMAN RYAN: I think we would really be interested in getting a copy or several copies electronically, if we can, folks. Thank you. That would be great.

MR. LOHAUS: Before I move onto the Integrated Materials Performance Evaluation Program and have John pick up, let me maybe stop here and see if there's any questions or any areas that I may not have covered. I mean, I know I've going through this fairly quickly but I thought what I'd do is sort of

give you a broad overview of where the program came from, sort of where we are today, some of the current issues the working groups, the National Materials Program, but if there's anything in particular that you'd like us to talk about further.

CHAIRMAN RYAN: Yeah, a couple of thoughts, Paul, that you've stimulated; you haven't mentioned the CRCPD, the Conference of Radiation Control Program Directors. Do they still have an active role and have suggested state regulations and so forth?

MR. LOHAUS: Yes, they do. Very good question. If you look to the states, there are really two major state organizations; one I mentioned the Organization of Agreement States. The other is the Conference of Radiation Control Program Directors. The Conference includes representation from all 50 states. All 50 state radiation control program directors are represented in that organization. One of their products and it's a very useful product that Mike mentioned, are the suggested state regulations and these regulations are developed to address the needs of the entire program. In other words, they don't just address needs that relate to the Atomic Energy Act materials, but they also address needs

relating to X-ray regulation, regulation accelerators, and other areas, lasers, for example, they have a suggested state regulation that deals with lasers and what the NRC staff does is work very closely with the various suggested state regulations groups. There's probably about maybe 15 or so of the groups assigned responsibility for particular areas and we work very closely with them.

For example, they have a group suggested state regulation dealing with Part 35 and they will work with the NRC staff to develop a comparable to Part 35 that the states could then use as a model in developing compatible or comparable state regulations. They also have a Part 61, for example, equivalent rule that they've developed and that provides a model for the states to use for developing a waste disposal licensing rule. They have a regulations dealing with transportation, for example.

So it's a good active organization. They have an annual meeting each year in the spring timeframe. They have good support and participation on the part of the federal agencies. It's a very active organization.

CHAIRMAN RYAN: This may be a question that you don't have an answer to but as you talk about

Agreement States dealing with AEA, let's just stick with materials for the moment, and perhaps non-AEA materials like let's take NARM, Cobalt-60 or something else produced by an accelerator, do you see that coming together? There have been a couple of initiatives that bring some non-AEA material under the AEA which would then put it under NRC as an Agreement State controls and I ask the question because when you talk to the state folks, I quote Mike Mobley often who said, "Uranium is uranium is uranium". I don't care where it started, I mean, he regulates the radiation risk. What's your thought on that? Where is that going? What's the direction of that effort?

MR. LOHAUS: My sense is the direction is that there will be, you know, in the future, a -- more of a comprehensive aspect. If you look at the Agreement States, they presently regulate the naturally occurring and accelerator produced materials comparably to how they regulate the Atomic Energy Act materials.

CHAIRMAN RYAN: Same people, same regs, same --

MR. LOHAUS: Same regs, same people, same process, same inspections, and many of the non-Agreement States have very active programs where they

register, license and control those materials in a very comparable way to how an Agreement State or NRC regulates naturally occurring materials. There are legislative proposals that have been considered and I believe are still active that would provide for the assumption of authority over discrete naturally occurring and accelerated produced materials by the Nuclear Regulatory Commission and again, this is an item before Congress but I think there is support from the states for moving forward in that area and we'll have to see how that comes out in the next congressional session, but there is legislative initiatives to provide authority to NRC for discrete NORM and discrete NORM materials.

CHAIRMAN RYAN: It's interesting when you look at AEA material licensing in states, it's very much a uniform sort of activity for all the reasons you've mentioned, which, you know, are all very good and well-planned reasons. If you look at say T-NORM, it's all over the map from none to a lot. So and you know, when you kind of think about risk informing all of that, sometimes T-NORM is more important, perhaps, than some AEA materials in terms of their relative interest from a regulatory perspective, so it's interesting to see that kind of shift continuing

toward one voice for a risk informed view of radioactive material.

MR. LOHAUS: Yes, and you know, mentioning the conference earlier, one of the accomplishments that they did recently was, they produced a regulation that's Part N. They use letters for their rules, but it was a regulation that was intended to address naturally occurring materials. So they've taken the lead to try and provide a model regulation that the states could use in that area as well.

CHAIRMAN RYAN: Sure.

MR. LOHAUS: So it's a good initiative to further that as well.

CHAIRMAN RYAN: I know, I serve on that committee, so I understand it well.

MR. LOHAUS: Yes.

CHAIRMAN RYAN: Yeah, that's interesting. Well, let me stop and see if there are other questions. Yeah, Allen, Allen Croft?

MR. CROFF: You mentioned a regional program and I wasn't clear what that was or how it fit in.

CHAIRMAN RYAN: The NRC Regional Materials Programs that we carry out, when we do our IMPEP reviews, the IMPEP program or Integrated Materials

Performance Evaluation Program, our review program, we apply that program to the materials programs that are carried out in the regions and the programs that are carried out within the Agreement States. So what we have is a process where the determinations that the programs, whether it be an NRC program or an Agreement State program, are being carried out in accordance with the criteria that we have set out in IMPEP. So if you look at our review program, we'll be going out to a regional office. We look at their implementation of NRC's materials program, how they're doing licensing, how they're doing inspection, the staffing, the training of that staff in a basically identical way that we would look at an Agreement State program and review that program. It's basically to provide commonality in the criteria that are applied in looking at the performance of the programs and in judging the performance of the programs.

So we have the same process that's being applied to NRC's materials programs as we apply to the Agreement States.

MR. CROFF: Okay, so when you say "regional program", it's NRC exercising its regulatory authority in non-Agreement States.

MR. LOHAUS: That's correct, yes, that's

correct.

MR. CROFF: Okay, that's what the name sort of threw me.

CHAIRMAN RYAN: I think a friendly amendment to that is also over its authority that an Agreement State is not allowed to have in an Agreement State greater than 350 grams of SNM and so forth.

MR. CROFF: Okay, I understand.

MR. LOHAUS: That's correct, yes.

MR. CROFF: Okay.

MR. LOHAUS: That's correct.

MR. CROFF: And you mentioned also a policy statement on adequacy and compatibility. I wasn't sure -- I guess what's the compatibility issue, if you will? Is there a requirement that agreements state regulations be compatible and sort of what does compatibility mean?

MR. LOHAUS: That's an excellent question and it's been a question of discussion from the beginnings of the program and continues to be a question of discussion but if you look statutorily, NRC, the Commission is required to make two findings for a state program initially. One is that they're adequate to protect public health and safety and the second is that the program is compatible with NRC's

program. And basically the compatibility component is a consistency. In other words, the program should be consistent with NRC's program within certain bounds so that you don't disrupt interstate commerce, you don't create inequities between an Agreement State and the NRC or a licensee within an Agreement State jurisdiction and a licensee within NRC's jurisdiction should be faced with the same level playing field, if you will, and requirements. And obviously that's balanced with the state's interest to have flexibility, to address local preferences, to address individual state legislative desires in terms of how the program should be run within the state and that policy statement provides basic ground level definitions of what we mean by adequacy, what we mean by compatibility and then sets the limits or bounds in which the states can have flexibility and then we've established a set of implementing procedures that carry that forward, but the comparability component is really the component of having, let's say uniformity in the radiation protection standards across the nation so you don't have one dose standard in one state and another dose standard and --

MR. CROFF: So the states generally approach their regulation or legislation and whatever

in essentially the same way from state to state? You know, if I went from Agreement State 1 to Agreement State 2, would the regulations and whatever look fairly similar or do they -- are they sort of all over the map and they approach it in very different ways?

MR. LOHAUS: It's the former, but I'm going to put the but in there, but, there is -- you will find variation and that variation and one of the responsibilities we have is to keep that variation within the range of the criteria and the range of our procedures.

And certain things are pretty easy. For example, administrative procedures, the state may have certain process steps that it would go through to receive, review and issue a license. We leave a lot of flexibility in that area to meet state preference. However, for dose standards, for example, public dose standards, occupational dose standards, concentrations of material that would be acceptable for release under the Part 20 concentration limits, those have to be uniform and we work with the states and we review each of their regulations and each of their procedures to make sure there's uniformity in the dose standards.

So when you look at the state rules and the state statutes in that area, you're going to see

very -- they're all going to be aligned along the NRC standards, if you will; whereas if you looked at their licensing procedures, you're going to see some variation, a lot of variation from state to state. And one of the responsibilities we have and as a matter of fact, John, prior to his assuming IMPEP responsibilities, had lead responsibility for us in this area. We review each state rule change in draft and apply our criteria to make sure that that rule is within the bounds and then after the rule is promulgated, we also review the final rule to make sure it's within bounds and then during our integrated materials performance evaluation program reviews, that's one of the areas that's specifically reviewed.

We look at regulations and the other program elements required for compatibility to make sure that the program is within the bounds that it should be. So we look at this initially for a new Agreement State and then we look at this on a continual basis after a state becomes an Agreement State. And you will find -- as I noted though, you will find some areas where the states are more restrictive. For example, one area is the dose standards for -- that are set out in the license termination rule. In this case, that's more of a

constraint, if you will, than an actual standard in that the state does have flexibility in that case to set a more stringent standard and you will find some states that have set a decommissioning dose limit that's lower than the 25 millirem limit that NRC has and in that case, that's within the bounds of acceptability, if you will.

But if you look for the occupational dose limit, you'll find uniformity across the nation in that area.

MR. CROFF: Okay, thanks.

MR. LOHAUS: It's a great question. I mean, the areas of discussion and the pull and tug that we have with the states in this area, it's an area of tension and it's the flexibility versus the uniformity question.

CHAIRMAN RYAN: Paul, you could probably talk for an hour or more on just that one topic --

MR. LOHAUS: Yes.

CHAIRMAN RYAN: -- but there is a lot of -- you know, having been a practitioner in South Carolina, there's a lot of attention paid by states to the regulations of the NRC and how they evolved. For example, you know, as the chairman of the TARCC Council, the Advisory Council in South Carolina, say,

"Well, these are compatibility changes that the NRC has made to regulations and here they are and, you know, we're going to implement them through a rule change and all of that", so it's very much a dynamic process over the years to maintain that compatibility and that's I think, one of the strengths of the program.

MR. LOHAUS: Yes, yes.

CHAIRMAN RYAN: If you're in one Agreement State or another, you have a pretty clear picture with the exception of some of those finer details, perhaps, of where you stand and what your requirements are.

MR. LOHAUS: Yes, yes.

CHAIRMAN RYAN: That's hard work to keep that up.

MR. LOHAUS: Very much so, yes.

CHAIRMAN RYAN: Any other questions or comments? Yes, for Paul?

DR. WEINBERG: For Paul. Something you just said triggered a question. When a state sets a standard that is within but more restrictive than the federal, do you ask them for any kind of justification or can they just do that?

MR. LOHAUS: We -- in those cases where they set more stringent standards, we do like to

understand the basis for that and if you look at the policy statement and the criteria, there is a limiting factor there. In other words, they cannot -- they cannot set a standard that's not based on public health and safety, environmental protection considerations and they cannot set a standard that would be so restrictive that it would preclude a practice that's in the national interest. In other words, if they set a standard that was so low that you couldn't license let's say a particular kind of activity within that state, that would put that out of bounds under the policy and under our procedures.

And there is a limiting criteria, if you will, that's there but yes, in those cases where the state has a different requirement or procedures, we ask the state to identify that and to provide the rationale or reason why they chose to do that so we have some basis for understanding for that.

DR. WEINBERG: Do you look at -- is there in every state a particular state agency that does all the Agreement State, all of the oversight -- sort of oversight that an Agreement State does or is this spread out among state agencies?

MR. LOHAUS: a great question because that's another area of pull within the states,

particularly today. To go back to the conference, the conference has a resolution that they've passed where they would like to see a central state radiation control program or agency, a single agency that's identified. And if you look at the states, the majority of the states are operated by a single radiation control program. That's sort of the term that's use.

In many cases it's within the State Health Department. In some cases it may be within the state environmental group. In some cases it may be a separate organization. For example, Arizona has an Arizona atomic energy organization that reports directly to the governor, if you will. Some programs are operated by multiple agencies. And NRC's position relative to organization, we do not dictate how a state should organize. We leave flexibility. What we want to make sure though, is however the program is organized, that it's adequate, that there's clear lines of communication among the various organizations and the program is effective in terms of its implementation and a couple of examples.

One is within the State of Texas, you have two organizations. One organization has responsibility for licensing a low level waste

disposal facility and handling the decommissioning type actions. The other organization has the responsibility for all the rest of the program. And you will find programs such as that.

One program I'll highlight is the New York State program. That program is actually, since its inception, has been carried out initially by three organizations and now by three separate -- excuse me, four separate state organizations, but they interact and coordinate well, and when we do our program reviews, we review each of those programs and we pull together an integrated bottom line, if you will, for the entire state radiation control program. And the states are wrestling with this today because there are efficiency areas and some legislative initiatives what are looking at improving state government performance and in some cases they're taking the programs and moving the responsibilities out and putting all licensing activities within the State Department of Health in one group, all inspection activities within another as opposed to having a single radiation control program.

And that's created some difficulties for the states in terms of maintaining expertise and training and understanding and transfer of knowledge.

Louisiana is a good example. They went through that process, divided the program up and then recently they brought the program back together as a central program because of the benefits that they see for having that central program and the expertise that's needed in the radiation safety area that they lost that and they're now back as a central program.

CHAIRMAN RYAN: What goes around, comes around.

MR. LOHAUS: Yes.

CHAIRMAN RYAN: Okay, any other questions for Paul? Thanks for that introduction, Paul. It's a good tutorial on a very dynamic program.

MR. LOHAUS: John?

CHAIRMAN RYAN: John, take it away.

MR. ZABKO: Thank you very much for the time to speak to you and I'd like to know about the microphone. It's kind of sagging. Can you hear me now? It might fall, but I'll play with it.

As Paul started, I will continue to give you an overview of the IMPEP program instead of going into specific details but if there are any questions along the line, along the way, please stop me and ask or you can ask after we're done or you can always contact me in the Office of State and Tribal Programs,

if you have an in-depth question that you'd like to discuss. As Paul has said, we do review the state programs and the regional programs and our authority comes from Section 274(j) of the Atomic Energy Act that allows us to go out and oversee the programs in the Agreement States. It is a common process across the United States. We do apply the same criteria to regional -- NRC regional organizations as well as the Agreement States. The same set of criteria with the exception of common and non-common performance indicators, which I'll get into later. Obviously, if a state does not have a certain program element, we're not going to inspect or look at that program element in the state and the same thing in the regions.

Since the regions operate under the NRC jurisdiction, they have the same regulations, so we wouldn't be looking at their comparability aspect of their program to the regulations. We would take that away from that part of the review, and I'll cover that a little bit farther down. We normally conduct reviews every four years depending on the program, how it's functioning. If we do see problems in the program or potential problems, if that comes out in an IMPEP review, we may schedule a shortened period as the next impact report or impact inspection. That is

a decision made by the Management Review Board here at the NRC based on the results from the IMPEP and it's not a decision that's come to lightly. There's a lot of debate and there's a lot of information gathered to make that decision about cycling short a review or going the full four years for good performance for a program.

The reviews are scaled to size for the different Agreement States and for the regional offices. California and New York, New York, as Paul mentioned, very big programs we send larger numbers of people. Sometimes seven or eight people will go to a large state. Usually it's around four, though, for a small state with just your basic indicators that we're looking at. And that normally -- a team normally consists of a team leader, which is a senior NRC person, either from the regions or from the Office of State and Tribal Programs or from time to time an NMSS person will go.

There are three to four other people that go along with a team; one being an Agreement State person. And the Agreement State person does provide a very great service to us. We like to include the Agreement States in this process, so it truly is a nationwide, consistent and it's not just the NRC

dictating but it's a national program for the review of these programs. They also can take -- the Agreement State people can take the knowledge they learned from looking at some of these other programs in the United States, how they do things or maybe some of the things are problems, where they can take that back to their state so that they can enhance their program and we do see the IMPEP program not only as being an evaluation program but a learning process for the United States and for all the Agreement States and for the National Materials Program and I've already touched on the makeup of the teams.

Common performance indicators, as I indicated before, are things that all Agreement State programs or the regions will share such as staffing, status and materials of inspection program, technical quality of inspections, technical quality of licensing actions and the response to incidents and allegations, these are things that all programs will have. So we will get them in each review. I'll touch on a few things of what make up each one of those but there are -- each one consists of a lot of items but I'm just going to touch on a few to make sure we understand what each one is.

Technical staffing and training means does

the program have enough people to do their job based on their licensee load and are they trained sufficiently. We don't really prescribe a training plan for the Agreement States. We do give them a model and we do have certain guidelines, but it's to insure that people who are doing the inspections have an adequate background to do the inspections that they're doing.

Status of Materials Inspection Program, obviously, different states have more or less licensees. They need to have more or less inspections taking place at different frequencies and are they meeting those frequencies and are they compatible to the NRC's inspection frequencies and are they being done at a routine fashion and are the reports being generated on a routine fashion and is the management involved in that process, is the kind of things we look at.

The technical quality of inspections, are they inspecting what they -- what we think they should be inspecting as a model program. Are they inspecting medical licensees for items that we would normally see them looking for in a medical licensee. Are they inspecting eradiators for the things we would be expecting them to see there as well, so we have a

standard across the United States. The technical quality of licensing actions refers to things come in when a licensee requests a license. Are they applying the correct license conditions, are they applying the correct limits. Are they applying the correct financial assurance, things of that nature.

And respond to incident and allegations, if there are incidents in the state is the radiation program responding to those incidents? Are they giving health physics support as they should and are they following up on that and are they also reporting to the NMED data base for information for the whole country to use on trends analysis.

CHAIRMAN RYAN: Could you talk a little more about that data base, please?

MR. ZABKO: It was set up to make sure that as events happen in the United States they can be reported to a central location and they can be grouped and tracked and follow-up actions can be planned from that. Each Agreement State does report to NMED based on a certain criteria what event would trigger the reporting level and during the IMPEP review, we do make sure that they are using the NMED process.

And here at the NRC we do have certain groups in NMSS that are -- that do track the system.

