

UNITED STATES  
NUCLEAR REGULATORY COMMISSION

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MEETING WITH THE ORGANIZATION OF AGREEMENT STATES (OAS)  
AND THE CONFERENCE OF RADIATION CONTROL PROGRAM

DIRECTORS (CRCPD)

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TUESDAY,

FEBRUARY 8, 2022

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The Commission met via Videoconference, Christopher T.  
Hanson, Chairman, presiding.

COMMISSION MEMBERS:

CHRISTOPHER T. HANSON, Chairman

JEFF BARAN, Commissioner

DAVID A. WRIGHT, Commissioner

ALSO PRESENT:

ANNETTE VIETTI-COOK, Secretary of the Commission

MARIAN ZOBLER, General Counsel

CONFERENCE OF RADIATION CONTROL PROGRAM DIRECTORS  
(CRCPD):

ANGELA LEEK, Chairperson (IA)

KIM STEVES, Past Chair (KS)

PATRICK MULLIGAN, Chair Elect (NJ)

ORGANIZATION OF AGREEMENT STATES (OAS):

AUGUSTINUS (AUGGIE) ONG, Chairperson (NH)

DAVID CROWLEY, Past Chair (NC)

STEVE SEEGER, Chair Elect (TN)

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

2 10:01 a.m.

3 CHAIRMAN HANSON: Good morning, everyone. I  
4 convene the Commission's public meeting with the Organization of Agreement  
5 States, or OAS, and the Conference of Radiation Control Program Directors,  
6 also known as CRCPD.

7 In this meeting we'll hear from these two organizations on  
8 their views on the materials policy and regulatory issues that are of interest to  
9 them and to the states.

10 We always welcome an opportunity to meet publicly with our  
11 state partners. As my colleagues have noted again and again in recent  
12 Commission meetings, nuclear safety is a team sport and certainly our  
13 partners in OAS and CRCPD are an integral part of the team particularly when  
14 it comes to the Nuclear Materials Program. We'll cover those and a lot of  
15 other issues this morning.

16 And I'd like to just note what a pleasure it was to join my  
17 colleague Commissioner Wright at the OAS meeting in Philadelphia this past  
18 August and I saw firsthand the important relationship that exists between the  
19 NRC and the states. And even in these trying times coping with the pandemic  
20 close coordination, collaboration, and communication among our regulatory  
21 partners to assure safe and secure issues of radioactive materials nationwide  
22 as we'll hear about today has been exceedingly evident and I look forward to  
23 our discussion.

24 Before we start I'll ask my colleagues if they have any  
25 remarks they'd like to make.

26 (No audible response.)

1 CHAIRMAN HANSON: No? Okay. With that we'll  
2 proceed in the order that's listed on the public meeting announcement, and  
3 we'll begin with Ms. Angela Leek from the Iowa Department of Public Health.

4 Ms. Leek?

5 MS. LEEK: Great. Thank you so much, Chairman  
6 Hanson, and thank you, Commissioners, for inviting us today. On behalf of  
7 both the CRCPD and the OAS I just want to open our presentation here and  
8 thank you for the opportunity to speak with you on behalf of all of our interests  
9 shared across the National Materials Program.

10 The states' partnership with the NRC and the National  
11 Materials Program is a critical piece to the effectiveness of our shared  
12 missions of protecting the public, workers, and the environment across the  
13 many aspects of radioactive material in the nation.

14 Next slide, please? Oh, we are on the correct slide.  
15 Please stay there.

16 The CRCPD and the OAS share common priorities in  
17 radiation protection and we work collaboratively to promote coordinated  
18 messages and we try to reflect each organization's perspective in a shared  
19 platform. And you will see that today. Our coordinated discussion of topics  
20 is an example of these efforts, and so as they share the discussions of these  
21 topics from both the CRCPD and OAS it will be presented by board members  
22 and board leadership from each organization, but as a combined presentation  
23 style.

24 Today you're going to hear from the chair, the past chair,  
25 and the chair-elect from each organization, and so as you introduced, I am  
26 Angela Leek, the chairperson for CRCPD. And I'm joined by Kim Steves,

1 who's our past chair from Kansas, and Pat Mulligan from New Jersey, who is  
2 our chair-elect. And from OAS we have Auggie Ong, who is their current  
3 chairperson from New Hampshire; David Crowley, who is their past chair from  
4 North Carolina; and Steve Seeger, who's the chair-elect from Tennessee.  
5 Each of us will introduce ourselves as we transition through the slides as well.

6                   Next slide, please? I'm going to start our first discussion  
7 with the priority area that we have regarding our health physics workforce.  
8 Again I'm Angela Leek. I serve as the Radiation Control Program director for  
9 the State of Iowa and I'm the current chairperson for CRCPD, and I want to  
10 talk about our HP resources and the technical resources that are critical to our  
11 ability to protect our public and to maintain our program in each of our states  
12 as well as across the National Materials Program.

13                   Across the radiation protection community all of the  
14 organizations in the federal entities as well as the health physics society and  
15 other professional organizations are recognizing acutely that there's going to  
16 be a significant percentage of our technical personnel assets that are eligible  
17 to retire, and this is currently outpacing the number of individuals that are  
18 entering the profession. This is in part caused from a smaller number of  
19 available nuclear engineering and health physics programs, but also coupled  
20 with reduced student enrollment.

21                   And this contributes to a trend toward a smaller and less  
22 experienced cadre of radiation protection personnel that will be available to fill  
23 critical roles across the entire radiation protection community and undeniably  
24 the work that the National Materials Program does to ensure protection of use  
25 of the material is one of those critical areas that will be impacted.

26                   The NRC for many years has supported efforts to foster

1 educational opportunities and early career placement through the University  
2 Grant and Student Fellowship Program. More recently the NRC has worked  
3 to expand eligibility in this program to include health physics in addition to  
4 nuclear engineering and also allowing students to meet their service  
5 commitment either through state or NRC employment. We appreciate the  
6 efforts of the NRC to work on this and we are partnering with the NRC to try  
7 to manage some of the interim issues while we work to increase the HP  
8 workforce through this important work.

9                   Next slide, please? Recognizing the fact that we'll be  
10 competing for and recruiting from the same and increasingly limited pool of  
11 technical resources, the NRC and the CRCPD in conjunction with the OAS,  
12 and hopefully the Health Physic Society as well, are collaborating through  
13 organizing a work group under CRCPD's jurisdiction and this newly  
14 established work group will be called the Health Physics Workforce  
15 Development and Coordination Committee.

16                   This is going to be chaired by a CRCPD member, but also  
17 co-chaired by an NRC staff person. And we hope to recruit members to help  
18 us work through these issues with two major priorities: We want to identify  
19 opportunities for mentoring and training staff across the states and the NRC  
20 and try to document pathways to more easily integrate and utilize resources  
21 from other states, from the NRC, and across all of our jurisdictional  
22 boundaries, both to help grow the expertise of our staff, leverage specific  
23 centers of expertise, and also to help us out if we find ourselves in a position  
24 where staffing of critical assets is reduced.

25                   Next slide, please? These priorities are outlined in  
26 charges, and so our work groups come together with charges. And we've

1 started with these four to try to develop a process for sharing experienced staff  
2 in a resource-deficient environment, try to work through some of the legal  
3 connectivity agreements, and set up some streamlined -- maybe kind of in the  
4 same vein as a reciprocity type of a condition.

5 We also want to facilitate growth opportunities for health  
6 physics skills and identify educational opportunities where maybe staff can go  
7 and visit another radiological program or the NRC to learn some of the skills  
8 that might be needed for some of the specialized type of licensing and  
9 inspections that we do.

10 We also want to identify any issues that might arise from  
11 credentialing or reciprocity and try to identify mechanisms that might be used  
12 to advertise for opportunities and really outline where those resources can be  
13 most effectively shared. And we want to maintain an awareness of these  
14 resources across the state, local, and federal programs that are available to  
15 leverage this.

16 For example, a group will work to identify ways to catalog  
17 where there are centers of excellence, and that's one of the programs that the  
18 OAS is working on identifying across the National Materials Program. And if  
19 we can catalog and provide a road map for where these exist and how others  
20 who might be outside of that jurisdiction can tap into those resources we hope  
21 that will help to foster a larger community of shared assets as well as provide  
22 information for newer radiation control program directors or individuals  
23 entering the workforce here in our National Materials Program who might not  
24 be as connected with the existing resources or individuals who might know  
25 how to tap into these resources.

26 It should be recognized though that the National Materials

1 Program is already really good at leveraging our assets and sharing across  
2 our partnership, but really it is important that as we bring new people in to the  
3 positions that we're sharing this knowledge and making it easy for them to  
4 integrate in with our existing community.

5 We are appreciative of the NRC's ongoing commitment to  
6 support training in an inclusive national materials approach as has been done  
7 for the decades and we appreciate that moving forward. And we also look  
8 forward to exploring how these new initiatives and these work group activities  
9 can help to proactively address the looming shift in the technical radiation  
10 world.

11 As this workforce committee kicks off I look forward to  
12 sharing some successes with you next time we meet and appreciate the  
13 ongoing commitment and support and coordination from the NRC.

14 Next slide? Next up is going to be Auggie Ong from the  
15 OAS.

16 So I'll turn this over to you, Auggie.

17 MR. ONG: Thank you very much, Angela.

18 And good morning, Commissioners, and thank you for the  
19 opportunity that you have provided our organization, and especially the  
20 Organization of Agreement States, too, to have this opportunity to provide you  
21 with the updates that -- the ongoing coordination between the NRC working  
22 groups and our own organization, the OAS.

