UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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BRIEFING ON GREATER-THAN-CLASS-C LOW LEVEL RADIOACTIVE WASTE

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THURSDAY

AUGUST 13, 2015

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ROCKVILLE, MARYLAND

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The Commission convened in the Commissioners Hearing Room at the Nuclear Regulatory Commission, One White Flint North, 11555 Rockville Pike, at 9:00 a.m., Stephen G. Burns, Chairman, presiding.

COMMISSION MEMBERS:

STEPHEN G. BURNS, Chairman

JEFF BARAN, Commissioner

WILLIAM C. OSTENDORFF, Commissioner

KRISTIN L. SVINICKI, Commissioner

NRC STAFF PRESENT

LARRY W. CAMPER, NMSS

CATHERINE HANEY, NMSS

MICHAEL WEBER, Deputy Executive Director for Operations

ALSO PRESENT:

THOMAS KALINOWSKI, DW James Consulting

SCOTT KIRK, Waste Control Specialists

CHARLES MAGUIRE, Texas Commission on Environmental Quality

ARJUN MAKHIJANI, Institute for Energy and Environmental Research

FRANK MARCINOWSKI, US Department of Energy

JANET SCHLUETER, Nuclear Energy Institute

P R O C E E D I N G S

CHAIRMAN BURNS: I invite our first panel up to the table. I want to welcome everyone to this morning's meeting of both our external panelists and NRC staff, representatives from the Department of Energy and Agreement States, as well as members of the public who may be attending or watching this Commission meeting remotely.

Today, the Commission will be briefed on the current regulatory environment and challenges for the disposal of greater than Class-C low-level radioactive waste. And this meeting will provide the Commission an opportunity to hear directly views from a panel of external stakeholders, as well as a panel of regulatory staff on several significant topics related to GTCC low-level radioactive waste disposal.

First we will have presentations from a panel of external stakeholders, including Ms. Janet Schleuter, Director of Fuel and Material Safety at the Nuclear Energy Institute will discuss industry views.

Mr. Thomas Kalinowski, Vice President of DW James Consulting LLC will discuss low-level waste streams from nuclear power plants, including greater than Class-C waste streams.

Mr. Scott Kirk, a Vice President of Licensing and Regulatory Affairs of Waste Control

Specialists, will discuss low-level waste disposal site interest in accepting GTCC waste.

And Dr. Arjun Makhijani, the President of the Institute for Energy and Environmental Research, who will give a public interest perspective on the topic.

After presentations from the first panel and Commission questions, we will have a brief break before hearing from our other panel.

And so with that, would any of my colleagues like to say anything? Commission Svinicki.

COMMISSIONER SVINICKI: Yes, I would. Well, good morning and thank you to our invited participants, to the NRC staff, and to others who are tuning in. This is a complex topic. I wanted to clarify for myself that I really appreciate I think the perspectives that are shared today will be very valuable background. The Agency has made public a paper on a related topic, SECY-15-0094 that is before the Commission and it is not the purpose of today's meeting, of course, to deliberate that or to arrive at any conclusions about it. So, again, I am excited. I am in data gathering mode here and I just look forward to learning more background about GTCC and low-level waste issues. Thank you.

CHAIRMAN BURNS: Thank you, Commissioner.

Anybody else?

Okay, first we will begin with Janet Schleuter from the Nuclear Energy Institute to begin the first panel. Welcome.

MS. SCHLUETER: Good morning, Mr. Chairman and NRC Commissioners. I would like to thank you for the opportunity to participate in today's briefing and also for early release of the SECY paper 15-0094.

For information to some, the Nuclear Energy Institute is an industry policy organization that addresses generic issues. Our members include entities that are licensed to operate commercial nuclear power plants, fuel cycle facilities, uranium recovery operations, and materials users. As well, it includes plant designers, major architects and engineering firms, and other organizations and entities that support the global nuclear energy industry.