MR. LOHAUS: This is an area that we put a lot of increased focus on with the states because of not only, you know, the significance of the events but also the learning that comes from those events. In other words, there may be an event that may take place in one state. There may be a similar event in another state and when you look at that, there may be a generic safety issue or a generic issue with respect to that particular event, procedure, or that particular equipment, for example So we've put a lot of increased focus on having the states report event information to a common data base.

And if you look at this, how it's tiered, the requirements for reporting events, those are matters of comparability we talked about earlier and those, the states have to require that their licensees provide the same reports, immediate, 24-hour, whatever the particular requirement is in terms of lost material, overexposures, medical misadministration and then there's a comparability requirement on the states that that information that they receive is reported to NRC and there's a contractor, INEEL, that maintains the data base for the NRC but that provides a collective set of event data for the nation.

CHAIRMAN RYAN: Is the examination of that

data the trends and tracking part of something that the Agreement State staff does here or do they report to you or --

MR. LOHAUS: It's --

CHAIRMAN RYAN: -- or both?

MR. LOHAUS: -- both. States should be doing the event analysis and this is one of the areas we look at in terms of looking for root causes, looking for root issues. NRC staff reviews the data nationally and also INEEO does review that data and does provide a quarterly report. They look at the results of the trending and things of that nature.

CHAIRMAN RYAN: Would it be possible for us to get a couple of quarters of that report, just take a look?

MR. LOHAUS: Yeah, and what I'll need to do is as John mentioned, the owner of this, if you will, within the staff is within the Office of Nuclear Material Safety and Safeguards Organization. It's a work --

CHAIRMAN RYAN: No rush, but I think that would be helpful. I think about over the years of course, we know about radiography sources that are and there are issues of being lost or lost down a hole and those kind of things and sometimes, you know, cables

sticking and you get equipment information and all that sort of stuff. It will be interesting to see what some of the highlights of that event over time to identify issues that you wouldn't maybe see otherwise.

DR. HINZE: Do you ever see events happening by omission rather than by commission? In other words, do you see an Agreement State that is not reporting the same kinds of things that you're seeing in the other states and there may be then an omission in the reporting of the events or incidents?

MR. LOHAUS: I'm just thinking. I'm not certain I've seen that. There certainly has been an increased focus that we've put on this area that the Commission has put on this area, particularly in terms of looking at the control of material, looking at incidents that result in overexposure and I mean, if you look historically, industrial radiography in many cases not following basic good health physics procedure, having your survey meter turned on and using it, and things of that nature, you know, not picking up the end of a guide table, so there has been learning there but I'm not certain I could identify an area that's related to quote "omission" if you will from that.

There generally has been, from my

experience, more of situations not following established rules or established procedures or process, if you will.

CHAIRMAN RYAN: I might add, Bill, too for your benefit, being -- having been a licensee and an RSO, in an Agreement State, very often the Agreement State inspection of the state program involves visits to licensees and in fact, very detailed review of the states' oversight of a state licensee and I would think that, you know, that could be focused on areas of concern or issues and that probably it's still, you know, what kind of licensee do we want to look at this time? We've looked at this the last time or, you know, that kind of planning goes into it, but that's probably a check from the NRC's oversight that there's actually, they kind of drill down into what the state's looking at, at the licensees and they interview the licensees, too. "How is the state doing"?

So I think maybe you could talk about that component.

MR. LOHAUS: Let me -- yeah, as a matter of fact, you sort of triggered because I came at your question more from the standpoint of looking at the licensee, but from the standpoint of our oversight

program that's what I'm looking at. I apologize, but the answer is, yes. There -- I mean, if you look at the results of our reviews, this is an area we've focused on, you will find when you look at the indicator, a response to incidents and the reporting part of that, that there are cases where there has not been complete event information that was reported to the state, reported to NRC.

DR. HINZE: Trends that you expect to see and if you don't see that with the state, that indicates something is open to further review and inspection.

MR. LOHAUS: Yes, yes and our review teams, and we've reinforced this through training, we've reinforced this through the Management Review Board meetings, reinforced this through our reports. We're really pushing very hard, working with the states to insure that whatever data is reported to the state from their licensees, that they, in turn, make sure that that data is reported to the NMED system and any updated information because you may get the initial report information but then you want to understand what was the final outcome from that, was there a root cause and was that event closed out and particularly for a source that may be lost or stolen.

Do you want to track that through because in many cases, they're found and you want to make sure that that's identified within the NMED record, within the reporting record so you understand that that source is no longer accounted for, that it has been accounted for and has been found and it's closed out in the record so that is an area where we're continuing to work with the states and they're being very responsive. They're working as well, but there are some cases you'll find where we've made comments and recommendations to the state programs to improve and insure that they're providing the complete information to us.

John, I don't know if you have anything further on this, but I think this is an area where we have --

MR. ZABKO: Any other questions?

MR. COLEMAN: I recently spent some time going through the NMED data base looking at one specific topic, uranium hexafluoride incidents that have been reported and it appears that some years ago there was a change made because there were many incidents of very minor releases and then I guess starting five, six or seven years ago, there seemed to be -- required more of a trigger for something to show

up in the data base. Could you comment on that? Was a change like that made?

MR. LOHAUS: That's -- I apologize, that's outside my area, field. What I might suggest is maybe direct that question to the field cycle staff. I'm just not aware of any change that may have been made in the terms and the guidance that they provide for reporting that type of information. And I can certainly take the issue and follow up or if you all want to maybe pursue that with the Division of Fuel Cycle in NMSS.

MR. ZABKO: Part of this other on the five common performance indicators of response of incidents and allegations. The allegations we've checked through also to see that they're following up and in closing out and making the appropriate contact with the allegers during and after any investigation to make sure it matches the standard program and the standard things that we'd like to see happen with allegations.

The non-common performance indicators, as I indicated earlier only apply to certain states and for example, the license and program elements required for comparability wouldn't apply to the NRC regions. They're under the 10 CFRs. We wouldn't be looking at

their compatibility but we would in the Agreement States because as Paul discussed, they do promulgate their own set of rules that has to be compatible in order to verify that they are keeping up on amendments to the CFRs and that their baseline rules are compatible to start with.

As you can go down the list there and see that each one of those would be individual to certain Agreement States. Sealed source and devices, all the states do not have a sealed source and device partner program, they can choose to or not to. The NRC assumed responsibility for the Agreement State can in their agreement with the NRC. The same goes for low level radioactive waste and uranium recovery program. We would not send a team member along to a state that didn't have that part, nor would we consider that in the program.

After the teams have done their onsite part of the IMPEP review, they put together a draft report and this is the first full report that gets reviewed through the team and through the Agreement State management. We give them a chance to respond to anything that they see in the report and they have to respond back to the NRC in 30 days with a draft report. Prior to leaving the onsite portion of the

IMPEP, we do meet with staff and meet with the management so the draft IMPEP report will not say anything that they don't already know.

One of our biggest -- one of the program's keys is too, there are no surprises during the review. During the week there's constant interaction between the team leader and the management of the state or the region and the team members, so that as items come up, they can either be dealt with, explained or the threats are pulled deeper to find the root cause and all that comes out in the draft reports and the states should not see any surprises when they see that report.

And they'll answer are either suggestions for improvements or they will go through the report and give other corrections, factual corrects or edits that they need to have. Following that process, we set the Management Review Board up to -- for NRC management to evaluate the team's findings and to allow officially the Agreement State or regional supervision to come in and have the report presented to them.

It's an independent board, as it states here which makes the final determination of adequacy and compatibility. Before the MRB, the MRB members do

not have any contact with the report or with the team themselves with the exception of a cursory management review from STP. Sometimes management and the state trial programs will review the report just for editorial or for program consistency but the idea is to not influence the team's decisions. The team's recommendations are the team's recommendations until the Management Review Board reviews all the facts that are presented during the meeting and makes a final determination on each category of the common and non-common performance indicators as we discussed earlier and the overall program.

MR. LOHAUS: If I could interject here, to me this is one of the strengths of the program and you wouldn't see this in our past review program. And the strength is, you have an independent review team with a common set of criteria that are applied uniformly to the states and to NRC and the team has the tough job of applying those criteria in a very objective way and making the hard call, does the program meet the criteria or not meet the criteria and the Management Review Board process provides ability to consider factors outside of the objective review criteria.

Now, and I'll give you an example of that. The strength is you've got an independent review team,

comes in, does the review, comes in and says objectively you look at this program, okay, what program it is and whether you all were to look at it with a criteria, I would or the MRB, everybody should come out at the same point in terms of where that program is. The Management Review Board, though, has the ability to take other factors into consideration.

And an example is, one program, state program, was well behind on inspections. The team made the call, did not meet the criteria for inspections but what had occurred is that state had experienced a whole series of rather significant incidents. They had diverted the staff that would normally be doing the inspections to respond to, investigate and follow up on those incidents, obviously a greater health and safety area.

The Management Review Board took that factor into consideration in looking at the program from a totality standpoint. The team did the right thing, made the hard call on the criteria but the Management Review Board looked at it from a broader perspective in terms of where is the greater health and safety benefit, if you will, from that program, so I think it's a strength that we have in the process to have the multiple layers of oversight, if you will,

the team and then the review that's done by an independent management review board and that Management Review Board also includes an Agreement State program manager that serves as a liaison to the board. The individual is not a voting member, only the NRC members are voting but you have a state management perspective that's considered and factored into the decision process both for a regional review, for an NRC regional program review and also for a state program review.

And maybe one final comment, you know, the item here that talks about sharing the draft IMPEP report, I think that's another important step. We did not do that in the past. We do that under impact. We give the region and the state program an opportunity -- the team does, the review team does, an opportunity to see the report. Again, it's part of communicating and insuring openness and transparency in the process and then the team has an obligation to consider any comments that the program may have, factual comments on the results of the review, what the program is doing, things of that nature, not necessarily not on the findings but on the factual correctness of the report.

And the team has an obligation to do that

within a 30-day timeframe was well. So 30 days after the review, there's a draft report that's issued and I think that's an important aspect. And John pays very close attention to the timing. That's part of his responsibility.

CHAIRMAN RYAN: Latif?

MR. HAMDAN: But this is done every four years, right?

MR. LOHAUS: Or more frequently.

MR. HAMDAN: Or more frequently. So my question is, what triggers a more frequent review? Do you have reports that come to NRC from the state that you review and that triggers, you know, maybe every three years or four years or longer?

MR. LOHAUS: If you move down to Item Number 22, John was going to talk about this, but there's two things. One is the results of the IMPEP review are considered by the review team and by the Management Review Board and in those cases where a program is experiencing performance difficulties, we may go back in a year, we may go back in two years, rather than four years. What we also do is between the IMPEP reviews, we will go out and hold what we call a periodic meeting with the state and one of the focuses of the periodic meeting is to try and keep our

pulse on what's going on and if we see emerging performance issues, or we see that they're getting behind on inspections, that is briefed to the Management Review Board and there's a conscious decision, are there additional actions that NRC should take in working with the state, either should we move up the schedule on the IMPEP review, should we place the program on monitoring which means we begin to have calls with the state on a routine basis to see where they are, "Are you catching up on your inspections", et cetera and so that's used as a way to try and keep our pulse on the status and what's going on between that four-year timeframe.

MR. HAMDAN: I can see that when NRC gets involved and does a review, you know, the job is done. The question I am thinking about while you were talking is, are there signals or flags or thinks, you know, reports that the Agreement States sent to you that triggers these meetings other than the regular review period of four years?

MR. LOHAUS: We have the ability, if we gain knowledge through program discussion, maybe the, you know, program -- discussion with the program manager or discussion with the program to identify an issue such as that and take it into the MRB. I've not

seen a case where we've done that. The focus has generally been coming out of the periodic meetings but there is routine interaction. I mean, there's daily routine interaction that not only myself and my staff have but also the regional staff have with the states every day. And if we see issues that are coming up, those issues are going to be -- we're going to pursue those issues between the IMPEP reviews. We have the ability to do that. I'm just not aware of any cases where we've done that. We've put states on monitoring and increased our contact with them in a more formal way based on that kind of feedback during the periodic meetings but not necessarily, at least that I'm aware of let's say a routine phone call, if we will, but we have the ability to do that.

CHAIRMAN RYAN: I think if you took a subject, for example, the use of let's say RESRAD as a code that's used in regulatory decision making. You know that came out of Argonne National Laboratory and you'll see an awful lot, at least I have, communication among state agency folks, you know, one Agreement State to the other, "How did you do this", or "What was your approach to that". As well as to the NRC staff. So the two organizations that Paul mentioned, the Organization of Agreement States and

probably more the CRCPD on the technical implementation type of stuff, you know, RESRAD and other tools that might be out there, you'll see states talking to each other because of the commonality that's offered through the Agreement States Program because they know they work under the same rules so it's easy to say, "How did you do this"? So I think you'll get a lot of that sort of proactive communication, not just on when problems occur and that I think is a helpful source of information of this type.

MR. LOHAUS: Yes.

MR. ZABKO: We've touched on a lot of the things that up till 23 but I'll just cover them to make sure we go through them. The regional or state management are invited to the MRB for their participation and so they can hear the debate that goes on at the MRB which is also very enlightening for the program.

Out of the MRB will come an Agreement State -- for an Agreement State will become a decision on the adequacy or compatibility for that -- for that program, compatibility, again, being the statutes and rules and other program elements required for compatibility that you wouldn't see in the NRC regions

which is the next one, in a region that we'd only say they were adequate.

a sample MRB team would be listed for you in 21. The Deputy Executor for Materials, Research and State Programs, Director of Office of Nuclear Material Safety and Safeguards, Director of Office of State and Travel Programs, a number of -- the General Counsel and the Agreement State Program manager from one of the Agreement State Programs.

Again, we talked about periodics, the periodic Agreement State meetings do take place in between the IMPEPs or any time that we do sense a program need for a periodic. Procedures that we go through to help an Agreement State get back on track if they are -- if we do notice program issues. a letter accompanying the final impact report is issued to the state management with recommendations. Normally, you know, there will be one or two recommendations out of each impact report. I've seen some with none, I've seen some with more, but on the average one or two specific items such as what to do -- we'd suggest something in your licensing or we'd suggest something to help you complete your inspections on time. And they are just -- they're not prescriptive but they are enough to bring attention to

the goal we want to have achieved and maybe a direction to point them into to increase their performance.

And then as you see, the next listed there are in order of severity. As a state exhibits programmatic problems we start with monitoring which is the least oversight mechanism here at the NRC which, as Paul mentioned, is just periodic calls to the state, "Are you caught up on your inspections, are you hiring new staff, how is the budget going that you've said during the IMPEP was impacting your program", things like that and that's done from the regional state Agreement State Officer and the Agreement State Officer here at STP. They combine along with STP management to conduct those meetings.

The next one up is heightened oversight which is more formal, which is -- we're asking for a program improvement plan. We check that program improvement plan. The calls are scheduled more frequently and more answers are requested from the state as specifically, "How are you doing", and, "How are you approaching the goals that you set out". And as you can see, they get worse, more severe as you go down; probation, emergency suspension, suspension of agreement and termination of agreement, which if I'm

not mistaken, I don't think we've pursued any of the last four since the program.

MR. LOHAUS: There's one case, going way back in history, the Idaho Program, which I think really was a joint effort. They basically lost all staffing in the program. So NRC was faced with reassertion of authority but it was really also at state request, if you will. The governor has the ability to request suspension or termination as well. That's one case and another, it was requested by the state with New Mexico. They turned back their mill portion of the program going back into the early `70s but both of these are way back in the early days of the program.

MR. ZABKO: Any other questions that you might have?

CHAIRMAN RYAN: You know, it seems like I guess and most everybody is at the monitoring step or kind of the base of the program. Are there many at the heightened oversight or -- and if there are, I'm not looking for specific states but what's the issues that you see as common to get folks to the heightened oversight step?

MR. LOHAUS: Let me start and, John, please chime in, but one there -- today there are only

three states that are on monitoring. In other words, if you look across the states, the states carry out very effective programs that meet the criteria. Today there are five programs that are in what I would call the middle category. In other words, if you look at the overall findings that the agency makes, there's an adequacy finding, which is the top finding. The middle finding is adequate but needs improvement. And then the bottom finding is inadequate. There are five programs that are in the middle category which means that their programs are experiencing some performance difficulties and there are areas that need improvement.

Three programs are on what we call monitoring where we're staying in touch with the state and talking with them and hearing from them in terms of the progress that they're making to address areas that need attention. There are two states today that are on heightened oversight and the primary reasons for those programs being on heightened oversight are satisfactory but needs improvement findings for one or more of the performance indicators or an unsatisfactory finding for one or more of the performance indicators and one of the areas that's common to those two programs and I'm sure you're very

familiar with this also, Mike, is keeping regulations up to date.

Both of these programs are way behind on keeping their regulations up to date and we've made the hard call and we've asked for a program improvement plan from the program to address getting the regulations up to date. In addition, if you look at these programs there are other areas in the program -- in their programs that were experiencing difficulties. Status of the inspection program, they were behind on inspections, is another area. Staffing is another area that I think is common in terms of the lost staff. They did not replace staff. They're having difficulty training staff and it was compounding their ability to complete inspections and I think generally if you look across the programs, those programs that do experience difficulties, the root cause in the main, this is just a broad generalization, in the main is generally related to the staffing and training staff. And I think -- I mean, it's basic to program administration, if you don't have sufficient staff, it's going to effect the general administration of the program.

Now, there may be other aspects as well, but I think from my experience, that in the main has

been the sort of the root cause of those programs incurring some difficulties. But at the same time, what we've found is when we use the heightened oversight process, with very, very, few exceptions, that process has proved to be very effective in terms of focusing the state management, in focusing the program on addressing the area that need improvement and in a very short period of time generally on the order of a year.

What we do with a program with heightened oversight is, we require a program improvement plan. We monitor that plan both in terms of progress reports and bi-monthly phone calls to review the progress. We go back in a year and do a follow-up review and really check each of those areas to make sure that they've brought them back up to where they should be. And what we've found is with that heightened oversight process, within about a years time frame with very, very few exceptions, the program has been able to address the areas, bring the program back to where it is and then normally what we'll do is we'll put the program on monitoring. We'll take it off of heightened oversight and continue to monitor the performance to make sure there's some period of continuity in terms of meeting the performance

criteria.

But it's -- it appears to be effective and I think that also given the peer review aspects and the commitment that you see within the state programs, they're committed to doing a good job in their programs. They want to address that. They want the program off of heightened oversight and they want to do it as soon as they can and it seems to be a good, effective process.