23 So that being said, just to remind everybody that the  
24 progress report that I'm going to provide the update to the Commissioners and  
25 to the attendees is that this is now Phase 3 of a multi-year project. And we  
26 already completed Phase 1 under Aaron McGraw and also partially Phase 2.



1 So at the completion of the Phase 2 we have moved onto more critical  
2 changes under the Phase 3 project. That being said, this project is now  
3 headed by Leira Cuadrado, who is senior project manager from the Materials  
4 Safety and Tribal Liaison Branch within the NRC organization.

5 So the whole purpose of the Phase 3 is concentrating on  
6 revising and taking a look at all the inspection reports, inspection protocols  
7 that are used by both NRC inspectors and also by our own OAS materials  
8 programs where we have commonality in terms of inspecting the various types  
9 of license and license activities. So that being said, under Phase 3 then we  
10 are now concentrating on what are those critical activities that would give rise  
11 to a greater risk of use of radioactive material and the security of those  
12 radioactive materials and sources.

13 So that being said, then that's the whole purpose of revising  
14 the inspection protocols and that is to really concentrate on the riskiest  
15 activities and take a look at how well the licensees are managing the use of  
16 that -- the radioactive materials and how risky it is for both the users and the  
17 general public and also the security of sources whereby it's more paramount  
18 now than ever before. So that being said, all the IPs that we have now -- are  
19 revising is concentrating on those riskiest elements, riskiest activities. And  
20 any of these lesser risky activities would be delegated to the appendix which  
21 I will describe a little bit more later.

22 So the purpose is really finding out whether in fact  
23 inspections are doing what it's need to be done; that is, to ensure the safety  
24 and the safe use of radioactive materials, safety for both users and also the  
25 general public, and also the security of the materials. And we are now using  
26 our past experiences with the inspections that are being collated between the

1 NRC inspection groups and also the OAS materials inspection groups  
2 whereby can we learn from what we have done in the past? Can we do  
3 anything better moving forward? And finally, then some of the issues dealing  
4 with the safety will certainly be much more relevant now going forward under  
5 the National Materials Program.

6                   Next slide, please? So as I mentioned before, the whole  
7 purpose of the inspection program, inspection protocols that are now being  
8 revised is to identify those elements that are of risk, risky activities, and making  
9 sure that these risky activities would be correctly identified thereby to help  
10 inspectors to concentrate on areas that are more important and spend less  
11 time that are of activities that are somewhat insignificant, but not having any  
12 greater impact in terms of protecting the users, protecting the general public,  
13 and security of the materials.

14                   So it is important then to have that -- of those activities are  
15 correctly identified that are now be able to provide the necessary inspection  
16 protocols to both the NRC inspectors and to the Agreement State inspectors  
17 so that then there will be a commonality in terms of -- regardless of various  
18 states doing the inspections or NRC doing inspections. There will be a  
19 commonality in terms of performance and expectations of the results of the  
20 inspections and thereby having the same kind of ability to evaluate are we  
21 working together effectively?

22                   Are we able to have the commonality between both NRC  
23 inspectors and the Agreement State inspectors thereby providing that  
24 confidence that is needed to the NRC management and also to the Agreement  
25 State management that in fact yes, we are able to capture the riskiest  
26 activities, we're able to identify those activities that would be the most critical

1 aspects of the inspection and those are covered so that then that provides us  
2 enough confidence that moving forward inspections are done correctly and  
3 any of the issues are correctly identified thereby providing the necessary  
4 evaluation that yes, the National Materials Program does provide enough of  
5 the inspection protocols, the commonality between the NRC groups and the  
6 agreement groups thereby everybody's working together as a team?

7                   Next slide, please? So as an example, on this slide some  
8 of the inspection protocols that have now been revised. All right. As you  
9 can see they're dealing with the various types of uses of radioactive materials  
10 and sources. And of course this is only partial, but this is the completion of  
11 part of the Phase 3 whereby these inspection protocols have now been  
12 revised and the riskiest activities have been correctly identified. The less  
13 risky activity have been delegated to the appendix whereby that would help  
14 the inspectors, both NRC inspectors and the Agreement State inspectors, that  
15 the activities that inspector ought to be able to spend more time in order to  
16 make sure those riskiest activities are correctly identified and correctly  
17 inspected.

18                   And any of the lesser activities would then still be visit if  
19 there is -- somewhere there is a question as to whether in fact there are any  
20 issues dealing with the management of the activities or somehow the failure  
21 of one critical issue thereby leading to -- leading the inspector to -- well, if  
22 there's a safety issue involved, let's take a look at the other activities that may  
23 then have some relevance or some significance to the overall inspection of  
24 the entire licensee.

25                   So that being said, these inspection program have been, like  
26 I said, revised and now have been submitted to the Agreement State folks to

1 make comments, make any additional changes or recommendations whereby  
2 those comments and recommendation would be brought back to the working  
3 group to revisit, to consider seriously, and to revisit if any change is necessary  
4 to finalize the inspection program and the inspection procedures.

5                   Next slide, please? So the whole purpose of the updates  
6 is to provide the NRC Commissioners and the management that we are  
7 working together as a team, both NRC partners with OAS working groups.  
8 We are working together. In fact, to demonstrate in fact there is coordination,  
9 there's communication, there's back and forth that we -- that NRC is  
10 considering the OAS comments seriously and the same thing with the OAS  
11 whereby OAS is still relying on the NRC to provide the necessary leadership  
12 so that then we could work as partners together. So that is important.

13                   And finally, of course then the -- we are under the discussion  
14 how -- well, if the comments have been considered seriously and changes are  
15 made to the draft of the inspection protocols, what would be the time frame  
16 whereby these IPs would now be finalized, then promulgated to both NRC  
17 program and also to the OAS Materials Program whereby now the inspectors,  
18 both newer inspectors with less experience and the more seasoned  
19 inspectors, both within the NRC and also the Agreement States, where they  
20 will be able to find true value to the revisions that are made to the inspection  
21 protocols. So that is under discussion right now. And there is some time  
22 frame that's already been considered.

23                   Next slide, please? So under the National Materials  
24 Program, as you know then we are now -- have completed the charter -- not  
25 completed -- finalized yet, but certainly the charter that to visit the future of the  
26 National Materials Program. Because obviously the NRC's sphere of control

1 is getting smaller, and that's obvious. And also the OAS still has the bulk of  
2 the licenses that are various types, same as NRC, but now with the greater  
3 control overseeing the activities of radioactive materials in this country we are  
4 now approaching something like more 40, if not more, in the near future  
5 whereby the sphere of NRC is getting smaller and OAS is getting larger.

6 So that being said, then what the National Materials  
7 Program would look like 5, 10, 20 years from now? So that being said, then  
8 with the formation of this working group, both with the active participation of  
9 NRC partners and also Agreement State representatives on the same working  
10 group to visit this issue, what are we going to -- what do we want from the  
11 National Materials Program? How are we going to visit the -- in terms of  
12 leadership, training, the various types of, how should I say, the coordination  
13 that's necessary in order to makes sure it's still a cohesive program for the  
14 next 5, 10, 20 years from now?

15 So that being said, again I'm glad very much that NRC has  
16 reached out to OAS and OAS is very, very appreciative that in fact that kind  
17 of coordination now exists whereby now we have a working team, a very  
18 effective team under the leadership of Huda Akhavannik, if I may pronounce  
19 your name correctly, have enact with the NRC intergovernmental liaison  
20 person and also project manager under NMSS and NIST Programs.

21 So that being said, there are more than 20 folks that are now working on the  
22 National Materials Program to visit what the future of NMP is going to look like.

23 So next slide, please? Well, thank you very much,  
24 Commissioners, for your attention and for the other attendees attending this  
25 portion of the presentation. And may I introduce Kim Steves, who is from  
26 Kansas, and she will provide you with the latest updates and also the

1 discussion on waste monitoring, source recovery, and disposal. Thank you  
2 very much for your attention.

3 MS. STEVES: Okay. Thank you, Auggie. As he said,  
4 my name is Kim Steves and I am the director of the Radiation Control Program  
5 for the State of Kansas. Proud to say we have been an Agreement State  
6 since 1965. And I'm also the past chair of the CRCPD board of directors.

7 I'm talking today about unwanted radioactive materials,  
8 which is an ongoing challenge for our states. There are many varied waste  
9 issues with which our states are dealing on a routine basis. Some examples  
10 of this are unwanted and abandoned sources, medical waste where patients  
11 go home after nuclear medicine treatments, naturally-occurring radioactive  
12 material or technologically-enhanced naturally-occurring radioactive material,  
13 NORM or TENORM, and foreign-origin radioactive material.

14 Our states deal with many varied issues associated with  
15 disposal of unwanted radioactive material including these materials showing  
16 up in landfills or at scrap yards and challenges finding places where it can be  
17 disposed and money to pay for the disposal. Disposal of this radioactive  
18 material is sometimes addressed inconsistently across our states.

19 So my purpose in discussing this topic is not anticipation  
20 that we can solve the challenges today, but rather to raise awareness as it an  
21 issue that the state radiation control programs are dealing with on a daily basis  
22 and to inform you of the activities being accomplished by the CRCPD in this  
23 area.

24 Next slide? So one challenge is landfills and recycling  
25 facilities. States find that NORM and TENORM, medical waste, and  
26 sometimes licensed material, which could be lost or stolen, is showing up at

1 landfills and recycling facilities. With regards to NORM and TENORM and  
2 medical waste different states have different laws with regards to disposal of  
3 radioactive material at waste -- in waste at landfills and states are often not  
4 consistent in how waste issues are addressed or who the regulatory authority  
5 within the state is. For landfills it's typically not the National Materials  
6 Program which has oversight. Landfills also have differing capabilities  
7 to detect and identify radioactive material. Some can detect, as in yes or no  
8 there is radioactive material, and fewer can identify a specific radio isotope  
9 such as iodine-131. Our states are regularly receiving phone calls and  
10 requests for assistance from landfills and recycling facilities about unwanted  
11 radioactive material and what to do with it.