With that introduction, I would like to begin with two caveats. First, NEI offers a response to the information provided in the staff paper, primarily from a technical and a policy perspective. As the staff points out, there are legitimate legal questions regarding whether allowing a state to license and regulate disposal greater than Class-C and transuranic waste is appropriate under the Low-level Radioactive Waste Policy Act amendments. It appears

that those issues have been appropriately identified in the paper and, I would imagine, have been considered extensively by your Office of the General Counsel.

My presentation today will not address the legal issues but NEI would be happy to make the appropriate industry representatives available to engage on them, should you wish.

Secondly, industry's views are provided in the absence of any knowledge of the Department of Energy's position on the staff action options in the paper or the contents of its soon to be issued Final Environmental Impact Statement on GTCC disposal. We have not been privy to any discussions that may have occurred between NRC, DOE, and the State of Texas. So, again, my comments are necessarily limited to providing industry's initial reaction to the information in the staff paper.

Slide 2, please. As an overview, it is important to recognize that industry-generated GTCC waste is safely and securely managed today by a variety of licensees that are mentioned on the next slide. We are not aware of any public health and safety or environmental concern or issue that needs an immediate or near-term regulatory response. That being said, we do believe, based in part on the jurisdictional question raised by the State of Texas to NRC, that the time is

right to implement a predictable regulatory framework for the disposal of GTCC and TRU wastes.

Inherently, such a framework must be carefully constructed by the federal government with the Agreement States and informed by industry's experience in safely managing such waste. Such decisions must also fully address all related jurisdictional, policy, legal, and technical issues.

To that end, Options 1 and 2 would both provide a path forward, where Waste Control Specialists would be authorized to dispose of commercially-generated GTCC and TRU waste at its Texas facility. The difference between the two options, as you know, is who would license and regulate the facility, NRC or the State of Texas.

Further, under either option, the staff states that it would modify Part 61 to address an internal inconsistency in the definition and regulation of TRU waste. We support clarifying the regulations and trust it would not result in unacceptable licensing delays.

Finally, Option 2, we believe, offers unique benefits, which I will discuss more in detail later. Next slide, please.

For background, GTCC waste is commercially generated in various forms, types and volumes at

different categories of licensees, and Agreement State licensees, such as the ones listed here. More specifically, such waste includes, but is not limited to, activated metals, contaminated equipment, scrap metal, glove boxes, filters, resins, soils, other materials, debris from irradiated fuel analysis, and large bladder radiator and other sealed sources.

Enclosure 2 of the staff paper provides an excellent overview of the forms, types, generators, and volumes of GTCC waste and my colleague, Mr. Kalinowski, will provide detailed information on waste generation at the nuclear power plants.

It is also very important to consider that most, if not all, licensees work very hard not to generate GTCC waste in the absence of a permit disposal options. Further, some licensees implement NRC's Branch Technical Position on concentration averaging and encapsulation that allows some GTCC waste to meet the Part 61 definitions of low-level waste and be disposed of accordingly. Next slide, please.

In the absence of a current disposal option, GTCC waste is stored safely on-site and typically, within a secured and controlled area. These areas often include such features as intrusion detection, surveillance and radiation monitoring, and are part of the licensee's integrated security program.

We are not aware of any safety or security concerns regarding our current management practices of such waste.

Further, WCS is currently authorized by Texas to dispose of waste that are the responsibility of the federal government in its on-site federal waste facility. So, from a risk perspective, the disposal of commercially-generated GTCC and TRU waste is essentially no different. In that regard, Option 2 helps facilitate a consistent regulatory approach by Texas regulating the safe disposal of such waste.

As you are aware, WCS submitted a petition for rulemaking to the State of Texas and Texas has raised an important jurisdictional question to the NRC. In response to action options for how the NRC might proceed are under consideration. And we commend the staff for its timely and comprehensive response to the issue in a very informative information staff paper. Slide 5, please.