In many cases we'll find when we go out and do an IMPEP review, the state has actually done a self-audit. That's the state's staff gaining experience working on IMPEP teams, they're doing their own IMPEPs, their own review, self-audits before the review team gets there and they know generally if there are weaknesses, where those weaknesses are and in many case they're taking action independently to address those areas even in the absence of NRC coming in to look.

So I think the program has a lot of strengths and you know, where we do identify problems with these five programs, we use the tools that are there and it's short of suspending or terminating the agreement, well short of that and the states are committed to do what they need to do and you can see

it happening. It's good.

CHAIRMAN RYAN: Well, I mean, the strength to me is that, you know, it's to your credit and the credit to the whole staff that you're involved at a stage before it needs to be punitive or negative. It's collaborative and it's corrective.

MR. LOHAUS: Yes.

DR. WEINBERG: So that's a real positive. And I would guess that sometimes an audit that, you know, gets them into a needs improvement category and having heightened oversight is more of a help to a state program director than a hindrance because it gives him something to communicate with upper levels of state government management on what the issues are. It's not just his own thought but it's from an outside review like the ones you're doing.

MR. LOHAUS: Exactly, and there's cases where the state and senior management within the state, I mean, going to the governor level and legislative level have taken action to increase staffing to address issues that the program in and of itself, has not been able to bring sufficient attention to and it's really been a plus and it's improved the program. It's provided increased staffing and through that, increased protection of

public health and safety. So, yes, you can see that.

CHAIRMAN RYAN: Let me shift gears a moment to both of you and have you put on your thinking caps. What are your big challenges that you face and how can the ACNW help you?

MR. LOHAUS: Well, this is -- if you look at the programs that are there, and you can look at the low level waste disposal area, I think that's going to continue to be an area of challenge for the states collectively. And it's an area that I'm not certain how much, you know, NRC can do from a regulatory standpoint. We have regulations in place, we have guidance in place. The states have regulations, regulations and comparable guidance but I think if you look at the -- sort of the national situation, I think low level waste disposal is an area that is going to be a challenge and is an area where ACNW may be able to provide some assistance in terms of waste to help address that.

CHAIRMAN RYAN: Let's probe that a bit more because that is in our action plan. Low level waste is in our action plan for 2005. As we look at 61, a couple of things jump out at me. One is, it's the only place where there's an organ dose. We know the dosimetry is not based on, you know, more current

thinking that backs up say Part 20 or other parts.

Two, we think about the technical criteria and their sort of lack of specificity for citing or lack of interpretation of how those can be applied successfully. Sometimes the states kind of are on their own to do that. Are those fruitful areas to think about or are there others or how do we move ahead?

MR. LOHAUS: Having been very actively involved in the initial development of Part 61, I've always looked at the rule as providing both a performance based set of requirements that you can apply to the full suite of near-surface disposal technology and did not constrain, if you will, application to methods that would use engineered technology, whether it be below-ground vault or earth-mounded concrete bunker, whatever. Yes, you could certainly address and provide greater specificity in terms of requirements but at the same time, I think where I come out in looking at this, just this is, you know, me speaking, you know, from my perspective, I think the rule can serve both NRC and the states in licensing not only, you know, a current near-surface technology but also other kinds of engineered facilities and the implementing guidance, the standard

review plan and the standard format and content guide to me provide a good foundation and a good basis that can be applied. So I'm not certain. You'd have to sort of balance the resource requirements to develop more specificity in the requirements with the current set of requirements in terms of their ability. And my sense would be, as I -- you know, that there's good ability in those requirements to license a full range of disposal tools.

CHAIRMAN RYAN: Yeah, I think if you take the standard review plan and the content documentation, that's a big help. What I think the challenge is, though, is it risk-informed and you know, I would say that if you look at the intruder scenario and some of the other things, it probably isn't on face value but that doesn't mean it can't be. So I wonder, you know, as we consider issues about low level waste in 61, it's a good bit of advice to us to make sure we really have good Agreement State representation and Agreement State program representation in any working groups or other things that we might do to formulate a view of that.

MR. LOHAUS: Absolutely.

CHAIRMAN RYAN: That makes sense.

MR. LOHAUS: I mean, if you think about it

and look at the experience, the experience has been I the states. Texas, I mean, Texas has an application under review today.

CHAIRMAN RYAN: In fact, the NRC has never received an application under 61, if I recall right.

MR. LOHAUS: That's correct. Yes. But you're exactly right. I mean, again, this is one of the benefits of the working group process, too, is to bring together state and NRC resources and expertise and deal with common technical issues or common policy or --

CHAIRMAN RYAN: We've found it effective to gather information, you know, in our role as advising the Commission, so I'm sure we'll be back in touch on that subject. Anything else on your list of things we could do?

MR. LOHAUS: Not that I can think of right at this time, Mike, but we'll certainly stay in touch and share anything in the future.

CHAIRMAN RYAN: That's great. And, again, I think you've got a very robust program. You should be very proud of the work you're both doing and your entire team and I guess as we consider this, the thought that strikes me and I'll just throw it out to everybody as food for thought, that we often write

letters about things we think need to be fixed but we also need to write letters from time to time on things that are working well and why. So I guess we would maybe work with you on getting some of your other documentation that we've talked about and thinking about that and maybe writing a letter on the subject of the Agreement State Program and the IMPEP program and how it seems to be working quite well.

MR. LOHAUS: Sure. If there's any information -- I mentioned the earlier Commission paper on the National Materials Program and the NMED documentation but if there's anything further -- another strength to IMPEP is it's proceduralized. I mean, there's not only a general set of procedures that provides the overall criteria but then there's detailed procedures that the reviewers take out in terms of how they do their reviews and document their reviews. You know, that's certainly available if you're interested in looking at that from a more detailed level.

CHAIRMAN RYAN: Yeah, I think that body of information would help us and then think about the challenges that are out there in maintaining that consistency in the face of what, you know, folks like the Health Physics Society have identified on manpower

crises and we all know that, you know, state program turnover rates are much higher than other elements of radiation protection industries and so forth, just because of salaries and the nature of those kind of jobs and so forth and it's -- you still have a quality level in spite of some of those challenges and so forth. So --

MR. LOHAUS: It's a credit to the states. I mean, they cross -- as I said, across the board, they're committed, dedicated professionals, public servants and they're committed to doing a good job. It's a good program.

CHAIRMAN RYAN: Well, thanks for the update. Any other questions or comments?

DR. WEINBERG: How have you handled or have you been able to handle the question that different states have different financial bases and I happen to live in a very poor state, the State of New Mexico. And I'm sure that the personnel are paid -- are supported differently the resources available to the states for this program are very -- vary widely.

MR. LOHAUS: Yes.

DR. WEINBERG: How do you handle that?

MR. LOHAUS: That's a very, very difficult area for the states. We don't dictate how the states

provide revenues for the programs. In some cases, it may be general fund. We have encouraged state programs to adopt fee systems and I think if you'll look across the programs today, most of the programs and I should know the answer whether it's all, I don't, but I'm pretty certain almost all the programs do have a fee system.

Some are a percentage of NRC's fee system. For example, I think one of the states, for example, has a fee system that's 75 percent of NRC's fees. Others are based on internal state analyses, but I think in those cases where the programs do have good fee systems, they are able to provide a sufficient base of revenue to the programs and then support an adequate base of staffing which then is reflected in the overall performance of the program.

One of the things that the Conference of Radiation Control Program Directors has initiated to try and help state programs in this area, is they're working on what they call a profile of information and they're going out to each of the states and developing information on their fee systems, personnel and other areas, and then they want to share this information more broadly among the states. And I think that's going to help because we've sort of done that

informally in some cases.

For example, one of the states that was on heightened oversight, we shared with that program analyses that another state had done in terms of looking at its resource needs, its funding needs, how it was addressed through a fee system and they use that information as background to help support their request. So now the states are looking at this more broadly. So I think that will help as well, but it's a tough issue and I think it's going to continue to be there and you will see the variation and it's a challenge that the state programs face.

MR. CROFF: From what you've said, it is fair to infer that when states started to get into some difficulty that the root cause goes back to basically budget, that if they had enough money, they would -- I mean the regulations would be up to date, the inspections would be done and all this kind of stuff or is there something else that generally or fairly frequently tends to cause this?

MR. LOHAUS: I think, as I said, from a broad brush general overall standpoint, to me I think the root cause does go back to staffing and training of staff. And you can certainly relate that back to resources for the program. But in some cases, it may

be that they have not been able to fill positions or retain staff in positions because of a low salary structure for example. And they have the resources to fund those positions but they may -- an individual may work there for a period of time, get trained and then move onto another job and they're continually faced with having to hire staff. So it's not necessarily related to the budget but it's related to the structure of their positions and the salary for those positions. So I usually characterize it as it's related to the staffing and the training of staff.

CHAIRMAN RYAN: Do you track turnover rates, just out of curiosity?

MR. LOHAUS: We do not, no.

CHAIRMAN RYAN: It's an interesting thing to think about.

MR. LOHAUS: We look at the -- each program we look at the -- as John mentioned, that they have enough FTEs to do that work and that those individuals are trained to do the kind of technical work that's needed in that program.

CHAIRMAN RYAN: Right.

MR. CROFF: Is, let's say budget appropriation or -- and/or head count in a particular state's program, is that any kind of a useful early

warning indicator that, you know, they may be headed for trouble if their budget gets cut or --

MR. LOHAUS: Yes, it is and that's one of the things that we do -- during the meetings for example, we look at where they are with their people. We look at you know, do you have adequate resources and things of that nature.

MR. CROFF: Okay, I'd like to change topics onto I'll call it trending. If you look at the results of your reviews over a period of the last few or several years, are you seeing the number of, I guess, findings and difficulties that are observed? Are they going up or down? Is there any systemic issues in there that seem to be coming up?

MR. LOHAUS: I think, and I don't have this like in a histogram, but I think if you look over the past IMPEP cycle, not the current cycle we're in but the past IMPEP cycle, I think we saw an increase in the number of states that were placed on heightened oversight. In other words, in looking back historically, there was maybe one or two programs at the most on heightened oversight during any one annual cycle, let's say and for the -- over the past cycle, John may have to help me here, too, but we've had more than one and in some cases up to three and today we

have two, that are on heightened oversight.

My sense it though, is that we're sort of -- we may have hit a peak and we're sort of heading in the other direction now where those programs that were experiencing difficulties are recovering, they're taking action to recover and some are -- they're still uncertain, they're still in heightened oversight and we don't know what the results of that will be until we complete the heightened oversight program. But I think, yes, I think we did see a small increase but my sense is that I think we're past that.

What you see is there's a lot of interest, a lot of focus within the individual programs to want to do a very effective job. And when we come in to do an IMPEP review, they want to come out of that with a clear IMPEP, if you will, with the full -- the highest rating is satisfactory. I mean, it carries with it performance well above the criteria but that's the highest rating we have. They want to come away with a fully satisfactory finding across the board, but at the same time, as I said, when we do identify problems they are addressed that the states are committed to addressing the programs.

We have program improvement plans from those states and they're implementing those plans.

MR. CROFF: Okay, and it would seem that maybe, let me call it a bottom line metric, would be that to reduce the number of let me call it normalized incidents in a state of releases or something that wasn't supposed to happen, and, you know, your program is trying to insure that the state programs and the regions, you know, are stepping up to this, but at that bottom line measure, is there any use of that? How are the number of incidents going? Is there such a metric?

MR. LOHAUS: Yes, there are and what I would refer you to are the performance reports that NRC prepares and I believe that the 2004 performance report was just recently completed. But what the agency does, it uses the set of NMED data to address the metrics that we have. They relate to over-exposures, control of material, things of that nature and all of the metrics were met in 2004. And you know, from an outcome standpoint, you know, obviously that's the outcome, if you will, in terms of protecting health and safety that the programs reflect.

And you can also look historically within the other reports but you know, as I said, you may want to -- one of the items is get the 2004

performance report because there are specific metrics there that reflect the collective efforts of NRC and the Agreement State Programs.

CHAIRMAN RYAN: That would be helpful to get that report. Any other questions? Bill?

DR. HINZE: Are there any soft spots in that, that you can identify for us?

MR. LOHAUS: No. I mean, obviously in today's environment, the states and the NRC are clearly focused on reducing the number of lost or stolen sources. I mean, the whole issue of control of sources is a very key, important are but I can't think of any specifics to offer in terms of response to your question at this time.

DR. HINZE: It might be useful for us to take a look at that.

CHAIRMAN RYAN: At 1:00 o'clock this afternoon we're going to hear a case study on that, so we'll learn a little bit more about that.

DR. HINZE: That will be soon enough.

CHAIRMAN RYAN: Jim, any questions?

DR. CLARKE: Just to follow up on something you mentioned earlier, in many respects this program sounds a lot like the EPA program with the states where a state can have what they call primacy

under certain environmental laws as long as their regulations are at least as stringent as the EPA, federal EPA. And you indicated that states have adopted more stringent regulations in some cases. For example the dose limit under the LTR, is it the 15 that they've gone to? I was just kind of curious.

MR. LOHAUS: Some are using a 10 millirem.

DR. CLARKE: Ten?

MR. LOHAUS: Yes, I should be able to explain and tell you why 10 but I think Massachusetts program for example --

DR. CLARKE: Okay, the EPA has suggested 15.

MR. LOHAUS: That's correct, yes.

DR. CLARKE: I wonder, is that common or is yours exceptional?

MR. LOHAUS: No, it's exceptional, yes.

DR. CLARKE: I'm sorry.

MR. LOHAUS: I was just going to offer one point of to me importance when looking at EPA's programs versus the Agreement State Program. The EPA programs are what I would call a delegation program whereas, with the Agreement State Program, it's a different process. NRC is actually giving up authority. It's not a delegation. We're actually

relinquishing authority and the state is assuming authority under independent state laws, but at the same time Congress provided the oversight responsibility that we have to insure adequacy and compatibility and a consistency in the programs.

But that, to me, is an important distinction because with EPA you're really implementing federal rules, if you will, whereas in the Agreement State Program, the state actually adopts regulations under state statutes and has a requirement to maintain those within the bounds of the federal rules.

DR. CLARKE: Okay, thank you.

MR. LOHAUS: Thanks.

CHAIRMAN RYAN: Other questions or comments? Again, gentlemen, thank you ver much for a very informative briefing on the Agreement States Program. It sounds like it's robust and well and doing a good job of keeping states focused and on the right track. Thanks very much.

MR. LOHAUS: Thank you.

CHAIRMAN RYAN: We're now at the point in our agenda where we're scheduled for a short break, so let's go ahead and reconvene at -- let's make it 10:25 and we'll take up at that time our working group

planning session. We don't need to be on the record for that. Yes, we'll be back on the record at 1:00 o'clock. All right, thanks very much. We'll be back at 10:25.

(Whereupon, the proceedings went off the record at 10:09 a.m. and resumed at 1:06 p.m.)

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

1:06 p.m.

CHAIRMAN RYAN: On the record. Welcome to the afternoon session. We'll go ahead and get started. The topic this afternoon is Control and Tracking of Sealed Sources and we're going to hear from a number of speakers this afternoon including folks from the NRC staff, the Department of Energy that has an important role in the sealed source management and some experiences from the Maryland program as well as from the State of Texas and finally from Terry Devine from the Conference of Radiation Control Program Directors. Do we have everybody on the telephone?

DR. DEVINE: Terry Devine here.

CHAIRMAN RYAN: Good afternoon, Terry. How are you? It's Mike Ryan. And how about anybody else?

MR. MAJOR: Bob may be an hour behind us.

CHAIRMAN RYAN: He's out of whack. Okay. Well, that's fine. Without further adieu, let me ask Tim Harris to give his presentation, the NRC's perspectives on sealed source management. Welcome, Tim. Thanks for being with us.

MR. HARRIS: Thank you. Good afternoon.

Well, I'm very happy to go first. My name is Tim Harris ***and I'm Section Chief for the Materials and Safety Inspection Branch in the Division of Industrial and Nuclear Medical Safety in the Office of NMSS. I'm here this afternoon to provide some NRC's perspectives regarding sealed source management issues. I'll attempt to set the stage for later speakers. We have DOE and agreement states. So I'm not going to go into too much detail on topics that they may cover in fairness to them.***

This presentation will provide information regarding NRC's initiatives that were referred to in recommendations one of three of the ACNW letter dated October 17, 2002 on orphaned sources. Recommendation two dealt with providing geopositioning technology to facilitate tracking of significant sources. At this time, none of those initiatives are currently being actively pursued or considered.

Specifically, I'd like to provide some information on the mandates or drivers involved in controlling sources that are the reasons and requirements for controlling sources. I will also discuss some initiatives to implement the control and tracking of sources and also discuss efforts that we have to recover sources.

I will note that we have Michele Burgess in the audience who is intimately involved in the source recovery program and Merri Horn who is intimately involved in the source tracking. So at the end depending on the level of detail, I may ask them to assist in answering questions.

The ACNW is well acquainted with NRC's mission to protect the public health and safety. Certainly, the NRC is concerned with the protection of the public from harmful effects associated with using and transporting sources, the effects associated with potential accidents involving sources and the effects associated with the loss of a source or that is when it becomes orphaned. Following the events of 9/11, the NRC has become more focused on controlling sources to promote the common defense and security and to limit potential use of sources by terrorists.

External factors such as the IAEA Code of Conduct have contributed to NRC's efforts to control and track sources. In part, the IAEA Code of Conduct recommends the establishment of a national source registry for high risk sources.

The NRC has been historically actively involved in controlling radioactive sources. The following initiatives are more recent examples

undertaken by the NRC to further enhance controlled sources. I'll discuss the last three initiatives, that is the National Source Tracking System, the General License Tracking and orphaned source recovery in a little bit more detail.

Since 1990, the NRC and the Department of Energy have been working together to recover unwanted sources with no disposal pathway. These sources are typically in quantities that are at or near greater-than-Class-C waste concentrations. Joel Grimm is here and he'll probably provide more detail on that. So I won't go into that any further.

The NRC has implemented a loss source enforcement policy. We did that in 2001. This policy provides initiatives to ensure that proper control, transfer and disposal of sources by ensuring that civil penalties outweigh the cost of disposal. That is if you decide that you don't need a source and you decided it's expensive to throw it away if we find out that you were the one that threw it away, we're going to charge you three times what it would cost to dispose of it. So the thought is that it would encourage people to dispose of sources properly.