12 Naturally-occurring radioactive material and especially  
13 TENORM are often the culprit found at landfills and recycling facilities.  
14 Transportation of NORM and TENORM waste occurs between states, but  
15 states may handle it differently. Though we understand that TENORM is not  
16 a focus of concern for the NRC, it is an issue of significant interest across the  
17 states and especially those with oil and gas industries.

18 Some of the issues our states are dealing with pertaining to  
19 TENORM waste are the same that we address for other types of regulated  
20 radioactive materials: Harmonizing regulations to the extent possible,  
21 communications with members of the public, ownership and financial  
22 assurance, clean up of legacy sites, and disposal.

23 Next slide, please? The CRCPD has been working to  
24 assist states with issues associated with the disposal of sealed sources that  
25 can be disposed of as low-level radioactive waste. In the 2007-2008 time  
26 frame we did a pilot project in Florida which was very successful.

1 Approximately 2,500 sources were disposed.

2 One important lesson learned from that was that the state  
3 financial services were very cumbersome and each state would do contracts  
4 differently. That is why we contract disposal with licensed waste brokers  
5 through the CRCPD specifically now.

6 And issue in 2008 was the closure of the Barnwell to out of  
7 compact low-level radioactive waste. This shut down disposal pathways for  
8 more than four years until the opening of the Waste Control Specialists low-  
9 level radioactive waste facility in 2012. This opened up a new pathway for  
10 disposal to all states and territories.

11 Another item which helps in our success on this issue is the  
12 revision of NRC's Branch Technical Position on Concentration Averaging and  
13 Encapsulation from 2015. This allows the low-level radioactive waste sites  
14 to be able to accept higher activity packages for disposal up to the Class C  
15 limits with acceptable justification, which helped us to manage the process.

16 All these activities evolved into the SCATR Program with  
17 CRCPD, which I will discuss further in an upcoming slide.

18 Next slide? The disposal of higher levels of radioactive  
19 material is an ongoing challenge because of the limited places that will accept  
20 it and the high cost. In the next slides I'm going to briefly mention the two  
21 programs in which the CRCPD participates to provide support to states:  
22 SCATR and the Orphan State Recovery Project, OSRP.

23 In addition it's important to mention a white paper by the  
24 CRCPD E-34 Committee for Unwanted Radioactive Material which was  
25 recently published on our CRCPD website. This white paper covers  
26 disposition of foreign-origin radioactive material. The purpose of this paper



1 was to analyze the impact and possible solution for foreign-origin radioactive  
2 material in the United States which require final disposition.

3 Sources manufactured in the U.S. are able to have final  
4 disposition at the DOE Waste Isolation Pilot Plant, WIPP facility, however  
5 those sources with foreign-origin material are not accepted for disposal at this  
6 facility. It is challenging to estimate the size of the foreign-origin rad material  
7 problem in the U.S. because the majority of these sources which were brought  
8 into the United States were below the NRC Category 2 limits and not tracked  
9 in the National Source Tracking System. Reasonable estimates based on  
10 the data which was collected by our committee show this to be a significant  
11 issue.

12 The white paper provides possible solutions to secure this  
13 at-risk radioactive material in the United States including congressional action  
14 which is needed to allow the use of WIPP to dispose of all transuranic  
15 materials containing foreign-origin material.

16 Next slide, please? As I mentioned previously, I do want to  
17 discuss the Source Collection and Threat Reduction, or SCATR Program.  
18 The Department of Energy National Nuclear Security Administration, NNSA,  
19 and the CRCPD maintain a cooperative agreement to support sealed source  
20 consolidation and commercial disposal at the state level. NNSA funds  
21 disposal activities through a cost sharing which is 30 percent and possibly up  
22 to 50 percent for higher activity sources. The licensee is still responsible for  
23 some of the cost of disposal of this material.

24 CRCPD administers this program through coordination and  
25 contracting with waste brokers for packaging, transportation, and disposal.  
26 The goal is to collect and commercially dispose of sealed sources no longer

1 in use which could individually or in aggregate be used maliciously.

2                   This program is very successful. To date under the SCATR  
3 Program we have collected and disposed of more than 32,000 sources, almost  
4 1,500 curies, plus an additional over 34,000 industrial radiography sources.  
5 It's very successful over the years to ensure the safe disposal of these  
6 materials, but we know there's a lot more out there. Currently one of our  
7 areas of focus is working with Cesium Irradiator Disposal Group at DOE,  
8 Department of Energy, on that project.

9                   Next slide? With regards to the CRCPD Orphan Source  
10 Recovery Project, as you know an orphan source generally refers to unwanted  
11 or uncontrolled radioactive materials, often a sealed source of radioactive  
12 material contained in a small volume. Some of the possible characteristics  
13 of an orphan source are that it's in an uncontrolled situation or where the  
14 responsible party cannot be identified, or where the licensee is incapable of  
15 providing for the safe disposal of this material, or in possession of a person  
16 not licensed to possess the material, or possibly where the state radiation  
17 control program took possession to mitigate a radiation threat.

18                   An example of orphan sources are measuring and  
19 controlling devices containing radioactive materials that were improperly  
20 disposed of as scrap metal. Many of our states have had this occur, and I  
21 can vouch that Kansas had this occur very recently.

22                   The work the state radiation control programs have done  
23 with their scrap recycling facilities to help them prepare to identify and deal  
24 with radioactive materials, even though it's typically NORM or TENORM but  
25 can also be these licensed lost or stolen sources, also benefits this program  
26 when the materials do fall under the Orphan Source Recovery Project.

1 CRCPD has had an agreement and funding from the NRC for several years  
2 to assist state programs in disposing of orphan sources, and we continue to  
3 provide support for that program.

4 Next slide? So waste and the disposal of unwanted  
5 radioactive materials is an ongoing issue for our states. As I stated in the  
6 beginning of my presentation, my purpose by discussing this topic is not  
7 anticipation that we can solve the challenges today, but rather to raise  
8 awareness as it is an issue that the state radiation control programs are  
9 dealing with on an almost daily basis and to inform you of the activities being  
10 accomplished by CRCPD in this area.

11 Thank you for your time and I believe the next slide will turn  
12 it over to David Crowley.

13 MR. CROWLEY: All right. Thank you, Kim.

14 Good morning, Chairman Hanson, Commissioner Baran,  
15 and Commissioner Wright. Thank you for meeting with us today to honor the  
16 partnership that exists between our organizations and to ensure alignment on  
17 the future of the National Materials Program, or NMP.

18 For those who do not know me, I am David Crowley, past  
19 chair of the Organization of Agreement States, and interim chief to the North  
20 Carolina Radiation Protection Section. In my portion I will be reviewing  
21 recent NMP activities.

22 Next slide, please? To start Agreement State programs  
23 continue to grow. It seems like only yesterday that Vermont and Wyoming  
24 entered into agreements making 39 Agreement States. Now both  
25 Connecticut and Indiana are working to become the 40 and 41st Agreement  
26 States. Currently Agreement State programs are responsible for nearly 90

1 percent of materials licensees nationwide. This will only become more  
2 skewed toward the states.

3 Is the NMP prepared to support further shifts in regulatory  
4 responsibilities? The idea of the NMP is not a new one. In fact, it has  
5 existed for a couple of decades now. Challenges to the state space in early  
6 the 2000s continue to be a challenge today, namely the dedication of state  
7 resources to support national activities.

8 That said, the NMP has made small incremental progress  
9 over the years. The NRC provides more opportunities for state members to  
10 collaborate through working groups, rulemaking, establishing priorities, and  
11 supporting frequent communications. The creation of the co-champions has  
12 really brought the NMP into focus for our members.

13 I want to extend a special thanks to Duncan White and Terry  
14 Durston. These individuals have been critical to the ongoing engagement  
15 and information sharing between co-regulators. They're evolving the NMP  
16 from a mere whisper of old pilot projects into an identity that we can all relate  
17 to. There was even a new emblem created this past year, pictured on the  
18 slide there, to symbolize the NMP.

19 We must continue to build on this progress to further  
20 strengthen the National Materials Program and our co-regulatory  
21 partnerships. Each of us brings unique expertise and lessons learned that  
22 can be shared for more effective regulation of our country's radioactive  
23 materials.

24 Next slide, please? Every year NMP leadership meets to  
25 review our goals and priorities. Members from the NRC, OAS, and CRCPD  
26 discuss objectives, measure progress on past priorities, and ensure future

1 tasks align with our overall mission. This past year we settled on five  
2 categories. These include innovation and developing more risk-informed  
3 approaches. For IMPEP this could be updating SA-100 program  
4 implementation to better leverage technology and streamline our reviews.

5 Auggie has already discussed some of the changes and  
6 ways that we're risk-informing our inspection programs. And we are looking  
7 at using a similar approach to evaluate adoption of certain program elements  
8 such as regulatory or compatibility changes for states.

9 Next is risk, or rather minimizing it by addressing timely and  
10 relevant topics. Steve will discuss some of our efforts to share lessons  
11 learned throughout the COVID-19 public health emergency. Other topics we  
12 continue to evaluate include fusion energy, extravasations, general licensing,  
13 and any other emerging issues.