The NRC also issued a proposed rule on portable gauges and this went out for public comment

in August 2003. The goal of this rule-making was to increase the control on portable gauges in the field. Typically, if you look at a vent report, it's not uncommon to see a large number of gauges that get misplaced or lost for a period of time. So these were efforts to ensure greater control over the portable gauges. The NRC staff has considered the public comments and has provided the final rule to the Commission for approval.

As I previously discussed, there are several mandates or drivers that promote NRC to enhance tracking of sources. These include the U.S. Government's commitment to implement the IAEA Code of Conduct. The NRC, DOE and the State Department all participated in the development of the Code of Conduct and are committed to its implementation.

The Code provides an infrastructure in terms of legislative elements and regulatory programs to be developed and promulgated by regulatory agencies within IAEA member states. The principles of the Code of Conduct are directed towards ensuring sources are managed and controlled in a manner to minimize the potential for unsafe management from a level at use that is by terrorist. Currently, NRC regulations don't require tracking of sources and we are underway

to development a rule and I'll talk about that in just a minute.

Before the rule is developed, the Commission directed staff to taken an inventory of sources. This is originally intended to be a snapshot in time, a one-time effort. We were quite successful in this voluntary effort. We looked at both sources in agreement states and in NRC states. So it was basically a national inventory. It was completely voluntary and I think we got 99.9 percent response, very high response. Is that right, Merri?

MS. HORN: Yes. We're down to three that haven't responded.

MR. HARRIS: Yes, three that haven't responded out of 2600 licensees. The Commission knowing that we were going to develop the National Source Tracking System felt that it was a good idea to continue the interim inventory. So we're currently underway in round two of the second year of the interim inventory.

The interim inventory is limited to high risk sources. Just to give you an idea for those of you who may not be familiar with the different categories, I'm sure some of you are, Tech Doc 1344 that was produced by IAEA ranked the sources in terms

of potential risk associated with malevolent use considering normal quantities. Category one sources are typically used in practices like radiothermal generators, irradiators and radiation teletherapy. Category two sources are typically things like industrial gamma radiography and high-to-medium dose rate brachytherapy. Category three sources would be typically involved in practices such as fixed industrial gauges and well logging. Category four sources are used in practices such as low dose rate brachytherapy, some industrial gauges and also static eliminators. Category five sources are typically used in devices such as X-ray fluorescence devices and PET check sources.

The interim inventory was used and is being used to inform security advisories, additional security measure orders, protective measure orders, that are used to enhance security of radioactive material. It also fulfills the IAEA Code of Conduct commitment to develop a National Source Registry and again this is kind of a interim thing while we're developing the ultimate National Source Tracking System.

As I stated in order to implement the source tracking, current regulations do not require it

and through OMB in order to require that information, we have to go through rule-making. The big picture plan is to have the proposed rule to the Commission in the spring of 2005 and have the final rule implemented in July of 2006. Again, it will be a national registry, that is, it will include NRC licensees, agreement state licensees and also DOE facilities. We've been working with Joel and other people in DOE to facilitate that.

Primarily the tracking's going to be web-based and it's intended to be cradle to grave. That is when a source is generated at a source manufacturer, he will catalog and input that source into the registry and then the registry will track transfers, that is, when it's sold to a licensee and if that licensee transfers it, it will track transactions. We believe that this will improve the source accountability and give better information for decision makers in the future.

Another measure that the Commission has initiated to enhance security of sources was revising its regulations to require that certain generally-licensed sources be registered. Under NRC regulations, a general license is authorized which allows persons to possess certain quantities of

materials without obtaining a specific NRC license or an agreement state license.

Generally-licensed devices are used to detect, measure, gauge or control thicknesses, density level or chemical composition of various elements. You typically see those in industrial practices, say, in the tank to gauge the fullness of the tank. There are approximately 600,000 generally-licensed devices being used by approximately 50,000 generally licensees. If we look at where these devices stand in terms of the IAEA categories, there are mostly category four and five devices, although there are a few that raise up to category three.

NRC amended its regulations to require that certain of these devices above specified quantities be registered. These measures have increased the tracking of generally-licensed devices and increased the awareness of licensees who have the generally-licensed device. Before we established a tracking system, a specific license transfer the device to a generally-licensee, but there was not record-keeping. Given that some of these sources can be category three, we implemented the tracking system.

Next, I'd like to turn to recovery of sources. Some of the initiatives we've developed in

this area are an MOU with DOE on the management of sources. This has been in place since 1999. The MOU provides for assistance from the Department of Energy on emergency recovery of sources as they become orphaned. The Commission has also provided an open forum for individuals who find a source to come forward through the Guiding Principles and the Staff Requirements Memo in April of 1998. This basically says that if a non-licensee finds himself with a source that they didn't seek to have, that the NRC wouldn't hold them accountable for disposing of the source.

In addition since 2001, the NRC has had cooperative agreement with the CRCPD in their National Orphan Radioactive Material Disposition Program. We currently have a cooperative agreement with them since 2004 to fund their program for an another five years. This has been quite a successful program with CRCPD. If somebody doesn't want a source, they can post it on the CRCPD website and that kind of facilitates somebody who does want a source. They can go there and provided that their license to use it, transfers can be made. So it helps people that don't want a source anymore find people that do want sources. There's also a trilateral initiative between the U.S.,

Mexico and Canada which started in 2002 for notification when sources become lost near borders.

In summary, the NRC has implemented a number of initiatives to control sources and is currently considering changes to its regulations to establish a National Source Tracking System. In addition to implementing measures to control sources, the NRC has been actively involved in recovering sources. That concludes my presentation. I'd be happy to entertain questions.

CHAIRMAN RYAN: Thanks very much. An interesting presentation. Could you back up a slide? I think it's the general license one. "Regulations require registration notification." That's a forward-looking program, right?

MR. HARRIS: That's ongoing.

CHAIRMAN RYAN: And how are you catching up with sources that are out there in the world?

MR. HARRIS: Well, for --

CHAIRMAN RYAN: Or is this for new ones or both?

MR. HARRIS: This is for NRC states only and we've gone through, I think, the first round of registration and as you can imagine, we weren't as successful as the interim inventory in tracking down

all of the sources. We were going through a risk-informed process whereby we're identifying those that we follow up on based on the transfer of device to the generally licensee and the quantity of material.

CHAIRMAN RYAN: But it would seem to me that that catch-up on the history of all of those generally-licensed sources is probably where the action is. Is that right?

MR. HARRIS: Well, we're registering plus tracking down the historical sources as well.

CHAIRMAN RYAN: Yes. That's not what I'm asking. Is that where the hard work is? I mean are you having much success there or not? Tell me about that.

MR. HARRIS: It's a little slower going than the interim inventory.

CHAIRMAN RYAN: And I guess just thinking about generally-licensed sources, what would you guess your batting average might be on finding them and registering them all? That's maybe a hard and unfair question, but I'm just curious to get your insight.

MR. HARRIS: No. I would say if we get 50 percent I would consider that a success measure, although my manager may not consider it. But that's about what we're running.

***CHAIRMAN RYAN:** Fifty percent, that's interesting. And your source of information on how many generally-licensed sources are out there comes from?*

***MR. HARRIS:** The manufacturers and the distributors are required to submit periodic notification of who they transferred the device to. So it's basically transfer reports. I see Michelle raising her hand.*

***MS. BURGESS:** I'm Michele Burgess. I work in the same branch that Tim does and I guess to put it into perspective is in GLTS (General License Tracking System) it's taking the old inventory is where they had to report whenever they did a transfer and it's bringing it up to speed and then moving forward. So our success rate as we move forward would be much higher.*

***CHAIRMAN RYAN:** Right. Oh, sure.*

***MS. BURGESS:** And part of the problem, it's not with the 50 percent. It's not 50 percent of the sources are out there and we can't find them. It's reconciling them off of that old data. The data might not be right either because it was transferred correctly, but they failed to put the information into the database. So it's getting all of that baseline*

and then being able to move forward. I just wanted to make sure that that 50 percent was clear.

CHAIRMAN RYAN: So the 50 defect may not be a source that's not under control, but one that's not properly tracked in terms of its paperwork.

MS. BURGESS: Right.

CHAIRMAN RYAN: As well as one that may be not controlled properly.

MS. BURGESS: Right.

CHAIRMAN RYAN: Okay. That's more helpful.

MR. HARRIS: We've gone through information outreach to notify generally-licensees that if you have a source that fits into this category you need to register in addition to following up on old transfer reports. Again, I'd like to note that it's not all generally-licensed devices that are required to be registered, only certain ones that need a certain threshold.

CHAIRMAN RYAN: That was going to be my next question. Could you give us an idea of what the spectrum of the sources that you are requiring to be registered are? Is it thickness gauges above some many curies of cobalt or what?

MR. HARRIS: You know it's in the

regulations and I didn't write down the number. But it's 31.5. Is that right? I can get that to Rich, but it's millicurie amounts.

MS. BURGESS: They're millicurie of ranges. I don't have the numbers offhand, but it's at a 31.5. The goal was the gauges not the little tiny things.

MR. HARRIS: Right.

MS. BURGESS: Not what, the 31.3. It was more the 31.5 types.

CHAIRMAN RYAN: Okay.

MR. HARRIS: Which may not mean anything to you unless you're --

CHAIRMAN RYAN: Oh, it means a lot to me, but I think it would be helpful for the other members of the Committee to have a sense of we're talking about tens of curies or millicuries and what the uses are.

MR. HARRIS: Yes, I can get those quantities to Rich.

CHAIRMAN RYAN: The instrument, level gauges. There's a whole spectrum of kinds of things that are generally-licensed just so we could get a feel for that.

MR. HARRIS: Typically, they are fixed

devices that measure thickness, density.

CHAIRMAN RYAN: Right. Flow rates. All that kind of stuff.

MR. HARRIS: Material. Right.

CHAIRMAN RYAN: The reason I ask that question is that some of those tend to be the ones that show up in steel mills.

MR. HARRIS: Exactly.

CHAIRMAN RYAN: Steel mills of one sort or another. So I just wonder about that correlation.

MR. HARRIS: Well again, there was a number of initiatives that the Commission has undertaken to make sure that when somebody, if we find out who threw it in the steel mill, they get penalized three times the disposal cost. Transferring something to Barnwell is expensive. Three times that is --

CHAIRMAN RYAN: Very expensive.

MR. HARRIS: -- very expensive.

CHAIRMAN RYAN: Okay. Thanks. Again, that information will help in informing the Committee, I think, in what the world is out there that are in the generally-licensed area. If you could give us some additional stuff as follow-up, that would be great.

MR. HARRIS: Yes, I tried to put it in the

context of the IA categories. They are mostly fours and fives.

CHAIRMAN RYAN: Right.

MR. HARRIS: And I don't have that information in front of me as far as that.

CHAIRMAN RYAN: That's fine. You can follow up, but again that's the category what we have in the world and the U.S. Now you said this is generally-licensed under NRC. I wonder what agreement states do.

MR. HARRIS: Well, the agreement states, when NRC changed its regulations, they were required to change their regulations in three years. Is that right, Steve?

AUDIENCE MEMBER (STEVE): Yes, three years.

MR. HARRIS: Yes, three years. Sorry. The gentleman from Maryland.

CHAIRMAN RYAN: So it's actually getting in line with this generally-licensing program.

MR. HARRIS: Right. So as far as I know, a number of states have done that.

CHAIRMAN RYAN: Right.

MR. HARRIS: So they would have a parallel type of system where they're going to track generally-

licensed devices.

CHAIRMAN RYAN: Okay. Thanks.

MEMBER HINZE: Did I understand you to say that you had no category one or two in your tracking system?

MR. HARRIS: In the generally-licensed devices?

MEMBER HINZE: Right.

MR. HARRIS: That's correct because what a generally-licensed device is I as a manufacturer who has a specific license manufacture a pipe flow gauge and I can transfer it to you and you don't have to have a license. You have a general license on a specific license and you're as part of the transfer required to do lead testing and other things.

MEMBER HINZE: That's helpful.

MR. HARRIS: The category one and two sources are tracked by the National Source Tracking System. Those are the significant ones.

MEMBER HINZE: Right.

MR. HARRIS: The generally-licensed devices I think were important because there was no specific license that tracked those.

CHAIRMAN RYAN: Bill, anything else?

MEMBER HINZE: That's it.

***CHAIRMAN RYAN:** All right. Allen.*

***VICE CHAIR CROFF:** Just to get some perspective, about how many category one and two sources are there?*

***MR. HARRIS:** Do you know, Merri?*

***MS. HORN:** Off the top of my head, approximately about 6,000 in the database. That numbers is a little low because you allow --*

***CHAIRMAN RYAN:** Would you mind using the microphone so you get it on the record? Thanks.*

***MS. HORN:** Yes. My name is Merri Horn. I'm the NRC Project Manage for Source Tracking and it's for the initial, for the interim database. There are probably about 5,000, 6,000 sources category one and two that were initially reported. That's a little low because we allowed irradiator licensees to treat the irradiator sources as a single source to ease the reporting because it was a voluntary effort. The same way with some of the medical facilities, for instance, the gamma knife usually made up of 100, 150, sources, we allowed them to treat it as one source. So the category one sources will actually much higher.*

When we actually get the National Source Tracking System up and running, they will have to report each individual source. But for this interim

thing since it was a voluntary effort and we wanted some information, we did allow them to do that. So you're probably talking maybe 10,000 total once they report completely.

VICE CHAIR CROFF: That's a lot of curies.

CHAIRMAN RYAN: That's kind of interesting what you have. You have all the curies. You may just have them aggregated in some way.

MS. HORN: Yes.

CHAIRMAN RYAN: Okay. That's helpful. Ruth.

MEMBER WEINER: When a source is returned to you for disposal, what do you do with it?

MR. HARRIS: I don't think we do anything with it. I don't think anybody gives us any sources.

MEMBER WEINER: Oh.

MR. HARRIS: DOE recovers sources, but I don't think the NRC.

MEMBER WEINER: So you depend on licensee to take care of the disposal in some way.

MR. HARRIS: Correct. Or like I mentioned, the CRCPD initiative where if you have a source that's useful and you no longer want it, you can post it on their website. They are facilitating people that have unwanted sources with people that

want sources.

MEMBER WEINER: Thank you.

DR. DEVINE: Excuse me. Tim?

MR. HARRIS: Yes.

DR. DEVINE: Terry Devine here. May I point out that we don't identify sources on our website. The website has an invitation to call me if I might be able to help in finding an outlet or making an introduction, but we don't list materials or locations of them on our website.

MR. HARRIS: I stand corrected, Terry. Thank you.

CHAIRMAN RYAN: Anyone else? I guess let me just pursue that generally. I'm a general licensee. I have flow meter. I decided I'm out of the flow meter business. What do I do with the source and maybe you can tell me what I used to do with my source ten years ago and what I have to do now.

MR. HARRIS: I think you're still doing the same thing. My generally-licensed devices are returned back to the manufacturer.

CHAIRMAN RYAN: Okay.

MR. HARRIS: That's the terms of conditions in most generally-licensed transfers which is different from, say, a smoke detector which when

you're done with it you can pitch it in your trash can.

CHAIRMAN RYAN: Right. That's interesting because Sears used to say, "Send it back to Sears" in the early days. But I guess I just wonder if that is a place in the system that needs attention.

MR. HARRIS: As far as getting rid of it?

CHAIRMAN RYAN: Well, some of these gauges that have shown up in steel mills and that's not a trivial number that have had impacts on steel mills have been in service for a long time and ended up for whatever reason getting scrapped with whatever was being demolished and ended up in a steel mill. Now steel mills have gotten real smart about that. They have all these great plastic scintillator detectors on the truck ramps coming in.

MR. HARRIS: Right.

CHAIRMAN RYAN: And they do a real good job of identifying sources and/or voids in the load and all kinds of stuff. But I just wonder if it makes any sense to think about tighter controls on disposition and I guess the penalty of three times the cost to dispose it is really the bite that you now have in place to address that.

MR. HARRIS: Right. I think once the

Generally-licensed Tracking System gets a little farther along, we'll get a better handle on what's happening to sources. Certainly that ones that are required to be tracked, we'll do that annually so we'll know. If somebody stops reporting that they had a source, we'll question what happened to it.

CHAIRMAN RYAN: Gotcha. That's interesting. I think that's helpful because you'll find out if a custodian either quit or retired and there's a new person. It gives you a tickler to put it on somebody else's radar screen rather than forget about it perhaps.

MR. MAJOR: Just a quick one. How far away do you think you are from a national tracking system? A year of rule-making before you have it?

MR. HARRIS: For the bigger national source tracking?

MR. MAJOR: Yes.

MR. HARRIS: I think the idea is that it would be in place, it was in the slide --

MS. HORN: The proposed rule-making will be going out for public this next summer in 2005. It's due to go up to the Commission sometime in the spring. ACNW will probably see it for review and comment like any other proposed rule I'm guessing in

the January timeframe.

CHAIRMAN RYAN: Great. So real soon.

MS. HORN: In January.

MR. MAJOR: Not that's the rule-making, but before the system itself gets there.

MS. HORN: The system itself we hope to have it up and running, the initial implementation, December 2006 and then full implementation in March 2007.

CHAIRMAN RYAN: And again, just to recognize the voluntarily aspect of what you've done here if I'm getting that right, you really feel like you've accounted for 99.9 percent of the curies in this category, too.

MR. HARRIS: That's the interim inventory.

MS. HORN: That's the interim.

MR. HARRIS: Which will continue until the rule-making is in place and the National Source Tracking System is up and running.

CHAIRMAN RYAN: The interim. Okay.

MS. HORN: The interim inventory was a voluntary effort. They, the licensees, didn't have to respond to it.

CHAIRMAN RYAN: But you said you got a very, very high.

MS. HORN: We got a very good because we did a lot of follow-up effort and we did get a very high response rate.

CHAIRMAN RYAN: Sure.

MS. HORN: The National Source Tracking System will not be voluntary. It will be required.

CHAIRMAN RYAN: Oh, absolutely. I understand that, but it's interesting. You have a jumpstart on your knowledge base with the voluntary program.

MS. HORN: Yes, and we'll use that for the initial loading of the National Source Tracking System.

CHAIRMAN RYAN: Sure.

MS. HORN: It will make licensees giving us that initial inventory for that system a lot easier.