14 Technology and using it maximize our regulatory  
15 effectiveness. Enhancements to technology can impact the entire NMP.  
16 For instance, changes to the state communication portal. Web-based  
17 licensing also continues to evolve for those that are utilizing it expanding the  
18 NMP's licensing and inspection capabilities.

19 Next people. A little of what Angela has spoken to. But  
20 we need to focus on recruiting, training, and retention of our NMP staff. The  
21 NMP relies almost exclusively on the training provided by the NRC to grant  
22 the foundational knowledge necessary to our members. Thank you for that  
23 ongoing commitment to that critical mission.

24 Additionally, we can take advantage of our strengths across  
25 the NMP by creating centers of excellence. So far the NMP has formalized  
26 a center for emerging medical technology and is in the process of establishing

1 one for the Sealed Source and Device Program. We will create more of these  
2 as we identify additional needs throughout the NMP.

3 Finally, we want to develop metrics on a broad scale that  
4 can demonstrate the NMP's capability in meeting its mission.

5 Next slide? As I hinted at in the technology bullet above, I  
6 would like to draw your attention to the NMP's website. Pictured here is the  
7 current navigation page. NRC staff, contractors, and especially the co-  
8 champions are working towards revising this page to deploy an interactive  
9 platform for communication across the NMP. The page will be a resource for  
10 historic information, guidance, upcoming events, records of past events, and  
11 any other useful information for NMP members.

12 In the past there were forums hosted to allow discussion by  
13 co-regulators, but those have not been available in many years. This NMP  
14 website will include an area for state and NRC staff to log in and discuss time-  
15 relevant issues in a safe and non-judgmental space. By including the entire  
16 community we can see who else out there may have previous experiences  
17 and lessons learned leading to better future results when facing similar  
18 scenarios. For example, if a new technology is deployed in one jurisdiction,  
19 sharing it through this platform might reveal that others are currently working  
20 through the same technical challenges.

21 Together we can accomplish more and better meet our  
22 safety missions, however this relies on reliable and trusted communication  
23 between partners. We hope that the enhanced website will provide the  
24 conduit to make that happen.

25 Next slide? As I began my presentation, the NMP is made  
26 up of 40 different regulatory partners and we are still expanding. Though

1 each of our programs have unique strengths and weaknesses, through  
2 collaboration we will improve in our roles as regulators. This slide provides a  
3 few examples of how NMP members come together to support one another.

4 First, communication sharing. This is necessary to discuss  
5 industry trends, new technologies, incidents, or lessons learned, and to  
6 request assistance.

7 With regard to IMPEP we work together to improve the  
8 NMP's overall performance. With NRC and state members serving on  
9 IMPEP reviews we increase regulatory knowledge and consistency across our  
10 programs.

11 Finally, by being contributors. The NMP is vast and diverse  
12 and we thrive when every one can contribute. We achieve this in ways  
13 already mentioned, but specifically through working groups, centers of  
14 excellence, commenting on regulation and guidance documents, and by  
15 participation in meetings.

16 Next slide? I'd like to end by highlighting a few of our past  
17 and upcoming activities. For CRCPD they held their first virtual conference  
18 this last May, 2021, and they will hosting an in-person meeting this coming  
19 year in Tucson, Arizona. And that is May 16 to 19.

20 For OAS we met last August in Philadelphia, Pennsylvania.  
21 For the first time we held a hybrid conference and as a result we almost  
22 doubled our average attendance. We will be holding our next meeting in  
23 Forth Worth, Texas August 15th through 18th. Your own Region IV staff are  
24 helping to host this year and we very much look forward to it.  
25 Our intention is to stick with the hybrid offering to retain the increased  
26 engagement that we saw this past year.

1                   The co-champions have hosted a number of virtual  
2 meetings for NMP members. These are called Champions' Chats and the  
3 participation levels have been great thus far. These covered topics such as  
4 IMPEP, the public health emergency, remote inspections, information sharing  
5 during incidents, communicating of enforcement actions, and most recently  
6 misplaced sources during shipments.

7                   The chats provide an opportunity to engage on topics of  
8 interest between the NMP partners and to allow participation from staff at any  
9 of our organizational levels.

10                  The NMP also meets more formally through government to  
11 government meetings usually to discuss a particular policy or regulatory  
12 matter. This has included new medical technologies, developing fusion  
13 regulatory frameworks, and also more standard rulemaking activities. They  
14 have proven an effective means to disseminate information and to engage  
15 with our NMP partners.

16                  Finally to bring things full circle from the beginning, quite a  
17 lot has changed in the last two decades for the NMP, thus we have established  
18 a working group to evaluate and make recommendations to the future  
19 structure of the NMP, and Auggie spoke a little bit this as well in his part. This  
20 is just in the beginning stages, but we very much look forward to the group's  
21 final report which should be available in a little over a year from now.

22                  That is all for my part and I look forward to any questions.  
23 Thank you again for this opportunity. Next up we have Patrick Mulligan,  
24 CRCPD's chair-elect from New Jersey, and he will be speaking on rulemaking  
25 and policy efforts.

26                  Patrick?



1 MR. MULLIGAN: Thank you, David.

2 Good morning, Commissioners. I am Pat Mulligan and I  
3 work for the State of New Jersey and serve CRCPD as chair-elect. I do want  
4 to thank you for meeting with us today and am grateful for the time you set  
5 aside out of your busy schedules to discuss radiation protection issues that  
6 are so important to each of our organizations. I am going to discuss  
7 rulemaking and policy efforts this morning.

8 The CRCPD and OAS recognize and appreciate the efforts  
9 of the NRC over the past several years to improve the rulemaking process,  
10 especially the work it has done by the Rulemaking Center of Expertise. The  
11 continued work on innovative approaches to rulemaking have produced  
12 numerous enhancements that provide opportunities to streamline the process  
13 while maintaining the quality and effectiveness of the rules. As the NRC  
14 continues to work on enhancements to key areas of the rulemaking process  
15 we encourage the continued focus on the importance of stakeholder input and  
16 involvement.

17 Both CRCPD and OAS recognize that there are many  
18 opportunities for collaboration on rulemaking throughout the process and both  
19 organizations strive to make the most out of those opportunities. We also  
20 recognize and appreciate the efforts that the NRC has made to be inclusive of  
21 the state perspective and the many opportunities to provide feedback through  
22 participation on working groups, task forces, and other rulemaking teams. As  
23 the NRC continues to work toward rulemaking enhancement in the coming  
24 years we encourage you to continue to look for opportunities to engage state  
25 stakeholders in the process to ensure the development of the timely and  
26 effective rules.

1                   Next slide, please? The CRCPD is working to become  
2 more agile and responsive to NRC rule changes through the work of the  
3 Suggested State Regulation Council. The SSR Council develops draft rule  
4 language for states to use as templates for the implementation of radiation  
5 protection rules and regulations. The process is collaborative and we strive  
6 to ensure consistency across state programs.                   The Suggested  
7 State Regulation Council created a Compatibility Tracking Working Group to  
8 create a more agile process for evaluating and addressing NRC regulatory  
9 amendments. The goal is to ensure prompt evaluation of rule compatibility and  
10 make suggested edits and recommendations for suggested state regulation  
11 updates within 60 days.

12                   The NRC's interpretive rulemaking process can be an  
13 effective and agile mechanism to provide a timely and effective response to  
14 critical needs regarding applicability of a rule. There are a number of  
15 variables that influence how state programs can operate in various regions of  
16 the country that can raise questions regarding the applicability and  
17 implementation of rules and regulations.

18                   The NRC interpretive rulemaking process provides a  
19 mechanism to clarify the language in a rule or offer advice on implementation  
20 when these discrepancies arise. This process is a valuable way to provide  
21 additional guidance to state stakeholders without the need to go through the  
22 cumbersome rulemaking process. The interpretive rule allows for clarification  
23 of language and compatibility options for effective application of regulatory  
24 requirements and can be quite effective.

25                   Next slide, please? To illustrate the implementation and  
26 outcomes of the interpretive rulemaking process I will briefly discuss two

1 examples. Last year the Nuclear Regulatory Commission withdrew a  
2 proposed interpretation of its very low-level radioactive waste regulations that  
3 would have permitted licensees to dispose of waste by transferring it to entities  
4 who hold specific NRC exemptions.

5           The proposed interpretation was withdrawn based on the  
6 NRC staff's assessment that the proposed changes may not benefit the  
7 regulatory framework. That assessment was certainly influenced by the  
8 public comment including feedback from OAS. And this is a good example  
9 of how the interpretive rulemaking process can work quite efficiently and  
10 effectively and in the best interests of the stakeholders.

11           In the case of the two-person rule related to industrial  
12 radiography we believe that there are opportunities for improvement.  
13 Because of the length of time between the initial petition for rulemaking and  
14 the time the interpretive rule was issued the outcome was perhaps not ideal.  
15 From the time the petition was filed to the day the public notice was issued  
16 there were multiple changes in leadership, both at OAS and CRCPD, and the  
17 original basis for the rulemaking petition may have been lost.

18           Over time, experience, and lessons learned regarding the  
19 interpretation and applicability of the two-person rule changed of perspective  
20 of state regulatory agencies. In the end by the time the petition was acted  
21 upon the state regulatory perspective had evolved and the original basis for  
22 the rulemaking petition no longer existed.

23           Collectively I think we need to explore innovative ways to  
24 reevaluate and reassess rulemaking petitions that do not get a high priority for  
25 action and may be dormant for extended periods of time so that when  
26 resources are applied for rulemaking that the need is still applicable.

1                   And I'm going to go on and I'm going to briefly mention two  
2 additional rulemaking topics that are actively receiving attention from the NRC.  
3 First, the Commission recently issued their decision on the reevaluation of  
4 Category 3 source security and accountability. The original paper that served  
5 as the genesis for this decision was the result of an NRC and OAS Working  
6 Group established in 2016 to address general licensing topics. The paper  
7 also served as the basis for continued work on a holistic review of a general  
8 licensing program by NRC, OAS, and CRCPD.

9                   Last year the OAS board asked CRCPD to create a working  
10 group to look at the recommendations the General Licensing Working Group  
11 pulled together since 2016. CRCPD was asked to identify best practices and  
12 compile ideas that Agreement States could implement to address some of the  
13 issues identified in the General Licensing Program structure. They also  
14 tasked us with looking at important areas where regulatory changes may be  
15 considered.

16                  Now that the Commission has provided direction on the  
17 issue to staff, both OAS and CRCPD encourage continued close collaboration  
18 to evaluate the impacts of the Commission decision on the recommendations  
19 developed by the General Licensing Working Group and whether to  
20 reconsider regulatory changes. The CRCPD working group will work in  
21 conjunction with OAS and NRC on how to best proceed with the decision  
22 framework provided.

23                  And finally, the Nuclear Regulatory Commission's proposed  
24 rule on emergency preparedness for small modular reactors and other new  
25 technologies originally published in the *Federal Register* in May of 2020.  
26 Both OAS and CRCPD provided comments to the NRC on the proposed rule

1 during the public comment period. We understand that NRC staff  
2 recommendations do not require the establishment of emergency planning  
3 zones for these technologies, therefore no requirement for coordination with  
4 off-site response organizations.

5                   We recognize that the level of risk for small modular reactors  
6 and other new technologies will be less than that for current generation light  
7 water reactors. We agree that a graded approach to off-site emergency  
8 preparedness is appropriate for these technologies and we do support the  
9 concept that the EPZs sites may be determined based on the level of risk and  
10 consequences of the range of postulated accidents. However, we do have  
11 serious concerns for those approaches that result in EPZs that are limited to  
12 the site boundary and have no off-site emergency response involvement.

13                   EPZs and emergency plans are provided to provide  
14 defense-in-depth for low-probability, high-consequence events and are meant  
15 to provide a well-defined methodology to reduce potential public exposures to  
16 unnecessary radiation. While the probability for significant releases of  
17 radiation for these technologies may be low, it's not zero. And we believe  
18 that the establishment of emergency plans that include off-site participation is  
19 warranted.

20                   The processes and knowledge required to assess fission  
21 product releases are complex and we cannot overemphasize the critical need  
22 for experienced off-site response agencies to be ready if there would ever be  
23 a need for independent assessment of an accident at a nuclear power plant  
24 regardless of whether it will exceed a PAG.

25                   State and local agencies are responsible to communicate  
26 impacts and risks of emergency events to their citizens and communication is

1 the key to effective public messaging. There should be a requirement for  
2 these facilities to support maintenance of these key minimum aspects of  
3 nuclear power plant response and we would be happy to discuss our position  
4 in more detail with the Commission should you like to do that.

5 I would also like to thank you for your time. We welcome  
6 any questions at the end. And I will now turn it over to Steve Seeger from  
7 Tennessee. Thank you.

8 MR. SEEGER: Thank you, Pat.

9 Good morning, Commissioners and thank you for the  
10 opportunity to share these important topics here today. My name is Steve  
11 Seeger. I'm from Tennessee and I'm the OAS chair-elect. I will wrap up the  
12 last of our topics here today and I will be discussing the COVID-19 pandemic  
13 and success through disruption.

14 Next slide, please? At the beginning of the COVID-19  
15 pandemic the NRC used its existing authority to consider granting relief from  
16 specific regulatory commitments through exemptions from regulatory  
17 requirements, amendments to license conditions or technical specifications,  
18 and enforcement discretion under certain circumstances.

19 Next slide, please? The NRC issued the following  
20 guidance documents outlining the regulatory options to seek regulatory relief  
21 that might be necessary during the COVID-19 public health emergency.

22 On May 21st, 2020 guidance issued where a licensee could suspend  
23 the use of licensed material and place material into safe storage.

24 On May 27th of 2020 guidance was issued pertaining to  
25 radiological emergency response plans during COVID-19.

26 On July 1st, 2020 inspection guidance during transition from

1 COVID-19 mandatory telework for the Nuclear Materials and Waste Safety  
2 Programs.

3 Next slide, please? OAS knew that many states had  
4 questions and were wanting to make sure that they were handling inspections  
5 correctly during the COVID-19 public health emergency, so OAS provided the  
6 following guidance for consideration by state programs while formulating their  
7 policies, but also to aid licensees in identifying how things are addressed in  
8 the various state programs. The Champions' Chats have also been a big  
9 help for states during the COVID-19 pandemic.

10 Next slide, please? So radioactive material inspections  
11 have been impacted by the COVID pandemic in several ways: In many cases  
12 the licensee has imposed limitations on entering their facility.

13 Some health care facilities at times are so overwhelmed with COVID  
14 that they have requested inspections be postponed due to the prevalence of  
15 COVID in the facility and the lack of sufficient staff to handle the patient load.

16 Some licensees are requiring everyone entering their facility  
17 to show proof of vaccination prior to entry and the states don't -- and some  
18 states don't have the ability to require inspection staff to be vaccinated.

19 Some licensees require everyone to wear masks while  
20 inside their facility and some inspectors claim to be unable to wear masks due  
21 to certain health conditions.

22 It has been common to announce inspections since there  
23 are so many possible limitations to entering these facilities due to COVID.  
24 We have seen the emergence of both completely virtual radioactive material  
25 inspections as well as what some are calling hybrid inspections, virtual being  
26 entirely by remote means using whatever platform works; examples are Zoom,

1 FaceTime, GoTo Meeting, Teams, Webex, etcetera, and hybrid being a  
2 combination of remote combined with an abbreviated on-site physical  
3 inspection.

4                   Hybrid inspections generally involve initiating the inspection  
5 by phone and/or video-conference. Interviews can often be conducted by  
6 phone or video-conference and many of the records can be provided and  
7 reviewed remotely. This approach seems to be working in most cases and  
8 reduces the impact on the licensee. It can also reduce the risk to the  
9 inspector. The platforms being used still allow the inspectors to see the  
10 facility and how they are doing their process and procedures.

11                   Virtual inspections generally require more than one phone  
12 call and more than one virtual meeting to complete the inspection. Although  
13 hybrid inspections are sometimes awkward inspectors have provided a lot of  
14 positive feedback now that they are getting used to the process. Licensees  
15 have also expressed appreciation due to reduced time impacted.

16                   Next slide, please? I'm sorry. I didn't mean to go to this  
17 slide. Sorry.

18                   And so some IMPEPs are also being affected by COVID-19  
19 and some of them are being done virtually. This has helped IMPEPs to  
20 continue in those states that might have high COVID cases and where most  
21 staff are working remotely. Virtual IMPEPs do lack the in-person aspect of  
22 getting to know the team and the state program staff which might help a team  
23 to get a better idea how everything is going and being in person does make it  
24 easier to talk with each other.

25 In-person and virtual IMPEPs have been successful during COVID-19.

26                   Next slide, please? Thank you to the NRC, CRCPD, and



1 OAS for the continued coordination across the National Materials Program.  
2 This coordination has helped the National Materials Program to move forward  
3 in a positive direction.

4 Next slide, please? So this completes our presentation of  
5 topics and on behalf of the OAS and CRCPD we would like to thank the  
6 Commission for the opportunity to have this discussion and we look forward  
7 to addressing any of your questions.

8 CHAIRMAN HANSON: Thank you very much, Steve, as  
9 well as Angela and Auggie, Pat, and David and Kim for all of your  
10 presentations. We'll begin questions this morning with Commissioner Wright.

11 COMMISSIONER WRIGHT: Thank you so much, Mr.  
12 Chairman, and good morning to each of you. Thank you for your  
13 presentations as well.

14 I really look forward to this meeting each year, maybe not  
15 as much as I look forward to attending your meetings each year and I look  
16 forward to seeing you again at those meetings this year as well.

17 When I joined the Commission back in 2018, much of the  
18 discussion focused on the development of the Nuclear Materials Program and  
19 the desire to form a more meaningful partnership as co-regulators, because it  
20 hasn't always been in a great way.

21 I'm really excited to see how much progress that's been  
22 made since 2018 when I started. And I really value the partnership and I know  
23 the NRC Staff has been working very hard and very closely with you and I just  
24 think that's great.

25 So, Steven and Patrick, I want to congratulate you on your  
26 selections as Chairs Elect and I look forward to working with you as you go

1 through your journey to obtain the most prized positions in your organization,  
2 which is that of past Chair.

3 So, we have a lot of work to do between now and then and  
4 I look forward to walking besides you as you go down that road. Angela, good  
5 morning to you, I'm going to start with you but I'm going to allow people to  
6 chime in if they feel the need.

7 The shortage health physicists is an ongoing issue and just  
8 so you know, we heard about the Staff's activities to address this shortage at  
9 the Nuclear Materials Users Business Line meeting last month here at the  
10 NRC.

11 We've also spoken about it several times at previous  
12 meetings with OAS and CRCPD and I've heard the same feedback as well  
13 from the Health Physics Society.

14 So, the NRC and states have put some programs in place  
15 to maybe try to help address the shortage.

16 For example, the NRC has a grants program that offers  
17 cross-training to the NRC's technical training center and we've started  
18 discussions with you all on shared resources.

19 So, the question is have we started to see any relief based  
20 on those programs and is there anything more we could be doing to address  
21 this issue?