CHAIRMAN RYAN: You should give participants a waiver on their first year's fee.

(Laughter.)

MS. HORN: They would like that I'm sure.

CHAIRMAN RYAN: States wouldn't, but the NCR licensees probably. But anyway, that's great. I appreciate the presentation.

MR. HARRIS: Thank you.

CHAIRMAN RYAN: Any other questions from staff or members? Oh, yes. On the phone, any questions or comments from Texas and/or Kentucky?

DR. DEVINE: No. Thank you.

CHAIRMAN RYAN: Do we have Texas online yet?

(No response.)

CHAIRMAN RYAN: Okay. Well, on we go. Next, we're scheduled to hear from --

MR. HARRIS: Thank you.

CHAIRMAN RYAN: You're welcome. Thank you. From Joel Grimm from the Department of Energy. Joel, welcome and thanks for being with us.

MR. GRIMM: Thank you, Chairman Ryan. I'm Joel Grimm from the Department of Energy. I'm a Program Manager in the Global Radiological Threat Reduction Program. Just by way of introduction, I'd like to say that when I last addressed your Committee three and a half years ago, this was the program I'd overseen. It was seen as a waste management operation at Los Alamos National Laboratory overseen by the Albuquerque Operations Office. A lot of things have changed since then especially in the last year.

The Radiological Threat Reduction Program is now managed by DOE's National Nuclear Security

Administration (NNSA) as part of the nonproliferation program. The mission is to reduce global threats posed by high-risk radioactive materials on a global basis mainly by identifying and securing materials in place and recovering and storing them where that's more appropriate and even disposing of them where that's possible.

There are some differences in how this mission is accomplished in the international sector versus the domestic sector. I'll address some of those details in the next couple of slides. NNSA has a number of program offices dealing with various aspects of nuclear security in the country. The nonproliferation program has a new program office created last spring that deals with radiological threats.

The Global Radiological Threat Reduction Program and the Global Nuclear Material Threat Reduction Program handle two different aspects of this. In NRC's lingo, the Global Radiological Threat Reduction Program basically deals with byproduct materials whereas the Global Nuclear Material Program deals with special nuclear material especially high-enriched uranium fuel at research reactors world-wide. Within the Global Radiological Threat Reduction

Program we have an international program office and the domestic. I will be concentrating today discussing the domestic program largely because I think that's what you're most interested in and it's the one that I am specifically involved with.

The Programs' efforts are truly global. When this activity was started a little over three years ago, the emphasis was on securing special nuclear material and other radioactive materials associated with Russia and former the Soviet Union's weapons programs, but it has branched out significantly in those last couple of years to now over 40 participating partner countries. Once again, I'll be concentrating on the domestic effort today.

There are some differences between the strategic approaches of the two programs. First of all, in the domestic program, we stress identifying, recovering and securing excess and unwanted sealed sources that could be used in radiological dispersal devices (RDDs). Now traditionally, our thresholds and our attention in this area were related to excess and unwanted materials that exceeded the low-level waste classification for Class C waste, better known as greater-than-Class-C waste. Those thresholds and priorities have shifted somewhat in the aftermath of

terrorists' attacks and again, I'll address some of those details in a few minutes.

In the international program, the emphasis in partnership with other countries is onsite, physical security upgrades and securing materials in place. The United States does not recover and take back materials from other countries except in rare and case-specific examples. The emphasis is on security in place especially for materials that are in use. Consolidation of materials in secure facilities where they are not being used, it incorporates bilateral cooperation with individual nations and also multi-lateral relationships involving partner countries and the IAEA.

Historically, the domestic program has been dealing with excess and unwanted sources for over ten years now. Originally, this began in concert with the NRC and the states to deal with excess and unwanted materials that were exceeding Class C criteria on a case-by-case basis. This really only dealt with a few sources and a few licensees a year mainly because we didn't have the funding to do a more proactive effort.

Secondly, another reason was that through the `90s more and more sealed sources that are

qualified as greater-than-Class-C were becoming excess and unwanted mainly on account of economic shifts in the country especially in oil and gas exploration industry and the shifts from domestic exploration and production of oil to international overseas production efforts. It was geared toward environment safety and health concerns. That is to say accidental exposures of workers and the public to excessive and unwanted materials.

We deal with identifying and recovering excess sources and they are managed as greater-than-Class-C waste and stored that way once they're recovered in route to a DOE facility. Given our new national security emphasis and focus, we're expanding beyond those greater-than-Class-C definitions by including additional isotopes that normally wouldn't be considered greater-than-Class-C and also by shifting thresholds for assessment and action.

Most recently, the program has been moved out of DOE's Environmental Program and into the NNSA nonproliferation program as I already said. This is allowing us to optimize and leverage the resources of DOE's National Security Mission by incorporating this with the International Radiological Threat Reduction effort.

What have we accomplished? Well, especially beginning in fiscal year 2001, the programs' activities have resolved in removing over 10,000 radioactive sealed sources from the licensed sector and moving these materials into storage at DOE facilities mainly Los Alamos National Laboratory. Interagency coordination has been required for this. We have a formal MOU that Tim mentioned a few minutes ago that addresses the roles and responsibilities of the NRC and the Department in this area.

The MOU is really only necessary where specific emergent situations are developing. The DOE program is mature enough and proactive enough that we conduct most of our sealed source recovery activities without direct involvement and requests by the NRC. However, there are situations where regulators whether it's the NRC or the states become aware of situations that require a higher prioritization and a more rapid response.

Some of these examples include four large strontium-90 sources that we recovered from the Houston area just prior to the Super Bowl last winter. These were seen as at-risk materials in light of such a big national event. Another example was an emergency request from NRC to deal with a bankrupt

licensee in Pennsylvania last spring, abandoning nearly 500 sources at their facility. This was the first time we had dealt with any significant qualities of cesium and cobalt sources by the way. Traditionally, we'd been dealing with the greater-than-Class-C isotopes, largely actinides like americium and plutonium.

We've also supported the Department of Homeland Security and are working with the NRC and others helping conduct radiological security pilot projects. This involved assessing the security status of medical facilities in the New York City area prior to, excuse me, New York and Boston, prior to the political conventions this year and it also resulted in us prioritizing recovery of 68 sources from 55 different sites in these cities during the summer before the conventions commenced.

CHAIRMAN RYAN: Just a clarification. You say "removed." Do you mean removed permanently?

MR. GRIMM: That's correct.

CHAIRMAN RYAN: Okay.

MR. GRIMM: These were excess and unwanted materials that we packaged and removed to Los Alamos.

CHAIRMAN RYAN: Other sources may be of similar type or size or under control or in use, they

were okay.

MR. GRIMM: That's correct.

CHAIRMAN RYAN: All right. Thank you.

MR. GRIMM: To put a graphic emphasis on this, this map portrays the most recent data managed at Los Alamos regarding sources recovered. There are several items of good news in this map. First is the cumulative number of sources recovered. This goes up on a weekly and monthly basis. The downside of that cumulative number is now that we're over 10,000, it's hard to make a big splash anymore. Hitting 100 here or 500 there doesn't seem like that big of deal.

The other good aspect of this map is that it demonstrates that large numbers of sources are consolidated by the companies that make the sources or the devices that use them. That's why you see concentrations of numbers in specific states. The bad news of course is that there remain excess and unwanted sources scattered all over the country. By the way, I'll show a map at the end of the presentation about sources that are on our database now still awaiting recovery.

These are some pictorial demonstrations of the types of situations that DOE and its contractors encounter across the country. The first picture is a

well-logging truck abandoned by its owner at a junkyard in Illinois during the 1990s. This is a company that was trying to get rid of their materials, had noticed pools of outlet, was trying responsibly to deal with their material for quite some time and finally gave up. The owner of the well-logging company retired and moved out of the country and then notified the government where his truck was with the plates removed. The second example is just a backyard in a rural lot in Oklahoma with pipes sunk down into the ground storing well-logging sources. Very little monitoring. Very little security.

The traditional scope of our domestic program has involved both large and small americium sources largely used in the oil and gas well-logging industry and used in portable and fixed gauges and calibration sources. Plutonium-238 neutron sources and heat sources, the heat sources were largely used in cardiac pacemakers.

MR. BLAKE: I hope that's what that guy is holding.

MR. GRIMM: That's a pacemaker. That's right. We often times give our Los Alamos contractors a hard time for giving us pictures of people holding sources without a glove on, but we were assured that

was not a LANL employee's hand.

CHAIRMAN RYAN: It doesn't matter whose hand it is. It's a hand.

MR. GRIMM: And then finally Plutonium-239 neutron sources which were an outgrowth of the Atomic Energy Commission's Atoms for Peace loan/lease program dating back to the 1950s. Over 2400 neutron sources were distributed to colleges and universities through the `50s and `60s for nuclear engineering research and education programs. Those programs have been abandoned going back quite a period of time and the Department have been taking those sources back from those loan/lease arrangements.

I mentioned a little while ago that both our list of isotopes and our thresholds for prioritization have changed given the new national security emphasis of the program. This slide is intended to provide some brief information about that. Strontium-90 recoveries as I mentioned commenced in 2004. That top picture shows four strontium-90 RTGs with about 60,000 curies of activities in them being delivered into a storage shift at Los Alamos National Laboratory.

One of our next big projects is removal of over 1,000 curies of cobalt-60. That's Department of

Energy owned out of a research irradiator at the University of Hawaii. I'm sorry. We already have enough volunteers to go on that trip.

Finally, we're developing some contracts with private sector companies to remove cesium-137 irradiators from high schools and colleges throughout the United States. We have about 16 of these on our database.

Traditionally, firms that manufacture cesium-137 sources or devices that use them have taken these irradiators off of licensees' hands, but their asking price is pretty high and many people have seen fit to sit on them hoping for a better deal and they are about to get it from the Department of Energy. It will be free. We're hoping to recycle the cesium with the same manufacturers, but it's yet to be seen whether that will actually happen.

CHAIRMAN RYAN: How many source manufacturers are there in the United States of significant size? Two or three or a dozen?

MR. GRIMM: I suspect it's less than a dozen. I can only name three companies that sell sources. Whether they actually manufacture them here is a different matter. I believe one of the larger neutron source manufacturing for the oil industry is

about to call it quits and go out of the business largely because of the lack of the supply of americium for new manufacturing.

This slide demonstrates radionuclides of concern and thresholds for assessing security needs and then definitively taking action. This is the threshold list that was developed by our international program which we are adopting for the domestic program. There are some similarities and some large differences between these thresholds and the traditional greater-than-Class-C thresholds. They also don't necessarily compare well with the IAEA's categorizations and code of conduct.

CHAIRMAN RYAN: Just a word about that concentration limited to Class C.

MR. GRIMM: Yes.

CHAIRMAN RYAN: That to me is a critical point. I mean the concentration limit really doesn't assess the risk per se.

MR. GRIMM: That's correct.

CHAIRMAN RYAN: And of course risk is more attuned to the quantity involved. So maybe you can expand on your thoughts there.

MR. GRIMM: Sure.

CHAIRMAN RYAN: Because I agree with you

and I understand why, but I'd like to help us talk a little bit about that.

MR. GRIMM: I understand. Perhaps the Waste Management staff here at NRC could address this better than I, but my take on the greater-than-Class-C limits is that they represent levels of activity in waste that will remain dangerous in a shallow-land burial facility beyond the 500-year performance period of that disposal facility.

CHAIRMAN RYAN: Not quite. The classic one that is based on the intruder scenario would be an agricultural farmer growing stuff in Class C waste. That's really what it boils down to.

MR. GRIMM: Okay.

CHAIRMAN RYAN: You know Class C waste can be anything from strontium-99 eye applicator to a very small amount of strontium-9 going up in the generators we just talked about.

MR. GRIMM: Right.

CHAIRMAN RYAN: So there is this broad range of activity level, but still Class C. In Class C waste, there is no discerned dose rate up to 10,000 R per hour. So I'm not sure I see it as a an excellent measure of the risk. In fact, I see it as a poor measure of the risk.

MR. GRIMM: I understand.

CHAIRMAN RYAN: I mean I understand you have grabbed on to that as an issue in part I guess because DOE has an obligation to manage greater-than-Class-C by the current law, but from the risk perspective it doesn't get you there I don't think.

MR. GRIMM: I agree. These assessment and action levels were developed by DOE's National Laboratories based on an assumed radiological dispersal device attack using various assumed parameters including the amount of land area contaminated the average dose rate to the public from that event and then working backwards to sealed sources sizes that would result in those parameters.

The reason that the top six are colored white and the rest are yellow is because the top six represent what is traditionally considered to be greater-than-Class-C isotopes and the bottom four are the new isotopes that are added to our list of concerns under our national security emphasis. You'll also see that the stark difference among the data are that the actinides or the long-life alpha emitters have considerably different action levels than the beta-gamma emitters.

VICE CHAIR CROFF: You mentioned this,

I'll call it, a scenario analysis or whatever. What kind of a risk or a dose or something corresponds to these action or assessment levels?

MR. GRIMM: Two rems per year.

VICE CHAIR CROFF: For which ones?

MR. GRIMM: For all of them based on EPA's protective action guides for, I think, Phase II clean-up and recovery actions. Two rems per year was seen as the top dose in those protective action guides and those are the data that were used to work backwards to source sizes shown here.

VICE CHAIR CROFF: Okay. Thank you.

MR. GRIMM: I'd like to discuss briefly the approach that we've taken as we went from a case-by-case project to a proactive project dealing with excess and unwanted sealed sources domestically. We tried to recover sources that are registered with us as quickly as possible. We work with the NRC NMSS staff on developing methodologies to prioritize recoveries. It's principally based upon the amount of material at a facility and either perceived or known security postures at those facilities.

Our contractors at Los Alamos have developed and employed a number of new technologies. The first is a special form overpack capsule that can

be closed manually in the field without welding, meaning you don't have to take welding equipment in a hot cell with you when you're dealing with sealed sources. We've also developed and certified for transport, long-term storage and disposal at WIPP assuming that that were to be an available outlet someday multi-function drums, containers, that are capable of providing long-term interim storage for various types of sealed sources. The picture you see here is drum called the S-100 which is specifically designed and shielded for neutron sources. It uses high density polyethylene shielding in the annulus of the pipe component to provide the shielding.

We dispose of sources where possible. The only clear path forward to disposal is for Plutonium-239 because we manage it as defense transuranic waste which has always been owned by the Department of Energy even though it was out on loan/lease. We do generate a small number of Plutonium-238 and americium sources from the Defense sector, largely from the naval reactors program. And finally, we integrate these efforts with our new cohorts in the international program. We are now looking at developing a take-back policy for U.S. origin sources in countries overseas.

And finally to sum up to put this in perspective for the coming year or two, this slide demonstrates no matter how many sealed sources we recover, there are always more on the database to get. Our database has gone over 5,000 during some years. Currently, our database is somewhere around 2200. Our numbers of actinides are going down because that's what we've actively been recovering since 2000. We've been encouraging licensees with beta and gamma emitters to register those on our database.

The way the registration works, they contact our staff at Los Alamos. They can do it on phone, by email. They can do it online, register points of contacts and types of materials they have. It is entered into a database at LANL which is secured. It is not online. It is not shared with typically not even me and then we employ the methodology we worked with the staff at NMSS to prioritize those recoveries.

We use subcontractors through Los Alamos to consolidate sources at commercial facilities, mainly at a firm in Houston because it's centrally located for the oil and gas industry. Then Los Alamos delivers the sources to DOE storage from those consolidators. The only routine situation where LANL

packages the sources onsite themselves and moves them directly to a DOE facility is the Pu-239. Are there any more questions?

CHAIRMAN RYAN: It's interesting to compare your two maps. I was just looking at North Carolina and Minnesota and Texas about the exchanges. Maybe that coincides with the three manufacturers you mentioned.

MR. GRIMM: Right. Minnesota and Florida stick out on the recovered map because there were firms there that made Pu-238 pacemakers and there are virtually none of those left in the country except for those that are removed from patients when they get more modern ones or when they pass away.

Obviously, the concentration in Texas is in account of the petroleum industry. There is a handful of large oil field service companies that conduct their international well-logging operations out of Houston and that's where they bring their excess sources back to.

CHAIRMAN RYAN: As opposed to, say, Oklahoma or some of the other oil states.

MR. GRIMM: That's correct.

CHAIRMAN RYAN: And Louisiana is obviously part of the Texas picture as well.

MR. GRIMM: That's correct.

CHAIRMAN RYAN: Interesting.

MR. GRIMM: Some of the other concentrations of notably North Carolina is based upon a single large portable gauge manufacturer.

CHAIRMAN RYAN: Interesting.

MR. GRIMM: Anything else?

CHAIRMAN RYAN: What is your biggest challenge?

MR. GRIMM: Money. While the program was seen by the Environmental Management Program DOE, it was not seen as directly related to clean-up and closure of DOE's major legacy facilities. So it got dwindling attention as the last couple of years have gone by. When we were adopted by NNSA a year ago, it was pretty late in the fiscal year `05 budget cycle and the best estimate at that time was $5.6 million required for the program. That's the number that stuck in the `05 budget request from the White House and that's what we got for `05. We are significantly raising that budget request for `06 to over $12 million largely to deal with the new infrastructure that's going to be required to deal with new isotopes.

CHAIRMAN RYAN: Gotcha. Jim, questions? Ruth.

***MEMBER WEINER:** I'd like to return for a moment to your slide the table of five radium amounts of concerns on it.*

***MR. GRIMM:** Yes.*

***MEMBER WEINER:** And you said that the action level that these were geared to a dose of two rem per year.*

***MR. GRIMM:** I believe that's correct.*

***MEMBER WEINER:** Can you say what kind of dispersion you're looking at and what kind of exposure time, any kind of detail? How do you get that two rem per year and is this the remming dose or does this go to the maximally-exposed individual or what?*

***MR. GRIMM:** I'm going a little out of my depth here, but I will attempt to answer this. I believe that our consultants at the national labs had many disagreements on how to approach this and they went relatively non-conservative so that everybody would agree. This is based upon an even distribution of radioactive material over a 500 acre area from an RDD.*

The reason 500 acres was chosen was because smaller areas, there were arguments during the analysis how big an area was seen as a national security impact. I think we all know that we could

pick one or two acres to contaminate and have a significant national security impact, but there was argument over that small an area.

MEMBER WEINER: Do you know what kind of dispersion modeling, what modeling, they used to look at that?

MR. GRIMM: I don't believe they used any dispersion modeling at all. They assumed an even distribution over the area.

MEMBER WEINER: So they assumed that the source, just to get this straight in my mind, was evenly distributed over 500 acres.

MR. GRIMM: I believe that's correct.

MEMBER WEINER: And then this was an external dose to somebody who sat for a year or what?

MR. GRIMM: I don't know exactly what the exposure time was for individuals, but I think it was assumed to be residents.

MEMBER WEINER: With no shielding?

MR. GRIMM: No shielding.

CHAIRMAN RYAN: Ruth, I think we had heard something about this previously and I guess my view of it is it's not a scenario that's designed to be an accurate representation of any one person's dose. It's a metric.

MR. GRIMM: I believe that's correct.

CHAIRMAN RYAN: It gives you some kind of a way to scale and rank on a relative basis what you should pick up first and you've explained your program to prioritize sources. Well, I think I would never take away from that metric a dose. A dose is nothing more than a benchmark on the wall. If it's here, that's important to us. Now it's real important now. If it's below, it's low in priority. Then you're done in terms of your ranking. Is that a fair summary?

MR. GRIMM: I think so. I don't believe that the, well, first of all, EPA's protective action guides are not hard and fast about exactly what number should be chosen for dose limitations during the second phase of clean-up that is after the emergency response evacuation.

CHAIRMAN RYAN: Through the recovery, right.

MR. GRIMM: This is during the recovery phase. I believe site and case-specific situations can be taken into account on determining dose limits.

CHAIRMAN RYAN: You know I think to me the key point is that if you look at the sources, let's just take the beta emitters and alpha emitters, it ends up with a resuspension inhalation model. If you

look at the gamma emitters, it's a direct exposure. It may be a little bit of inhalation and so forth. So I don't know if you changed your parameters and your scenario, you would come up with anything different in terms of their ranking substantively. One may shift with another one next to each other, but I guess I want to agree with and recognize that the exercise is not to calculate doses. It was to rank importance.

MEMBER WEINER: I wasn't criticizing. I was simply trying to clarify in my own mind. I have another question though. WIPP can take its defense generated transuranic flights.

MR. GRIMM: Correct.

MEMBER WEINER: So is there any way to, you mentioned it was disposal only for Plutonium-239.

MR. GRIMM: Correct.

MEMBER WEINER: Could you put the other actinides in there or what is interfering with that that they are not defense generated?

MR. GRIMM: The only thing that's interfering right now is a programmatic presumption that americium, Plutonium-238, other actinides and transuranics in the licensed sector must be managed as greater-than-Class-C waste. They are not DOE-true waste and if they were DOE-true waste, would they be

defense waste? Okay.

I personally was responsible for shifting our paradigm on the Pu-239. There was an operating assumption that since licensees had those sources for decades that they were greater-than-Class-C waste. I challenged that and said, "No. DOE always owned them. They are transuranic waste. It's not a coincidence that they were manufactured from weapons-grade plutonium from Savannah River" and I succeeded at making an argument with the Environmental Management Program and our general counsel that they should be managed as defense-true waste.

Now one of my initiatives for the next year is to take that same white paper and try the same thing for our americium because I think most of us know that it's a decay product of plutonium in the weapons production stream or in weapons components themselves. The only difference between that and the Pu-239 is that we separated purified and sold the americium in the commercial market. It's not DOE owned, but that's the only difference. So the question is when the government recovers those materials, which waste label do we put on it? I would like to say "defense-true."

CHAIRMAN RYAN: Allen.

VICE CHAIR CROFF: Talking about the scenarios, is there a report or whatever where this analysis is laid out?

MR. GRIMM: If there is, it's probably classified.

VICE CHAIR CROFF: Okay. And the list of radionuclides in your left column, how was that list picked? Why are those there and others not there?

MR. GRIMM: This was picked by NNSA and National Laboratory staff as isotopes of concerns that would make effective radiological dispersal devices and by "effective," we mean materials that would after the emergency response deny access and open use of a contaminated area. This isn't geared toward radiological exposure or injuries during the RDD event itself, but in the long-term exposures in the aftermath.

VICE CHAIR CROFF: Okay. Thanks.

MEMBER HINZE: Briefly, Joel, I realize you're just talking about sealed sources and that's your domestic program, etc. and we're dealing here with control and tracking of sealed sources, but what about unsealed sources? I've had an occasion to have chunks of carnotite land on my desk from former friends. There are regulations in place, I believe,

in some states that one cannot leave cores of uranium ore laying on the ground. What's being done about controlling unsealed sources?

MR. GRIMM: I'm not really sure I can address your question. We have routinely only dealt with sealed sources. I think most materials that are used in unsealed form typically can be used and disposed of at low-level waste facilities. They don't exceed regulatory criteria that require the government's intervention and action.

MEMBER HINZE: But they are not required to go into a low-level waste storage.

MR. GRIMM: You're talking about NORM.

MEMBER HINZE: Yes, right.

MR. GRIMM: Or at least in part.

CHAIRMAN RYAN: We have an additional comment from the staff.

MR. HARRIS: Yes. Tim Harris from the NRC, just to put a perspective on NRC licensees, 10 CFR Part 20 requires licensees to control their radioactive material. So the regulations require control of all radioactive material. I think we're talking today about sources and tracking sources. Just because we're not tracking non --

MEMBER HINZE: NORM, if you will.

MR. HARRIS: Well, NORM is a different issue. But not a sealed source, bulk material, the regulations still require control of that material.

MR. GRIMM: Tim would an example be things like brachytherapy seeds or are those all sealed?

MR. HARRIS: Those are sealed.

CHAIRMAN RYAN: They are little, but they are sealed.

MR. HARRIS: Right, but brachytherapy seeds we're not tracking. They don't meet the threshold.

MR. GRIMM: Things like carnotite are not regulated because they are naturally occurring radioactive material.

MEMBER HINZE: Right.

MR. GRIMM: Not by NRC.

MEMBER HINZE: But don't put them on my desk.

CHAIRMAN RYAN: Well, I think it's an interesting area, but I just wonder as you point out if maybe it doesn't meet the test of being a sealed source concern at this point. I don't know. It's interesting to think about.

MEMBER HINZE: Yes.

CHAIRMAN RYAN: Other questions.

***MR. GRIMM:** Any interesting aspect of your question is that as you can see from the bottom of the chart we have radium on the list. Traditionally, the government has not concerned itself very much with radium.*

***CHAIRMAN RYAN:** The Federal Government.*

***MR. GRIMM:** The Federal Government.*

***CHAIRMAN RYAN:** State governments concern themselves with it all the time.*

***MR. GRIMM:** This is a new thing for us and believe it or not, we've taken so much americium off the market that we now have sealed source manufacturers asking if they have some of it back because the DOE plants have stopped separating and purifying americium. The supply of clean americium for two new sources has dwindled considerably. We'd like to say yes, but in a nonproliferation program, it's difficult to start handing out the stuff that you've been picking up.*

***MEMBER HINZE:** Thanks, Joel.*

***MR. GRIMM:** You're welcome.*

***CHAIRMAN RYAN:** I guess I just speculate that if you did recycle the material into some new and improved source control program maybe that's the path forward. Who knows.*

MR. GRIMM: Well, recycling excess and unwanted material would be in compliance with the NRC/DOE working group study on security of sealed sources. It remains to be seen what the government's role is in managing that recycling.

CHAIRMAN RYAN: But that's interesting. That is part of the MOU.

MR. GRIMM: Another interesting aspect of this is that the radioactive source market has become global which means, I'll use a specific example. A firm in California wants americium, but it's their sister corporation in the Czech Republic that actually manufactures the sources. So that means we have to put our foot into the export/import market and all the rules that regulate that. I personally fear that if anything goes wrong in that arena, fingers are going to point at us. So it bears some careful thought.

CHAIRMAN RYAN: Latif.

MR. HAMDAN: Joel, what is the status of the generic EIS that DOE Department of Environmental Management are preparing on dispose of greater-than-Class-C waste?

MR. GRIMM: DOE's Environmental Management Program committed to the Senate in a hearing, I think it was in October, to begin a NEPA process for

developing greater-than-Class-C waste disposal options. The Environmental Management Program Office is responsible for that and is preparing to issue an advanced notice of intent to start the scoping process for that.

I believe the advanced notice of intent is scheduled to be issued this month or in January. The purpose of the advanced notice is to provide a little extra time for the public to identify important issues before the actual public scoping process starts.

MR. HAMDAN: Joel, just a follow-up. Will the EIS cover only the commercial greater-than-Class-C waste or will it also include the greater-than-Class-C waste covered with the Department of Energy and Department of Defense also?

MR. GRIMM: There was discussion on this topic over a year ago and I believe there was a move in DOE especially in the Environmental Safety and Health Program to incorporate those other problematic and no-disposition path type waste streams. I don't know if EM is going to take that approach and include things like non-defense transuranic waste or if they are strictly going to limit it to the license sector of greater-than-Class-C.

CHAIRMAN RYAN: Other questions?

Comments? Joel, thanks very much. Very informative presentation.

MR. GRIMM: You're welcome.

CHAIRMAN RYAN: You have a lot of work behind you and a lot of work ahead of you.

MR. GRIMM: Good work.

CHAIRMAN RYAN: Thank you. Theron, why don't I suggest we take maybe a ten minute break and that way you can work on reestablishing the forum and so forth before our Maryland presentation. We'll come back in about ten minutes. Off the record.

(Whereupon, the foregoing matter went off the record at 2:16 p.m. and went back on the record at 2:32 p.m.)

CHAIRMAN RYAN: Okay, if we could have everybody's attention, please. We're now going to hear from the Maryland Radiological Health Program, Roland Fletcher, the Program Director. Is that correct?

MR. FLETCHER: Program Manager.

CHAIRMAN RYAN: Program Manager, and Raymond Manley from the Program also will be here to talk. And, Roland, you're going to lead us off.

MR. FLETCHER: Yes.

CHAIRMAN RYAN: Welcome. Thank you.

MR. FLETCHER: First of all, I'm very pleased to have this opportunity to speak before this committee and to present information that the CRCPD has been engaged in for some time, especially in the area CRCPD programs and radioactive materials control, recovery, and disposition.

Let me point out that this material that I'm going to be using was provided primarily by Terry Devine of the CRCPD, who we're trying to make contact with so they can make sure that I say it right. And it is based on experience, as I said, that CRCPD has had with the states over some time.

I'm going to begin the presentation, but at a point about midway, I'm going to turn it over to Ray. I'm going to be covering the CRCPD aspects of these programs. Ray is going to be talking about Maryland's experience in the same area.

Let's talk first of all about the conference. I don't know how many of you know what the Conference of Radiation Program Directors is. It's essentially an organization of state regulatory programs advised by agencies of the federal government, including the NRC, EPA. And what we do is we put together working groups based on the experiences of the staffs of these various programs,

so that we can jointly develop consistent regulations, so that we can look at issues and concerns within the regulatory community, come up with position papers, resolutions that deal with those particular things.

We also kind of act as a clearinghouse for information. We exchange staff. You'd be surprised at how many people have gone from one state to another to participate in another staff based upon their experience in an opening that might appeal to them.

During the past four years, the CRCPD has worked with the NRC in their National Orphan Source Program to address the vital issue in this country.

Since 1987, CRCPD has invited custodians of discarded or otherwise unwanted radioactive materials to call for assistance in finding affordable, legal solutions for the control of these orphan sources. Thousands of these requests have been satisfied by continually expanding a list of alternatives. Radioactive materials were mostly produced over 30 years ago and have been long retired from use. In many cases, records from the materials have essentially been lost. We need to find an orphan source, as we've been talking about, something with no record, no trace, no identifiable characteristics, and no ownership.

The material that we have dealt with may have had a valuable application at one time, but it's better controlled here than in prolonged storage where you may not even know where it is.

The contract invites contact with people who wish to adopt these sources, someone who wants to take control, someone who has a use for them. Over the years we have been able to fill hundreds of these requests. Success of these projects can clearly be seen in the yearly request for Radium sources. These sources are available - as indicated in the previous speaker - Radium is one of the areas that is identified by many states where a lot of these sources are found, and we find those who want to take control of it.

Many of these activities are funded, in part, by the NRC, and in previous years, by EPA and DOE. In eight cases, funding was provided through the CRCPD from the above sources for disposition of radioactive materials in agreement state programs. Currently, four more of these projects are underway, so the agreement states have taken full advantage of the opportunity to get rid of some orphan or unwanted sources. And Ray is going to go into a lot more detail of what we've done in Maryland about that.

What has been working? The adoption of RAM at no charge has accommodated tens of kilocuries of Cobalt-60, kilocuries of Cesium-137, and approximately a gram of Radium-226. Some manufacturers accept retired devices at affordable prices for recycling or disposal. This process has been successful with Tritium signs, Americium-241, Radium-226 smoke detectors, certain Cesium-137 and Cobalt-60 gauges, and virtually all Krypton-85 devices.

CRCPD appreciates the DOD Waste Office acceptance of radioactive material devices, mostly luminous devices, at no charge, and in a reasonable time frame. The DOD Off-Site Recovery Program, OSRP, is the only significant outlet for Plutonium, Americium, and their Beryllium Neutron sources. They have taken several kilograms of Plutonium and several kilocuries of Americium, approximately 10,000 items, since the program has been implemented.

OSRP is now expanding to consider Cesium-137, Strontium-90, Cobalt-60, Radium-226, may be considered for sources where burial as low level radioactive waste is excluded or would be prohibited due to expense. Sixteen Cesium-137 devices currently targeted for collection from high schools and colleges

are in the 3.6 kilocurie range. Strontium-90 from thermal electric generators is about one megacurie.

What else works? Brokers who secure and handle most of the orphan sources are generally competitive in pricing, utilizing federal outlets and manufacturer acceptance, and cooperate with each other in fully utilizing waste packages. Brokers can be contracted to recover a source or device in response time between hours and several days. But we do have some concerns.

First of all, device distributors continue to become Superfund sites. U.S. Radium in Pennsylvania, two luminous dial firms in, 120 grams of Radium devices at Radium Chemical Corporation, examples of defunct and problematic. Atomic Energy Act material licensees include Golf Nuclear in Texas, Neutron Products in Maryland, and Berthold Scientific in Pennsylvania.

With just tens of milligrams of Radium contamination, entire buildings are disposed of under low level waste criteria. Over a megacurie of Cobalt-60 is in storage in defunct or otherwise closed facilities with neither a commercial market, or an affordable disposal option. And dozens of Lithium and Beryllium Neutron sources with five to fifteen curies

of Plutonium or Americium remain to be collected by OSRP. These are some of the concerns, some other concerns.

A dozen greater than 100 milligram Radium Beryllium devices remain in long term storage because the disposal is either unaffordable or prohibited. Expansion of DOE support has been slow. DOE financial support for the OSP program has been erratic. Limited disposal of Plutonium-239 was halted in 2001. The program was expanded in 2001 to include Plutonium-238, Americium-241, and associated Beryllium Neutron sources, but progress is slow.

Radium orphan sources are again in need of disposal. Four states have accumulated a few drums of Radium, Radium trash, mostly luminous items that will need disposal. Funding of approximately $60,000 is needed. Between 1964 and 1982, EPA accepted 145 grams of Radium for disposal.

More concerns. Relief should be considered under current regulations regarding disposal of short-lived medical patient waste, norm scale, and Radium luminous dials. Agreement states, NRC, EPA, and DOE need to cooperate and organize a more prompt and cost-effective deal with discovered radioactive devices.

Here are some examples of specific concern. Questions on responsibility of responding agencies to secure and dispose of a discarded or discovered RAM. This has happened in several instances where something happens, we become aware of it, and there's an unidentified, unwanted source, and it may not be in an agreement state, or it may have been in an area where previous ownership was not determined. And no one really wants to go out and say I'll take it. I'll take it over. I'll take it under control. Sometimes you have to come to difficult situations.

Two hundred twenty milligrams of Radium in therapy devices found at landfills, most expensive alternative for evaluation and disposal. Sometimes we find it and the ebb and cry is let's get rid of it, let's do something. And rather than plan how to take charge or how to get rid of it, whatever works quick is usually pursued, and that's normally the most expensive.

Examples of concern. Forty milligrams of Radium-226 was found in an unoccupied house. Radioactive material remained at the site weeks later while negotiations for disposition continued.

In two cases, 70 millicuries of Strontium-

90 and 70 millicuries of Cesium-137 were held several months by scrap dealers that reported finding them, while authorities arranged for disposition.

An agreement state is currently struggling for three months to dispose of 1.3 curies of Krypton-85 gauge. The shutter was stuck open, and is still being held by the manufacturer. The manufacturer has agreed to the return of the device, funds are available, but state attorneys are still holding the matter under consideration.

Now we want to give you some perspectives and experiences from the field, and I'm going to turn this over to Ray, who's going to talk specifically about things that have occurred in Maryland.

MR. MANLEY: Good afternoon. Thank you for allowing me to speak with you today. I'd like to start off by saying a little bit about accountability in the State of Maryland. Where Maryland is going at the moment, we are attempting to approve the accountability of our generally licensed devices, so I'd like to talk about that a little bit.

We have implemented a portion of the NRC required regulation to improve the reportability from manufacturers to Maryland so that we, along with the NRC and other agreement states, will have better

accountability as to final users for general license devices.

We are working to establish a general license database through the registration of devices. I will tell you that there is some polite discussion right now between some agreement states and the NRC regarding how to establish that general license database. You heard earlier some discussions on 10 CFR Part 31.5, which outlines that criteria by which the NRC is establishing the threshold for the registration of general license devices.

Maryland and a number of other agreement states are considering whether we want to establish the level of registration the same as the NRC. Some considerations in that, perhaps, is if you say we are only going to register such devices that are greater than 10 millicuries of Cesium - well, does that mean you don't want to register the 9 millicurie Cesium sources?

If you are going to ramp-up a program like we're going to do in Maryland, approximately 750 users or 3,000 devices, approximately, for general licensees, we would like to encompass a larger proportion of our general licensed users in that registration process.

I believe where the question is currently going is that the NRC regulation is a Compatibility-B, which means that it must be adopted verbatim by agreement states, and subsequently, that means that agreement states are prohibited from registering anybody else under the current NRC regulation.