22 MS. LEEK: Thank you, Commissioner Wright, for that  
23 question and I'm happy to take the lead on this to try to address that question.

24 I think honestly we haven't even seen the bubble of the  
25 impending change in our workforce availability yet.

26 I don't have the data in front of me but I know the Health

1 Physics Society is working on where are all the radiation professionals, and  
2 they have some data they've been compiling about projected timelines and  
3 the track of the amount of health physicists and other technical resources that  
4 would be available at various times throughout our future.

5 So, I do really believe we're being proactive right now.  
6 We're feeling some of the exodus at the moment, we're seeing a lot of  
7 retirements coming but I honestly think we're going to see even more coming  
8 through.

9 And even if we have the volume of bodies available, even if  
10 we get the pipeline going and we're enticing people to join our very fun  
11 profession, from my perspective, I think the level of expertise we'll have or the  
12 experience that people have had will be different in our workforce.

13 And they're going to need more support, they're going to  
14 need opportunities for experiences that don't exist as readily as they did back  
15 in the 1950s, 1960s, 1970s, and we're going to need to figure out how to help  
16 those individuals reach the level of excellence that many of our more  
17 seasoned and retiring personnel will be taking with them.

18 So, I think we'll be seeing it coming.

19 I think the reason that our Workforce Development  
20 Committee is being formed at CRCPD is to try to come up with some interim  
21 solutions if we do find ourselves in the position where we have limited  
22 resources or even limited expertise, that we make it easier to tap into and  
23 share those resources as we work through maybe the dip that's coming and  
24 get ourselves back on track with the efforts that are happening with the grant  
25 program and the university program.

26 COMMISSIONER WRIGHT: Does anybody else want to

1 comment?

2 MR. ONG: Yes, Commissioner Wright. This is Auggie  
3 Ong representing the OES and I'm the current Chair.

4 In any case, OES has now reached out to the Health  
5 Physics Society whereby any of the notification from CRCPD that the  
6 vacancies are available in the various agencies and programs, I channel those  
7 vacancies and the possibilities of those jobs to the HP Society, the Health  
8 Physics Society, whereby those jobs would be made available for any of the  
9 members at the HPS that are interested in working in the state programs in  
10 their respective states.

11 Here are the jobs that are available, so that then I'm trying  
12 to help as much as I can to channel the possible candidates that are certainly  
13 well qualified, because they are HPs, to those state programs.

14 So, in addition, in the near future OES and I will certainly  
15 reach out to the American Respiratory Radiological technologists and again,  
16 those professionals who already have the necessary training that some may  
17 be interested in switching their careers to instead of simply operating X-ray  
18 equipment, they would be interested in doing field work and doing inspections,  
19 doing any of the regulatory requirements that would be in their respective state  
20 radiation control programs.

21 MR. CROWLEY: And if I may real quick, Commissioner,  
22 just an example of how we're using our current resources, I spoke to the  
23 Centers of Excellence and the sealed source and device one hasn't I believe  
24 been completely formalized yet.

25 My own state has taken advantage of sharing other state  
26 resources, NRC resources, and using our reviewers to help assist other

1 programs and vice versa.

2 And so when we've had shortages of trained staff within our  
3 own internal programs, we can lean on other states and partners in a way to  
4 continue moving forward with the work that's at hand.

5 So, I think that's a really good way to highlight some of the  
6 partnerships across the programs as well.

7 COMMISSIONER WRIGHT: Thank you for that, because  
8 one of the things is there are existing people out there that maybe we can  
9 exchange, do trades and those kinds of things.

10 Because we have a lot of people leaving, they're still being  
11 trained, I know that, which raises a lot of questions in my mind.

12 How do you get more people in the pipeline and is there  
13 more outreach that we can do, or funding opportunities available to get more  
14 people interested to get into attract to school and other incentives out there to  
15 keep people in government positions really.

16 So, I look forward to working with you on this issue going  
17 forward. Patrick, in the time I've got left I want to go quickly to you. Pat,  
18 thank you for sharing your views on the rulemaking process.

19 Some of the comments you made are on point, so thank you  
20 for that. It sounds like we've made some progress in increasing state  
21 participation and we're doing some of the earlier stages in the rulemaking  
22 process.

23 To me, obviously early engagement is the key on anything,  
24 right, and consistent communication as well. So, I'm glad we both recognize  
25 that as being key to success. One area I think we can do better is in the  
26 notice of interpretation, or the NOI process.

1                   This is relatively a new process for us. You mentioned two  
2   NOIs related to the low-level waste and the two-person rule, both of which  
3   would have impacted the agreement states.

4                   And my understanding is the NRC was not aware of the  
5   extent of the concerns from the agreement states before the publishing of the  
6   NOIs.

7                   What can we do at the NRC to improve communication and  
8   coordination in the process there to ensure that agreement states' positions  
9   and circumstances are considered before we issue interpretations?

10                  MR. MULLIGAN: I think we have a lot of the processes in  
11   place right now. I believe there are a lot of Work Groups and compatibility  
12   taskforces put together for various issues as they become relevant or maybe  
13   resources are applied.

14                  So, I think there are some of those mechanisms in place and  
15   there are rulemaking teams that collaborate between NRC, OES, and  
16   CRCPD.

17                  But I think that early on in the process, once the notice is  
18   developed, before it's issued we need to touch base.

19                  Is this relevant? Is this applicable? Is this something that  
20   we need to do today?

21                  I think particularly for the case of the two-man rule, what  
22   happened was so much time had passed between the time that the petition  
23   was picked up and the time that the notice went out.

24                  And like I said, we have so much turnover in our  
25   organizations I don't know there was anybody left that understood what the  
26   original basis was for that rulemaking.

1                   And so I think went to go back when we pick these things  
2   up and before we proceed to a notice, we need to make sure they're relevant,  
3   they're applicable and that we're essentially on the same page as far as where  
4   we need to be for making the rules.

5                   I'm not sure exactly when that happens, I know internally  
6   there's processes in place that once you start the ball rolling they're hard to  
7   stop. And you're kind of focused in your lane about what you need to  
8   accomplish to get that notice out.

9                   And sometimes you forget to look at who is in the other lane.  
10   So, we don't want to make the process more difficult by stretching it out  
11   because you need so much collaboration before you even get to something  
12   that's put out there.

13                  But I think there needs to be that sanity check, like is this  
14   something we're ready to go with, are there big issues, do we have to have  
15   discussions?

16                  COMMISSIONER WRIGHT: One, I appreciate your  
17   comments there and one of those things that we are striving for at the NRC,  
18   and I know Staff is really trying to do this as well, constant improvement.

19                  Anything that we can do to make it more effective, more  
20   efficient, but that doesn't happen in a vacuum so we really need your input  
21   and we need it to be timely input too.

22                  If you see something going awry you've got to speak up and  
23   let us know. So, thank you for that and, Mr. Chairman, with that, I'll turn it  
24   back over to you.

25                  CHAIRMAN HANSON: Thank you, Commissioner Wright.

26                  Pat Mulligan, I appreciated your opening the door on the

1 emergency planning zone rule, and if I could I'd like to walk through it and dive  
2 down not just with you but other members of the group this morning.

3 As you mentioned, the final rule is before the Commission  
4 for consideration and I went back and looked at the comments in some detail  
5 that CRCPD as well as individual state agencies provided on the rule.

6 And I found them really helpful. And as I was doing that, I  
7 became really interested in teasing out the technical aspects as well, on the  
8 one hand, and the policy aspects on the other.

9 And of course, in emergency planning this is really an area  
10 where these two things kind of come together. I do want to focus on one  
11 thing. CRCPD as well as the State of Iowa provided comments and in their  
12 comments they mentioned of course the emergency planning zone itself, but  
13 also the ingestion pathway zone.

14 And of course, as you know, the rule suggests that when the  
15 emergency planning zone is the site boundary, that is at zero, there wouldn't  
16 be an IPZ either.

17 And I'm interested in getting feedback from a technical  
18 standpoint, your thoughts about the determination of an ingestion pathway  
19 zone.

20 And that's open for anybody, that isn't necessarily...

21 MS. LEEK: Sure, I can jump in since you said Iowa, so I  
22 will try to take the first stab at this and the perspective that we were coming  
23 from that comment.

24 So, with the ingestion pathway zone, obviously that is a level  
25 of contamination that would require us to assess the food products and the  
26 other things that could be ingested as a result of a radiation release.



1                   And I think the basis of the comments that we're making  
2 even with an emergency planning zone that is within the site boundary, there  
3 will be contamination offsite.

4                   So, the basis that's being used for determining that is the  
5 EPA PAG manual levels of where a PAG would be exceeded.

6                   And so while that is the current standard for making  
7 protected action recommendations and it would drive a lot of the actions that  
8 we would take, it doesn't mean there wouldn't be a lot of contamination pretty  
9 significantly offsite.

10                  And our population and their perception of radiation are  
11 going to be asking questions about this reading they can now get in their  
12 neighborhood. Even though it's below PAGs, they're going to have lots of  
13 questions.

14                  And we're afraid that without support to ensure the offsite  
15 agencies, both in the emergency phase, even though it's not going to need  
16 protected actions, but on the converse, proving zeros or assuring our public  
17 that it is a relatively manageable amount of radiation that doesn't require an  
18 action offsite is just as important as it is to say that a protected action is  
19 necessary.

20                  And so we may find ourselves with offsite response  
21 agencies that have never had a nuclear power-plant in their jurisdiction, never  
22 dealt with a fission release before, and not have those networks and those  
23 coordinations for those assessments for other types of field monitoring in place  
24 as effectively as we've built up and have seen very strong emergency  
25 preparedness communities around our existing nuclear power-plant.