Maryland is looking into evaluating its resources for the purposes of inspecting general licensees to a greater degree. Currently, I believe we have the same policy that the NRC has during their inspection process where if we inspect a specific licensee and they have generally licensed items, we will review those generally licensed items, or if there is an event that occurs, of course, we take a look at inspecting a general license. But right now, if there is a user who is only using general license devices, we're not getting out to do that, and we're looking into that.

We have successfully or are currently trying to train our licensees and the general public on all those factors involved with general license distribution, and general license registration, and we have been and are continuing to develop good coordination with local law enforcement. When you have a recovery of a source, always it's very good to

have a good relationship with those local responders that are going out with you as a state agency to establish control of a radioactive material.

Okay. Why are we interested in recovery of radioactive material? Well, you never know who may end up with a radioactive device. That particular device, that gentleman, whoever he is, is holding is a Nickel-63 ICAM. It's a generally licensed device that's made in Maryland. And as we know, when you're dealing with orphan sources, they're just so easy to find out there in the waste train. They are just so incredibly easy to find. And in the same sense, they're always very easy to identify.

CHAIRMAN RYAN: Just out of curiosity, what does that last one show?

MR. MANLEY: That is a Radium-226 source that was found in ash. I believe that was found in a situation in Pennsylvania.

Okay. A couple of things I want to talk about that we've done, which we feel is important in this recovery of lost sources. RHP does try to budget money for disposal each year, but Maryland - and that amount has been up to $20,000 in the past for orphan source disposal, but Maryland is in the same current budget crunch as a number of other states, so that

money is truly in jeopardy at the moment. But we try to keep money available for the purposes of disposal.

Another thing that we've done which we find very helpful is to have a place to take our radioactive material when we've recovered it. To take it out of the public domain, where do you take it? We have an agreement with one of our licensees, the University of Maryland at College Park. Here is an example of one of the older signed agreements, but it indicates this radioactive material is currently present at College Park, and they say that Maryland has made a commitment to resolve and to dispose of that material, but it really is necessary if you have a program for emergency response to have a place to take the radioactive material and get it out of the public domain.

Okay. When we recover radioactive material, the first thing we try to do is return it to the licensee. That works in a lot of cases. We also deal with bad luck, you're stuck, I guess is the way to put it. If you acquire radioactive material and you don't necessarily -- you are the last one to have it, you may end up with the responsibility of the payment. And I think that's where the Orphan Source Program from CRCPD comes in, try to help people in

this category.

CHAIRMAN RYAN: Raymond, just a quick question, if I could.

MR. MANLEY: Sure.

CHAIRMAN RYAN: When you say that if they can't pay, do you go through some of the administrative process to examine that, or how do you figure out they can't pay?

MR. MANLEY: That goes through our legal process, and the administrative evaluation. It can go all the way through the Director of our administration, down to Mr. Fletcher, and so forth. It also, of course, is going to depend on what options, if any, are available to dispose of the material.

We have, on occasion, impounded radioactive material from bad actors, bad licensees. Sometimes that material ends up at College Park and needs to be disposed of, and if you have radioactive material that's both in the public domain with no owner determined, we take that to College Park.

What do we currently have located at College Park? We have an Alphatron ionization vacuum gauge. I had a heck of a time just finding out what an Alphatron ionization vacuum gauge was, and I was

real happy to look it up on the sealed source and device registry. And thought gee, I've really found it, and there was just the first page of the device, no other information, not even the amount of activity in the device. But it has approximately 500 microcuries of Radium-226. That's currently on our list to get rid of. And there's a Radium-226 Marine compass. We tried to get creative and have one of our licensees take it off our hands who has a health physics museum. That didn't quite pan out when he realized and we told him that yes, he could take it off our hands, but yes, we would have to add it to a specific license too, and he wasn't too pleased about that. So as a result, it's still at College Park, but there's a picture of the device.

Let me talk about our most recent experience with a recovery and disposition of several radioactive sources. There was an instance in February `02 where we were notified in RHP of a 2 curie Cesium-137 source that was found in a steel plant in Hartford, North Carolina. The owner of that device was identified as a facility in Maryland, Jet Blast, also known as Essex Chemical.

RHP went out and conducted an investigation of the scene. It indicated that that

particular facility had had four of those devices installed in 1984. Two of the four devices were located at that facility at Fairfield Road. Interestingly enough, the management there didn't know they had them, but they were located at that facility.

That still left one that was unaccounted for. RHP went out and educated a number of the waste dealers in the area to keep a lookout for the fourth device, and it was found in the waste stream at United Iron in Baltimore, Maryland. There was no damage to the recovered devices and no leakage. All four gauges were transported to Radiation Services Organization, who is a licensed waste broker, and they were stored and charges were made for storage from RSO. And there's an indicator of the types of devices that we found. They were four Texas Nuclear gauges.

So did we ship them back to the manufacturer? Well, no, because it turns out that Texas Nuclear wouldn't take them, so that's the first thing. We did look into other options and it turned out that there was a chance that Ohmart Vega would take them back, or do we have them disposed at an approved disposal facility? Who's going to pay for all of this? Is it going to be paid for by RHP? Is it going to be paid for by Jet Blast, or are we going

to use the CRCPD Orphan Source Program? So basically, we did use the CRCPD orphan material fund for this disposition.

We reviewed our options. Legal review, as you heard before, can be a problem. The State of Maryland basically is taking liability for the disposition of this material, so there is a legal review that's involved. There is a request that's put forth to the CRCPD, an agreement signed, a confirmation of that agreement, the bidding process, internal fiscal concerns.

Basically, even though money is coming from CRCPD to pay for this transaction, Maryland had to come up with a special budget amendment to procure the money up front, and that's not necessarily an easy thing to do within a state system. And then final disposition.

Here is an example of the request that goes from the agreement state to CRCPD, and that request was put in September 20th, 2002. It was for authority to accept reimbursement. It had to go through the legal review before this letter could be sent, and it indicates that Maryland will get the bids and complete disposition of the radioactive material.

Then there's an agreement that is signed,

the reimbursement agreement. Here is an example of that. It has to confirm that the licensee or the individual with the radioactive material cannot pay, that the entity holding the radioactive material did so inadvertently, or the radioactive material is abandoned with no owner.

It also indicates that the radioactive material must pose a potential threat, and that MDE has the responsibility for the transaction. Also, it indicates that MDE has the liability for conducting the actions involved with the disposition, and that CRCPD has the responsibility of payment. And then there's a letter back from CRCPD where they commit to provide funds for the disposition. That was on September 23rd, `02.

And again, here is the radioactive material that was necessary to be disposed of. RHP went out and got bids for the transaction. They're all basically close in nature but, obviously, when you're looking at these bids, it needs to be the reasonable and best bid that's taken. In this case, we chose the Radiation Service Organization bid, which is their paperwork there. I'll go by that real quick. And then there is the confirmation of shipment once the disposition has occurred.

Lessons Learned, and I guess this is a couple of comments by myself on Lessons Learned in putting together this small talk here. And that is that yes, we have a history in Maryland of dealing with these type of orphan sources, and we do keep all vital records, transmittals, the waste shipment manifest. But what I found is that many subtleties of those actions are easily lost. I have a feeling that Maryland is going to be relearning its lessons over and over again, so Lessons Learned we're attempting to keep better quality of records.

Retirement of persons who maintain the historical perspective. If my former boss were here, Carl Trump, he would be able to probably talk for another hour and a half on each one of these instances, but he's not here any more, and now his perspective has been lost.

Careful documentation of all events, to me, is really necessary. From a historical standpoint, in early 1989, Maryland did have a large Radium shipment where there was a collection from a number of licensees in Maryland. It was brokered by the Radiation Service Organization. When it ended up going to U.S. Ecology, it was about 1,153 milligrams of Radium. And these are the licensees in Maryland

that the Radium was collected from.

We did have a shipment in June of `97 of two Cobalt-60 sealed sources, which RHP paid that amount. And I guess I shouldn't admit this, but I went looking for where those two Cobalt-60 sealed sources came from and I couldn't find it in the records, so that sort of goes back to the Lessons Learned of keeping better notes at this point.

There was a shipment in March of `99 of one millicurie of Radium dials, and other miscellaneous sources. This shipment came about because before Maryland had an understanding with College Park, we had to have someway of taking small little sources out of the public domain, so they would come back to our office and be stored in our safe under the appropriate controls, and labeling, and so forth. But this shipment here was to get rid of those sources that we were keeping in our office.

In April of `99, we transferred three curies of Americium-241 from a well logging device. Our department and Natural Resources had a well logging license but was decommissioned, and as a result, RHP ended up with that source and a need for disposal of it.

And in January of 2000, we used the DOE

Off-Site Source Recovery project to ship a moisture density gauge to Los Alamos. And there's a picture of the drumming and so forth that was involved. Do you have any questions?

CHAIRMAN RYAN: Jim? Ruth?

DR. WEINBERG: I'd like to ask, if I adopt an orphan source, what happens when I'm through with it?

MR. FLETCHER: Once you adopt the source, then you become the owner of that source. Then all of the rules and regulations that apply to ownership go into effect, so you would have to go through disposal.

CHAIRMAN RYAN: You can't borrow it, Ruth. You've got to own it.

DR. WEINBERG: Got to own it. I can't be a foster parent.

MR. MANLEY: Are you volunteering?

CHAIRMAN RYAN: I think that's why your Radium dial clock wasn't adopted, because it was permanent. Right?

DR. HINZE: A question that I'd like to direct to Mr. Fletcher. One of your slides states in one of the bullets, "The agreement states, NRC, EPA, and DOE need to cooperate and organize for more promptly and cost-effectively deal with discovered

radioactive devices." Could you expand on that a little bit, and what it's going to take to get that cooperation, what type of cooperation are you looking for and organization?

MR. FLETCHER: Well, I can expand on it a little bit. I don't know if Terry ever got on the line or not, but --

CHAIRMAN RYAN: Terry, are you there? Could you put the microphone over --

MR. FLETCHER: I did actually hear him respond, but it was so low. I can start.

CHAIRMAN RYAN: Please.

MR. FLETCHER: I mean, we are all aware of the problem with these sources. I mean we need to be discussing at various meetings, the CRCPD annual meeting, the OAS meeting, but we seem to have different perspectives on how do we feel about processing. When we've had situations within Maryland, we've had to work within Maryland's regulations and with Maryland's procedures, and work with the CRCPD to get that done.

There doesn't seem to be a uniform procedure that everybody buys into, to address this. And I guess we're just going to have to keep meeting --

***DR. HINZE:** Is that even possible because of the varying state regulations and how they're codified and so forth?*

***MR. FLETCHER:** Well, I always think anything is possible. Probable is another question. And, particularly, when you talk about the naturally occurring materials, which seem to pop up in many of the conversations regarding these orphan sources, because NRC regulations don't really deal with those things, so bringing them into the discussion is a little more difficult.*

***CHAIRMAN RYAN:** Latif.*

***MR. HAMDAN:** Maryland is an agreement state, right?*

***MR. FLETCHER:** That's correct.*

***MR. HAMDAN:** So from what we heard this morning, if you are an agreement state, then you should have your own regulations.*

***MR. FLETCHER:** We do.*

***MR. HAMDAN:** So if you have your own regulations, and you implement them, it's all the State of Maryland, it seems to me.*

***MR. FLETCHER:** Well, that's true, but the question dealt with how you have kind of a coordinated process where everybody participates. Because when*

you're talking about the disposal of these sources, you're talking about a few disposal locations. And a lot of the disposal brokers work in many different states, some of them NRC states, some of the agreement states. And I think what that particular comment was geared to was to try to get something in common so that the brokers, for example, can follow the same procedures state-to-state.

CHAIRMAN RYAN: Latif, I think one of the things we heard this morning - we did hear from Paul Lohaus, the Agreement State Program, and he commented how effective CRCPD is across the board, suggested state regulations, this program and others, so I know as a past chairperson of the conference that you appreciate that that's recognized.

I think you've touched on a point you just made that there's AEA material and non-AEA material. I've heard over the years from many state program participants that say Radium, is Radium, is Radium. I don't care where it starts or who regulates it, we have to deal with it at the state level.

I recall Mike Mobley's slide of radioactive material is the box he regulates, and then he shows the federal slide which has a bunch of different boxes, and who does what, for whom, so

there's that aspect to it.

I think it's important to recognize it's not so simple, but is there a theme? And I think that's your question, is there a theme?

MR. HAMDAN: That's right.

CHAIRMAN RYAN: And I guess the theme is you always manage the material correctly. You may not be able to sort it out in terms of where it's going to go, or where it's going to be disposed, but public health and safety is the theme, I think. At least that's my perception. Tell me if I'm wrong, or if I'm right, tell me how I'm right.

MR. MANLEY: I believe you're right. I would like to mention three points that my staff brought up, that I'd like to mention for your consideration. These may have been brought up previously. We've only been here for this afternoon. And I've even had members of the public ask me this question.

If you want accountability of sealed sources, why can't there be insulations of GPS or low jack systems in radioactive material devices to assure accountability of devices. I've had the question that - and for your consideration - should legislation be enacted to make manufacturers more accountable for

radioactive material.

We had an example right there where Texas Nuclear refused to take the device back. There's nothing that makes them take it back. Just, again, for consideration. And should legislative action be enacted to prevent storage of unusable radioactive material for extended periods of time? I'll just leave you with those three. Any other questions?

CHAIRMAN RYAN: Actually, the middle one was one that was in our October, 2002 letter to the Commissioners, saying that consideration should be given to the use of geopositioning technologies to facilitate tracking of significant sources, so we're on the same page with that one. It had much the same ideas on tracking.

I think it will be interesting to see as the staff brings forward their draft in January. Maybe that's a focal point for all of us to revisit, what the next steps seem to be shaping up to be. Yes, Latif.

MR. HAMDAN: Yes. I just have one other question. The Maryland experience, is it any different than other states, or is it typical of what goes on with sealed sources in other states? Do you know?

***MR. FLETCHER:** Well, there's very few agreement states, so the experiences are a lot different from state to state depending upon the kind of licensees they have. I think we're pretty active in working with the CRCPD. I don't know how many other states there are, but I think the number that we had in the presentation were like 8 to 12, perhaps. So of the 33, I know that 8 to 12 have worked with CRCPD in this program. And I still don't know if Terry can comment, but that's the experience I know about. But different states have different licensees, different kinds of licensees; and, therefore, they encounter different problems.*

***CHAIRMAN RYAN:** Terry, are you there?*

***DR. DEVINE:** Yes.*

***CHAIRMAN RYAN:** We can barely hear you. We're going to try and fix that. Hang on just a second. Our audio capability has been challenged this afternoon.*

***DR. DEVINE:** Many of the things that turn up --*

***CHAIRMAN RYAN:** If you could be quiet, maybe we could hear, please.*

DR. DEVINE: -- to be dealt with are 30 to 50 years old, and not only is the owner untraceable, but manufacturers defunct. And I think that happens with a good many of the things that turn up.

The problems in dealing with these materials very often is in the first response to assess the situation and decide what's to be done. And that, a you just said, varies enormously from one state to another. I think with byproduct materials, the procedures are better established, the alternatives are in place, and it works better. But particularly with NARM and with Radium, at an incident scene, a report of a find, there might be four or five agencies with some degree of authority over the matter, that have to rush out and try to push the responsibility onto one of the others.

They have institutionalized a grave concern not to take possession of materials, and I think that's rather sad because well, with Radium - now we have some outlet, and Roland mentioned a case a while ago of 220 some milligrams of Radium. Radium therapy devices are typically just 40 milligrams. And that case was five or six of these devices in a little box. And they all passed the responsibility back to the person who was good enough to report it, who was

quite prompt in getting a broker onto the scene within hours who took it away.

I didn't hear about the case for more than a year, I guess, and would have had an outlet at no charge for them, just the cost of inspection, packaging, and transportation. I think there's a problem with developing these procedures and getting them in place among all these different agencies.

Another case that Roland mentioned about bracchytherapy, Radium being found in a home that was unoccupied. And it did remain there for some weeks. There's an interesting nuance of that - I heard a few days ago an anecdote that well, this pretty little wooden box, very attractive little box, 50 years old had been left there in the home. The realtor decided that he'd have an open house and invite 200 people in to see the property, so there I think is a risk that fortunately nobody noticed that pretty little box and carried it off. And it was there some time later for a broker to take. But clearly, we need to work on these procedures of getting things secured, changing the attitudes and the policies towards that.

We will find disposition affordable. You do need to fill a few gaps in that, and the Off-Site Recovery Program is doing marvelous work to expand,

but there's much work to be done.

CHAIRMAN RYAN: Terry or folks from Maryland, could you help us understand a little bit more about discreet Radium sources? I guess, I don't really have a firm grasp on how they were licensed and distributed in the very early period, say the post-war period when they were much more popular in radiation therapy and so on. Did doctors own them individually, or how were they controlled and accounted for?

MR. FLETCHER: I think Terry was trying to address that.

DR. DEVINE: I don't think they were. The professional associations established some guidelines and training on safety and use of the things, but I don't think -- they predate the State Radiation Control Act.

CHAIRMAN RYAN: Oh, sure. And I guess --

MR. FLETCHER: And I think --

CHAIRMAN RYAN: Go ahead.

MR. FLETCHER: I can only guess. A lot of the regulatory controls of these devices was a lot more cavalier. I mean, they weren't perceived, in my estimation, as having the level of potential harm that we now know they actually do, so I remember watches

with Radium dials, cars, compasses, and because they glowed in the dark, people just thought they were great, and now we know better. But as you said, in the 40s and 50s, and I'm sure even in the medical community, there wasn't that awareness. So some instances with some of the Radium paint facilities were starting to be revealed, but there still wasn't that realization of what the total harm of these things could be.

CHAIRMAN RYAN: Well, I think one of the things you pointed out, Roland, in your slides was an example - I forget the number - but a small number of milligrams resulted in demolition of a complete building because of contamination.

MR. FLETCHER: Right.

CHAIRMAN RYAN: So I think that aspect of source -- now we've all heard stories about bank vaults or safety deposit boxes where a source has been found leaking, or things of that sort that become remediation problems.

MR. FLETCHER: Projects, yes.

CHAIRMAN RYAN: Is studying remediation projects of that type a way to get at sources, what's been lost on a control? Is there information to mine there? It would be interesting to see if you could

cast every remediation that's been a recovery effort of some sort in the way you just described that one building - X milligrams of Radium result in the demolition of one building, and so on across a broad spectrum of those kind of projects. It would be interesting to see what that picture was like nationwide. X number of hundreds of thousands of dollars was expended by a state and contractors to clean up a safety deposit vault or something.