26                  So, I think that's the basis. We recognize the risk is low but

1 that doesn't mean the public isn't going to be just as interested in the  
2 contamination that's in their community.

3 CHAIRMAN HANSON: Thank you, Angela. Pat or Kim or  
4 others?

5 MR. MULLIGAN: Yes, I can offer just a few additional  
6 thoughts. Right now, and the thing that I've been struggling with the most  
7 from a technical perspective is that number one, as far as I know, there are no  
8 approved reactor designs yet.

9 None of them are operable. The assessment for what is a  
10 credible emergency or event at one of these plants has been left up to the  
11 applicant to determine.

12 And so everything that we've looked at from this  
13 perspective, where it's going to be below the PAG, is I'm not going to say a  
14 whole part but it's somewhat theoretical and I think it's premature to decide  
15 that there's no EPZ that's required prior to the technology actually being  
16 developed, implemented, tested, and the credible accidents looked at.

17 So, beyond that, I do think that I agree with Angela, if you're  
18 looking at a decision point and you're limiting it to the EPA PAGs, I think from  
19 a state perspective it's a little short-sighted because there are things we would  
20 be concerned about and things we might be able to do at, say, half of the PAG,  
21 at 500 millirem, or 100 millirem.

22 You can certainly still save dose to the public at those levels  
23 by taking some action but you need to have the offsite response agencies with  
24 the ability to assess that through modeling and through experience and  
25 expertise that we have for those types of sites and reactors in place to make  
26 that determination.

1                   So, while I believe that, again, the risk is low, consequences  
2   may be high and certainly public interest is going to be high and concern.

3                   And I believe there are some things we should probably do  
4   and we've proven to pipeline regardless of whether or not a PAG could be  
5   exceeded offsite.

6                   MR. CROWLEY: And I'll add real quick for you, Chairman,  
7   my thoughts on this are it's a twofold problem. One is the technical aspects  
8   and I think we can all appreciate and understand that piece of it.

9                   The second comes in a little bit to what Angela spoke about  
10   to the communities and the communication and will they have trust that what  
11   we say is in fact the case?

12                  Is it safe to have those reactors operating in their  
13   communities?

14                  So, I think the utilities, as we move forward and as we look  
15   at this rule and approval of it, one way or another, are we setting ourselves up  
16   to succeed in actually building and operating one of these plants with the rule?

17                  Will they grant us that social license where it's accepted by  
18   the people and actually it can be brought into a community.

19                  I think right now especially is a trying to time, a lot of people  
20   are hesitant to trust facts and science and things. And even though we as  
21   the technical experts know one thing, we will have that barrier to get over.

22                  So, I think being very transparent too and communicating  
23   these things and if that means following similar action to what we've done with  
24   larger-scale fission plants, perhaps we carry that because that's what's  
25   worked and has been trusted.

26                  So, just a few other thoughts.

1 CHAIRMAN HANSON: Thank you, Dave. I want to touch  
2 on a couple of points here. All of your comments have been very, very  
3 helpful.

4 To your point, Pat Mulligan, I think it's incumbent on  
5 applicants to actually prove to us in their application that site boundaries is  
6 actually technically justified. It's not a default for advanced reactors.

7 So, to your point, the emergency planning zone is going to  
8 be maybe different by each design and I do agree that, at least at this point,  
9 the conversation is kind of hypothetical.

10 I guess my follow-up question then to each of you is  
11 historically, licensees have paid for that offsite emergency response planning.  
12 And I certainly understand and I'm very sympathetic to the need for ongoing  
13 state and local engagement in this.

14 But I guess my question is then are you as state agencies  
15 open to other kinds of funding mechanisms that the Federal Government  
16 might come up with?

17 So, if a licensee, again, hypothetically, has a reactor design  
18 where it's technically justified that they have a site boundary then if that  
19 funding doesn't necessarily come from the licensee but comes from some  
20 other program through FEMA or the Department of Energy or some other  
21 mechanism, would that be acceptable as long as it supported the offsite  
22 response capability that we've been discussing?

23 MS. LEEK: Thank you, Chairman, I'll jump back in here  
24 again with a comment on that. I think that fundamentally the states are  
25 positioned to work within and accept any funding stream that would help to  
26 support this.

1 I think the focus of this and the desire of the community and  
2 the Federal Government is to move and treat capabilities across all hazard  
3 spectrums.

4 And so we've been looking at other funding resources and  
5 opportunities.

6 Obviously we've had a form of funding that has come  
7 through the utilities that states have become very used to. And it's difficult to  
8 make a shift and actually put the risk assessment into the current THYRA  
9 process.

10 Many times radiation incidents, because they are of such  
11 low probability, they are not designated very high in certain jurisdictions so  
12 they may not get designated to tap into those funds.

13 There are other restrictions as far as resources through  
14 some of the Homeland Security Funds and have very specific direction as far  
15 as securing the cities and designations of those entities.

16 So, we can end up with a disparate ability to utilize some of  
17 those resources and funds in the current structure that's in place.

18 So, I do think the states would be open to having access to  
19 other funds, I just think we need to either look at the existing funds and find  
20 ways to maybe make a stronger checkmark in some of those funding streams.

21 Because if you have one of these reactors, you  
22 automatically get higher on the list of prioritization of these assets or these  
23 funds, if they're not directly funds that cover for this type of reactor.

24 So, I do think there are options and there are many  
25 possibilities we could look at but we definitely have to look at them. We can't  
26 assume they exist now because states have struggled with tapping into those

1 right now.

2 CHAIRMAN HANSON: Thank you. If my colleagues will  
3 just bear with me here, I just want to sneak in with one more question. I'm  
4 hoping both Commissioner Wright and Commissioner Baran will find it useful.

5 Right now under the framework, because we have for large  
6 light-water reactors we have a ten-mile emergency planning zone, etcetera,  
7 FEMA reviews the emergency plans for those plants and I guess I'm interested  
8 in your views on even, again hypothetically, to Pat Mulligan's point, for a site  
9 boundary EPZ, whether FEMA --

10 Even in the site boundary, those reactors will have some  
11 kind of emergency response plan presumably. Whether FEMA should still be  
12 in the role of reviewing that plan even when the EPZ is zero.

13 Anyone?

14 MR. CROWLEY: It's kind of like our position on the funding  
15 as well. As long as it's being done or can be guarantee one way or the other,  
16 I think we could end up being satisfied, at least our position as stated  
17 regulators.

18 It doesn't need to be FEMA, it doesn't need to be NRC.  
19 Everyone is comfortable if you continue with the same but I think we would of  
20 course be open to either way that would work.

21 We could look further into that if need be.

22 MR. ONG: If I could just make a side note, Commissioner  
23 Hanson, and that is in terms of licensing of these reactors, be it more  
24 advanced nuclear reactor or even the fusion reactor becoming aligned within  
25 the next 20 years.

26 That being said, it's part of the licensing process whereby in

1 order for an applicant to get the license approved, the applicant still has to  
2 provide where are the boundary zones, where are the emergency planning  
3 zones whereby that would then be able to reassure both the stated agencies  
4 and the general population within the area whereby the plant would be located.

5 In order to get everybody to have a buy-in in terms of  
6 allowing the application to be approved. So, that being said, the negotiation  
7 will always be taken place.

8 What would the licensee be applicated in order to provide  
9 that kind of assurance to cover any small, albeit low probability of that failure,  
10 to continue the material whereby it's now released beyond the site boundary.

11 So, that being said, there's still going to be ongoing issues  
12 and the state certainly will be very reluctant, if I may add, in this kind of  
13 environment to tap into the state general fund in order to buy that assurance  
14 to the communities that in fact there will be emergency planning zones, there  
15 will be substantial personnel to be able to respond to the possibility of the  
16 low-probability events.

17 That being said, then certainly if the Federal Government is  
18 able to provide some funding source so to speak to help out the states, thereby  
19 then everybody will have a stake in terms of getting the technology  
20 implemented.

21 And for the state government this country's future.

22 So, everybody will have a stake in this eventuality. Thank  
23 you.

24 CHAIRMAN HANSON: Thanks, Auggie, I really, really  
25 appreciate it. I've run way, way over my time at this moment and I really want  
26 to thank Commissioner Baran for his patience on this.

1                   And I know we'll have an opportunity potentially to follow up  
2 this afternoon with some more discussion on this point. And with that, again,  
3 thank you Commissioner Baran and I'll hand it over to you.

4                   COMMISSIONER BARAN: Thanks, Chairman, it's been a  
5 great discussion. I don't mind waiting an extra few minutes, it's been very  
6 good.

7                   I really appreciate all of the insights you all have shared and,  
8 really, we value the partnership we have with all of you.

9                   My sense is it's really as good as it's ever been, maybe  
10 better, in recent times and I think we're all benefitting from that. Pat, thanks  
11 for your comments on the two-person rule discussion there.

12                  As I try to think through what can we do better next time, in  
13 this case the reinterpretation was issued on June 1st and it took us back right  
14 away. And NRC asked us to have the public comment period follow the  
15 notice of reinterpretation rather than precede it.

16                  And this meant the Agency couldn't consider the comments  
17 before making a final decision. I think that did not really work well. I think the  
18 lesson I would draw is agreements made comment, the public comments  
19 should be considered before the decision is made and not after.

20                  I think that's really going to significantly reduce our risk of  
21 doing something that ends up not making a lot of sense.

22                  I don't know if you have thoughts about that or if your  
23 colleagues have any thoughts about that but to me, that from a process point  
24 of view is the thing that could be easily changed that would have probably  
25 made all the difference in this case.