MR. FLETCHER: Well, I mean, you could take it even further. Think about the tons of dirt that scraped up when contamination is found to be above what it should be in certain areas. You're also talking about tons of soil that are removed from areas.

CHAIRMAN RYAN: Sure. Interesting.

DR. HINZE: If I may, what -- you apparently have a good relationship with Maryland and they will store your recovered items for some temporary period. I think the terminology was. Do they charge for this, or is this just out of goodwill? How is this handled in other states where there may not be as a benevolent university.

MR. MANLEY: Well, I hope -- we have a good relationship with the Radiation Safety Office,

and I hope the word of the word "free" doesn't get back to them, or we're liable to lose that. But yes, it has been free of charge.

MR. FLETCHER: We try not to ask the question.

DR. HINZE: I understand. Do you know what transpires in other states? Do your colleagues -- do you discuss this at all?

MR. FLETCHER: It's very isolated. I mean, a few of the states do use their state university. I mean, the University of Maryland and the State Department of Environment, we essentially have the same boss. We're both state government facilities. That helps to facilitate doing this, and I would venture to say that there are other states who run into this problem who do the same thing. I think Iowa might be a good example, but I couldn't itemize it for you. I just don't know.

DR. HINZE: Well, that was your third question, I think, regarding storage.

CHAIRMAN RYAN: Again, as a matter of perspective, could you tell us in the spectrum of programs in state, is Maryland a big program, medium, small?

MR. FLETCHER: I think we're either --

MR. MANLEY: We're sixth or seventh.

MR. FLETCHER: Yes.

CHAIRMAN RYAN: In size.

MR. MANLEY: In size, total number of licensees.

MR. FLETCHER: We have about 600 licensees.

CHAIRMAN RYAN: So you're one of the bigger programs, the top ten in the country then. So your experience probably is across the spectrum of what other states might see.

MR. MANLEY: I think experience, again, has varied depending on what types of use and companies are specifically located.

CHAIRMAN RYAN: Sure.

MR. FLETCHER: Our experience has been, we have a lot of certain licensees - like gauge uses, et cetera - some of the midwestern states have a lot of Uranium mill tailings or industrial radiography facilities and things. The concentrations vary. We have a lot of medical licensees and a few other states have a lot of medical licensees, but other states have fewer, but they have a lot more radiographers. So the kind of licensing will vary.

MR. MANLEY: Right. We have a large

number of research licensees just because being located near Rockville and Gaithersburg, so a large percentage are non-sealed sources, but are unsealed.

CHAIRMAN RYAN: Thank you. Terry, did you have any other comments?

DR. DEVINE: On that question about the other states, I would say that four or five states have programs of taking in whatever turns up, and eventually paying for the disposal. Several other states have the arrangement that Maryland has with a state facility to take it in, and eventually dispose of it with their own waste.

A good many states have no program of that type. They tell the operator of a facility, scrapper trash facility, obtain appropriate container, chain it to the building and store it and see if it decays. If it doesn't, you'll have arrange disposal or something. Now this is becoming a very widespread practice since the pressure to install radiation detectors at landfills. And we had probably ten cases a day or more of alarm trips and radioactivity found in municipal waste. And in almost every case, it is short-lived, and does decay, and that storage hopefully is a good idea. But in the case that it's

long-lived, then we have some problems that it's just being left there on the site in need of attention.

And again, back to the Radium - it's a therapy device. We heard about the acute fatal injuries in other countries from tunnel therapy devices, Cobalt and Cesium, but with Radium, the device is about the size of a pack of matches or maybe a kitchen match itself, so that can easily be carried off or lost, broken. And it's not a good idea to have those at just some local facility in a lock box, but in many states that's the usage.

CHAIRMAN RYAN: Has the conference produced a report on this by any chance, Terry?

DR. DEVINE: Oh, I think there's been some articles in our newsletter over the years.

CHAIRMAN RYAN: If there's any of those that are more recent, of recent vintage that kind of summarize the conference's experience as a whole, those would be helpful for us to have. If you could maybe think about that and get back to us --

DR. DEVINE: Yes, I will.

CHAIRMAN RYAN: -- with some summaries, that would be very informative for us.

I've learned that Robert Free is not going to be available on the phone link today, unfortunately. He's been called away for other activity, so the next item on our agenda is kind of a general discussion. I guess the question is where do we go from here? So maybe I'd thrown that open to any and all participants, including our Maryland State folks, or our other speakers from NRC staff, or DOE. Any thoughts?

MR. GRIMM: This is Joel from DOE. One thing we've tried to impress upon our new management at NNSA, whether you're talking about permanent safety or permanent security related to sources, disposal is security. Typically, the National Security programs don't want to be saddled with disposal projects, and rightly so, but not having the disposition path, a permanent disposition path is a major stumbling block to proper management of sealed sources.

CHAIRMAN RYAN: That's an interesting perspective. Do you have any thoughts on how to break that conundrum?

MR. GRIMM: Well, thankfully DOE's Environmental Management Program was officially named the Owning Program Office for the greater than Class E problem. I don't think there has ever been a formal

designation like that. When the Low Level Waste Policy Amendments Act was issued in 1986, it was signed in January of `86, the only real requirement was for DOE to write a report. And the report was written and there's been very little discussion of it since, so I think it's a good step forward.

CHAIRMAN RYAN: That's a long way from actually having disposal --

MR. GRIMM: It goes without saying that writing an Environmental Impact Statement, a generic Environmental Impact Statement for a disposal facility is one thing. Getting it sited, approved, and built is another. It's not a foregone conclusion that we're talking about a new pristine site. Existing facilities could be included in the EIS.

CHAIRMAN RYAN: Well, that's interesting to think about the fact that the source term is an inventory of curies on probably a top ten list that you showed us on your slide, and that's a fairly straightforward thing to make some assessment about.

MR. GRIMM: The inventories are not large. The 10,000 sources we recovered are in 600 drums at Los Alamos.

CHAIRMAN RYAN: Interesting. So that might be the eye of the needle, is the disposal outlet

has to bring closure to the problem, rather than ongoing management.

MR. GRIMM: I believe that's correct.

CHAIRMAN RYAN: Okay. Would you guys agree with that from your state perspective?

MR. FLETCHER: I think so.

CHAIRMAN RYAN: It would be interesting if that was available directly to states, that it didn't have to go through a more complex collection step by some intermediate program that's underway now, but if there was a direct okay, yes - package it this way, that one can go to disposal, or it can go to a broker to accumulate for disposal, and on we go.

MR. CROFF: I have a clarification.

CHAIRMAN RYAN: Yes.

MR. CROFF: Which of the waste that you collect don't you have a disposal outlet for?

MR. GRIMM: Nearly all of it. Most of the sealed sources we recover are managed as greater than Class C waste generated by the licensed sector. They cannot be disposed of at DOE-owned facilities.

MR. CROFF: Ahh, that's what I missed.

CHAIRMAN RYAN: I think the one exception that Joel highlighted was the Plutonium-239 at WIPP.

MR. GRIMM: There is one other exception,

depending on the origin of the material. We've now disposed of three Strontium-90 RTGs, one at NTS, and one at Hanford. They came from DOE operations, but the precedent is established that large Strontium-90 sources can be disposed of at DOE facilities.

CHAIRMAN RYAN: It's interesting.

MR. GRIMM: They're just like greater-than-Class-C RTGs.

CHAIRMAN RYAN: Well, I think one of the problems that we face is that regulating it based on its origin doesn't make as much sense as regulating it based on the risk and the radioactive materials involved.

MR. GRIMM: Regulating it by what it is.

CHAIRMAN RYAN: Right, instead of where it came from.

MR. FLETCHER: I wanted to echo something that Ray had talked about earlier; that is, it seems like everything we use these days has a code. You can be sitting in New York and you can find out where a cell phone is being used in California. Why can't we do the same thing with these materials? I mean, it seems to me that if you want to preclude them being lost or just being discarded, you have some form of recovery where you not only know where the material

is, but you know who had it last, who it belongs to, and who needs to pay for its disposal. I think that would really clear up a lot.

CHAIRMAN RYAN: I think in the forward-looking direction for new sources, or new uses, or new owners, that certainly seems to make a lot of sense, and is consistent with our past recommendation in October of `02. And, of course, you'd do that, I think, for the significant sources. You may not want to do that for every generally licensed device under the sun, but certainly significant sources you could reconsider that option.

As I understand it from the NRC staff, we're going to hear in January - we'll see the proposed rulemaking on this, so again, that's a focal point, to me, for us to all reconvene on and see where that's going. That will be interesting to see.

MR. HAMDAN: Mike, I have a question.

CHAIRMAN RYAN: Yes. Please.

MR. HAMDAN: Joel, clarify this for me. Are you saying that DOE is or is not responsible for disposal of commercial generated greater-than-Class C waste, which includes some sealed sources? Is DOE responsible for maintaining its disposal site or not?

MR. GRIMM: Yes.

MR. HAMDAN: Okay.

MR. GRIMM: Specifically, from Public Law 99-240, which says "DOE is responsible to provide" - that's the verb that's used.

MR. HAMDAN: Right.

MR. GRIMM: "Disposal for waste exceeding Class C criteria."

CHAIRMAN RYAN: And there's no specificity on buy it, generate it, new site, old site, existing site. All those options are out there, because it wasn't specified beyond provide.

MR. GRIMM: That's correct. Another option is for the private sector to speculate, speculatively design and get a contract and a license for a disposal facility on their own. It's been suggested, but it hasn't gone anywhere, largely because of the up front commitment of funds required.

DR. WEINBERG: I have another question for Mr. Fletcher, and this comes off of the Maryland program that has the University of Maryland taking orphan sources. Would it be possible for CRCPD to basically monitor a recycling program? There are a number of educational institutions that can really use sources, small, medium-size sources. And certainly, paying for both the source and its disposal costs more

than just paying for the disposal. I've just been through this.

And it seems to me that - this doesn't address the disposal question - but it seems to me that you could have a recycling program for some of these sources, especially for educational institutions. Has that been considered? I'm sure that's what the University of Maryland does with them.

MR. MANLEY: Well, CRCPD through Terry Devine, has -- as you talked before, if you want a source, you can obtain it that way, if it's out there and it's an orphan source. The sources at the University of Maryland are not ones that can be used as check sources and that type of items. We dispose of a number of nuclear gauges, for instance, soil test gauge that has long been defunct, and other radioactive material that I don't believe would necessarily be of any use even in a museum capacity.

CHAIRMAN RYAN: And the bar is raised too. As I think Brian pointed out, if you adopt a source, you're the parent. I mean, you have to agree then to take on the obligation for ultimate disposal, and I think my own experience with universities or schools first to find out what the rate is going to be for ultimate disposal - the shine kind of goes away from

that star, and then they don't think about it much any more, because it is a very expensive proposition, or at least at its initial blush, expensive to what they thought they were going to have for free.

MR. MANLEY: For a while, we actually sent a number of our items out to Dr. Paul Frame and ORAU at Oak Ridge, but eventually he said no more. I have enough. He said one more Revigator and I'm going to have a real problem.

MR. HAMDAN: Sealed source and greater-than-Class C waste is really different than let's say high-level waste or low-level waste because there you're talking about large volumes of waste. And here, the last projection I saw on the commercial greater-than-Class C waste, 2,000 cubic meters projected in 2055. So you would think with such a small inventory, somebody would jump on this, since it's such a problem for many states, and there are thousands of sources. Do you think this would go to the front burner and frankly, DOE would express a solution to it. So what is --

MR. GRIMM: I can't speak historically. I can only surmise that part of the problem with addressing greater-than-Class C waste, even though the responsibility was established in the law in 1986,

this problem wasn't present at any single DOE facility; so, therefore, there was no specific program office in DOE that had the incentive to solve the problem until there was an official designation made by the Secretary this year.

When you talk about waste projections, the only serious studies that were done for this were in the report to Congress in 1987, and then by Idaho National Engineering Lab in 1994. And they made some assumptions and some statistical analyses that I think we would question today, especially when you look at volume projections for sealed sources. They were just considering the sealed sources themselves, they weren't considering packaging, and shielding, and drums like that. It was a minuscule number, a cubic meter, two cubic meters, something like that.

But there was another projection that talked about other greater-than-Class C waste, which is activated metals from power plants. It's much different. I think those are likely to be remote handled wastes. I think that's one of the reasons that the utility companies were looking at entombment in place as their decommissioning method a couple of years ago. I don't know where that went. And dealing with that material is going to be a lot different than

dealing with sealed sources.

CHAIRMAN RYAN: I was going to say one thing. I think Joel is on the right track to segment the question, because irradiated hardware is 10,000 R per hour in his Class C routinely disposed stellite balls on their own on greater-than-Class C because of the Nickel content that are in pools now, and in sealed sources at a whole different spectrum.

And again, I think to me, one thing to keep in mind, again, is that the concentration doesn't determine the risk. It's not the concentration, it's the amount. Strontium-90 eye applicators used by ophthamalogists calculate to be greater than Class C waste, but they're a trivial amount of Strontium. The way they're disposed is you average over the package in which it is disposed, and then that concentration basis is less than Class C, so there's a lot of details about how you calculate a concentration, whether it's the source itself, the source and the capsule, the source, and the capsule, and the steel container, or the drum. And how you look at that is how you determine the classification often, so there's a lot of detail that goes into that.

Again, from our perspective, I think just looking globally about it, the amount is what

determines the risk, not the concentration. The flaw in a concentration-based system is it's easy to apply over the middle range. But at the very dilute end, like dilute concentrations in bulk soil, it sort of falls apart. And at the very concentrated end, which are these very small, discreet sealed sources, a very small mass but very high activity, it may not seem to make the same logical sense. So tell me if I'm right, or does that make sense? And I think maybe the question is that the disposal strategy for these highly concentrated discreet sources shouldn't be the same disposal strategy that you think about for Class A, B, and C waste in that middle of the range. I don't know. I just throw that out for comment.

MR. GRIMM: The proposals that have been drafted up for dealing with long-lived sealed sources disposal would employ intermediate-depth borehole technology, as opposed to a geological repository.

Your point touches on another dilemma, though; and that is, just because a waste stream classes out as Class C doesn't mean the disposal facility will take it. I think the upper limit for Cesium, for example, at Barnwell is about 30 curies in a drum. If you just use simple division using the Class C limit in 10 CFR 61, the definition for Cesium

Class C waste is 3,500 curies per cubic meter. That means about 700 curies in a drum, so there's a huge gap between 30 and 700.

CHAIRMAN RYAN: Of course, then there's the operational side of it.

MR. GRIMM: Right.

CHAIRMAN RYAN: What do you handle in an operational setting from a radiation protection standpoint for worker's point of view. And that gets into the equation, as well.

MR. GRIMM: Correct.

MR. CROFF: I'd like to -- first, I found the background provided by the many speakers very interesting. I want to agree with what you said before, in the sense that I don't think this issue for the ACNW is quite ripe for a letter or further action pending, as you said - one, the draft rulemaking, seeing what it says, and what the staff proposes to do. Number two, I think very closely related to it is going to be this greater-than-Class C disposal issue. What does the department propose to do as an outlet?

I think the NRC can do a lot of things on tracking, but when they go to okay, we'll get orphan sources back. What are we going to do with them? Again, a lot of it is going to go to this greater-

than-Class C outlet, and we don't even know what they're going to propose yet, so all this wraps around and becomes part of one rather knotty package.

And at the risk of complicating some things even further, we're talking about looking a little bit at Part 61, and there's some relationship with Class C disposal potentially in there. It's not a done deal. And even on the where issue, if you go back and look what Congress has done, they're basically talking about allowing disposal of greater-than-Class C waste on-site on a case-by-case basis again. And that is going to raise considerations of what do you allow to be disposed on-site in the near surface, and what are the criteria under which you allow that? How much do you have to do to allow such a thing?

CHAIRMAN RYAN: And I think the nexus of all that is this question of quantity versus concentration.

MR. CROFF: Yes.

CHAIRMAN RYAN: So I think that's --

MR. CROFF: And sorting through that.

CHAIRMAN RYAN: At all levels. Now again, we recall this morning that the classification system was based on an intruder probability of one, 100 years

post closure at a low-level waste site into the highest concentration waste. That was the limiting case that set the Class C limits. Why is Strontium-90 allowed to be at a higher level than Cesium-137 in a Class C? Strontium-90, we've all been taught, is the most restrictive radionuclide in a fission product world.

Well, the reason is because the accidental dose rate in the intruder scenario drove the dose higher than intake of Strontium by internal exposure. So if you want to go back to the root of it, how that scenario is constructed, is important to understand, to really understand what the implications are when you say greater-than-Class C. Again, it's tied into this difference between a concentration-based limit ad a quantity limit in terms of what defines the risk in what setting. Ruth.

DR. WEINBERG: Joel mentioned borehole disposal and I thought Joel might be interested - the Egyptian government is looking -- that really has only sealed sources to dispose of, is looking at borehole disposal in the desert as a disposal option. And that's being quite extensively studied now, and I would think that DOE would be interested in that.

MR. GRIMM: The IAEA is also working on a

generic safety assessment for intermediate-depth borehole disposal. They had a consultancy - no, it was a technical meeting on that at the beginning of November.

DR. HINZE: Well, I've heard all this, but I still go back to a concern that I have about this temporary storage. It leads to inefficiencies, and inefficiencies can lead - not to Maryland, of course - but can lead to cavalier approaches to the problem. And I think that there's a disconnect with what we're expecting out of the agreement states arrangement.

CHAIRMAN RYAN: Terry, you're on the phone and have been quiet. Can we call on you for any closing comments?

DR. DEVINE: Do I? No. Thank you, though.

CHAIRMAN RYAN: Okay. Well, we appreciate your participation, as we do all the speakers from the staff and DOE, and from Maryland representing a robust and important agreement state. And I think we're well-informed to kind of see the draft regulations that get proposed by the staff in January, and we'll be back in touch.

Any other closing comments or questions?

DR. WEINBERG: Thank you.

***CHAIRMAN RYAN:** Okay. Well, thanks again, and we'll close our session on that happy note. Thanks again very much. We appreciate your time and participation.*

(Whereupon, the proceedings in the above-entitled matter went off the record at 3:49 p.m.)

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