26                  MR. MULLIGAN: I certainly agree with you,



1 Commissioner.

2 Public comment prior to implementation is always the best  
3 practice I believe and we've seen it work in other rulemaking, not just with  
4 NRC but other organizations as well.

5 Everybody benefits from getting that input prior to taking an  
6 action.

7 That's first, and I think second too, beyond that, when things  
8 are put on hold for a while because the priority is low, I think when we pick  
9 them back up again they should be filed on the back-burner with a little bit of  
10 history so that when we pick them up again, we make sure we take the time  
11 to ensure they are still relevant topics and that the condition still exists, that  
12 whatever petition or rulemaking effort was based on.

13 So, I think that's first, make sure it's still relevant. Then we  
14 get the public information and then we take an action to make a decision.

15 COMMISSIONER BARAN: That's a great point.

16 I'd like to ask about something that Kim touched on with her  
17 discussion, which is financial assurance for the disposal of CAT1 and 2  
18 byproduct material sealed sources.

19 Under NRC's current regulations, many CAT1 and 2 sealed  
20 sources are not required to provide financial assurance for decommissioning.

21 That means no decommissioning funding plan and no  
22 financial instrument in place to cover the eventual transportation and disposal  
23 costs.

24 This is because the current regulatory threshold for the  
25 financial assurance requirement is very high. For example, one of the most  
26 commonly used radionuclides is large-sealed sources of Cesium-137 as we

1 all know.

2 27 curies of Caesium-137 qualifies as a Category 2 quantity,  
3 which subjects the source to physical security and source tracking  
4 requirements. But a licensee isn't required to meet financial assurance  
5 requirements unless it's 100,000 curies of Cesium-137, which is quite a bit  
6 more.

7 The Commission recently decided to proceed with the rule  
8 to extend the current financial assurance requirements to all CAT1 and 2  
9 byproduct materials sealed sources tracked in the national source tracking  
10 system.

11 I don't know, Kim, if you want to talk about it, or Auggie, can  
12 you talk a little bit about the level of support among the agreement states for  
13 this rulemaking? I know that's been a long-time coming to get rolling on this.

14 Let's do that check-in now. How are you all feeling be this?  
15 Is this something you think is a good idea?

16 MS. STEVES: I'll let someone from OES take that.

17 MS. LEEK: This is Angela Leek, I'm going to jump in here  
18 real quickly.

19 From the CRCPD's suggested state regulations  
20 perspective, we have a little bit of history in this topic and have been working  
21 on this over the last few years.

22 There has been an interest across the states to figure out  
23 ways to better support. Because as Kim did mention, often times states are  
24 left with those open sources or the disposal of a source that hasn't otherwise  
25 been required to be financially assured by their licensee.

26 So, we have been working on suggested state regulations

1 and have had Committees working on this, very much in line with what has  
2 been coming out of in the idea of the sealed sources and the higher-category  
3 activity sources.

4 However, there was some interest by states to go a little bit  
5 lower into almost a generally licensed device arena, not quite, and there's a  
6 little bit of discrepancy there on the states.

7 So, I would say from the feedback we've gotten through that  
8 process, which is not yet finalized, and now this new initiative is out we're  
9 going to work to make sure we align our SSR efforts with what the NRC is  
10 working through in discussions, so they align and we're ready for compatibility  
11 at some point in the future.

12 However, I think from the comments we've received from all  
13 of our states, there is a general support for doing some effort to require  
14 financial assurance, whether that's a full decommissioning plan or not I think  
15 can be varied on the level of actual risk from a sealed source versus lower  
16 activity sources.

17 However, the higher activity sources I think you'll find a  
18 consensus that we agree.

19 As you get down into lower activities or less risk, it gets  
20 grayer so finding that level of where to draw the line might be the difficult part  
21 but I do think you'll find some consensus across the states in agreement for  
22 extending some of those financial assurance requirements.

23 COMMISSIONER BARAN: Auggie, do you want to add  
24 anything?

25 MR. ONG: Definitely, thank you for the opportunity to do  
26 so. I can only use New Hampshire as an example.

1                   We do understand that the mom and pop businesses that  
2                   somehow are no longer able to have enough financial assurance so to speak  
3                   for eventual disposal of those sources.

4                   And that being said, what we have done in the past and still  
5                   are doing so is that for any of the material licensees who ship out low-level  
6                   radioactive waste, New Hampshire charges a certain percentage of that  
7                   volume.

8                   And the whole purpose of that is to provide a standard loan  
9                   fund thereby that could be used and tapped if necessary to properly dispose  
10                  of those abandoned sources.

11                  So, what it means is that certain licensees will become, so  
12                  to speak, have a stake in ensuring that, eventually, the state does not get  
13                  stuck, sort of speak, funding the entire disposal cost of those abandoned  
14                  sources, where now the state will certainly contribute certain parts to that fund.

15                  But the licensees that do ship out low-level waste will also  
16                  be partners in terms of helping the state to securely dispose of those  
17                  abandoned sources.

18                  So, that is one mechanism and I don't know of other states  
19                  doing similar things without having to tap into scattered programs or looking  
20                  for referral government to provide the necessary funding or to dispose of these  
21                  abandoned sources.

22                  We're going to be at the start of this rulemaking and that's  
23                  going to give us a lot of time to interact with all of you and get your ideas and  
24                  feedback. We're really looking forward to making progress on this with all of  
25                  your help.

26                  Briefly, another topic on fusion that got brought up a little bit

1 today, we're seeing more interest in fusion technologies and the development  
2 of a regulatory framework for fusion.

3 I know that our partners from Wisconsin and California are  
4 on the fusion Work Group with the NRC Staff. I realize we're still early in the  
5 process of thinking through options for the regulatory framework.

6 Angela, at this point, does CRCPD have thoughts about the  
7 appropriate role of states in regulating fusion reactor technologies?

8 MS. LEEK: Thank you for the question, Commissioner  
9 Baran.

10 I think we have a Work Group, Jeff Samansick is the Chair  
11 of the Work Group that's doing a lot of the efforts to stay on par with what  
12 discussions are happening as this is evolving.

13 As far as the role of agreement states and the licensing, I  
14 think I would defer to the agreement states and hopefully David will bail me  
15 out on this to give a little bit of that feedback on what the OES would believe  
16 as far as the agreement states rule in this type of regulatory structure.

17 CRCPD is continuing to keep focus and make sure that we  
18 are compiling all of the relevant information so that as this proceeds we can  
19 help to support comments as they come through.

20 MR. CROWLEY: I'll jump in there. Thank you, Angela, for  
21 that point of view from CRCPD in their effort.

22 So, as far as fusion goes, we see a lot of different  
23 stakeholders with respect to this and I think a lot of the things that we hear  
24 from the state perspective is to not lose sight that fusion could mean more  
25 than just power reactors, right?

26 So, we have potentially isotope production or different

1 industrial and research uses of fusion technology. And sometimes those get  
2 attributed more closely to, say, an accelerator facility but it is in fact a fusion  
3 process that's going under or taking place.

4 So, if the NRC passes either regulatory language or a  
5 framework that goes forward in such a way, a lot of states might have issue  
6 with all those other technologies being broadly swept up.

7 So, I think where we draw the line and how we delineate  
8 between things is important. Additionally, I think the industry and some  
9 states make a case that fusion can be regulated.

10 It's not a fission process, it's not going to have necessarily  
11 the same risks, it's not zero risk potential but it'll have different risks such that  
12 the state could regulate those reactors, even if they were on the power scale.

13 But the appetite from one state to the next to be able to take  
14 that on is going to be much different. Some states have very robust nuclear  
15 programs and other ones much more limited.

16 So, my opinion way before we get down the road here, is  
17 maybe we would see this as something that could be brought into our 274  
18 type agreement. With the agreement state itself, does that state choose to  
19 take on regulating fusion activities or not?

20 So, just early on but I do really appreciate the coordination.  
21 We've had several meetings, both public and government to government, that  
22 have really helped bring some of these issues out for conversation.

23 COMMISSIONER BARAN: Thanks, Dave, I appreciate it.  
24 I have one last question related to greater than Class C low-level waste.  
25 There's a paper pending before the Commission about a potential GTCC  
26 rulemaking.

1                   Aside from the site in Texas that is potentially interested in  
2     disposing of GTCC, has anyone heard interest from any other sites or states  
3     in accepting GTCC disposal?

4                   I'm seeing a lot of shaking heads.

5                   (Simultaneous Speaking.)

6                   MR. ONG: Commissioner Baran, not that I'm aware of, so,  
7     certainly, if that question is posed to agreement states then we will certainly  
8     send out a survey to determine the interest of that disposal.

9                   COMMISSIONER BARAN: Thank you, I appreciate it, and  
10    good to talk with you all, I think it's been a really good discussion, thank you.  
11    Thanks, Chairman.

12                  CHAIRMAN HANSON: Thank you, Commissioner Baran,  
13    and thanks again to all the participants. As I said at the beginning, nuclear  
14    safety and security is a team sport and we're grateful for the incredible  
15    collaborative relationship we have with both OAS and CRCPD.

16                  So, thank you all for being here and your thoughtful  
17    responses to all of our questions. Thanks to my colleagues. The great thing  
18    about having such good colleagues is a lot of their questions are some of the  
19    same questions I had.

20                  We touched on I think really important topics today,  
21    workforce development and program sustainability. Fusion is certainly the  
22    issue of the day. Sealed sources security among a lot of other issues.

23                  So, I want to thank everyone again this morning and with  
24    that, we're adjourned.

25                  (Whereupon, the above-entitled matter went off the record  
26    at 11:43 a.m.)