As one might assume, there are related issues that need to be considered. For example, we eagerly await issuance of DOE's Final Environmental Impact Study on GTCC waste disposal. We trust that the FEIS will include a preferred alternative that may or may not explicitly consider the jurisdictional matter before the Commission today. In absence of the FEIS,

we trust that NRC staff has fully addressed DOE's input, as it actually formed the two regulatory action items described in the staff paper.

Also, as the Commission is aware, the public comment period on a proposed Part 61 modification regarding the disposal of certain waste streams just recently closed. In commenting on that proposed rule, NEI and others raised the question regarding the need to assess the impact of that rulemaking from potential future modifications to Part 61 waste classification tables. The concern is that future modifications to the tables could impact current rulemakings, specifically, how waste is categorized. The same issue is relevant here and should be considered. The purpose of such consideration is to avoid future unintended consequences from today's decisions. Slide 6, please.

As I stated previously, both options 1 and 2 appear to be reasonable paths forward, in that either option would permit consideration of the currently operating WCS facility as a permanent disposal option for GTCC and TRU waste. NEI fully supports that outcome.

As clearly stated in the paper, Option 2 would permit the State of Texas to actually expand its current regulatory role over the site. It is also important to note that NRC would continue, if not

actually expand its current oversight role of the Texas program. Next slide, please.

We firmly believe that, provided that the statutory and regulatory implications of Option 2 are fully addressed, that Option 2 has certain unique advantages that include but are not limited to the following.

Option 2 can be implemented in a manner that we believe is adequately protective of public health and safety in the environment. Our confidence is based in part on the fact that the Agreement State of Texas has over 50 years of experience regulating Atomic Energy Act material, in addition to regulating non-AEA materials and sources of radiation for even longer. Further, the state is very familiar with the characteristics and operations of the WCS site, given its past licensing decisions and current regulatory role.

Additionally, we are confident that a rigorous licensing process and decision would be made in consultation with the NRC. Further, NRC will continue to oversee the agreement state program through periodic reviews that are performed under its integrated materials performance evaluation program.

Option 2 is clearly the most efficient and least resource-intense of regulatory option, in part, since the current regulatory role of the State of Texas

would simply be expanded.

As you know, under Option 1, NRC would actually become the regulator of only a portion of the existing site. Further, as the staff points out, Option 1 would require significantly more NRC resources for the staff to familiarize itself with site characteristics, conditions, and et cetera.

Further utilizing a currently operating waste disposal site is by far the most environmentally friendly option, since an entirely new site disposal would not need to be cited in Texas or in any other state. That fact, in and of itself, is significant.

Finally, it is our understanding that the WCS site operates with the support of the local community, clearly, a key attribute for success of any waste site. Last slide, please.

In summary, industry minimizes its generation of radioactive waste and safely and securely manages it today. Our goal, however, is to see it disposed of permanently. The time is right and industry supports well-informed decisions to implement a regulatory framework that provides for the permanent disposal of GTCC and TU waste at the WCS facility.

Industry prefers option as a reasonable and the most efficient and effective path forward, provided that all statutory and regulatory implications are

addressed.

Finally, to increase transparency of these decisions, we respectfully suggest that one or more public meetings be held with the responsible decision-makers and affected and interested parties to ensure that all jurisdictional, policy, regulatory, and technical issues are clearly identified and understood.

I thank you, again, for the opportunity to participate in the briefing today and I look forward to the dialogue. Thank you.

CHAIRMAN BURNS: Thank you. Mr. Kalinowski.

MR. KALINOWSKI: I also would like to thank the Commissioners for the opportunity to talk to you this morning.

My presentation is going to focused more on GTCC waste that is generated from nuclear utilities. There are other sources which need to be addressed but I think, primarily, for my company's interest, we are looking at what nuclear utilities generate. Next slide.

There is two basic categories of waste from nuclear power plants, process waste streams and activated metals. Process waste streams consist of resins, filters, DAW, contaminated items, building rubble at the time of decommissioning, and then

activated metals. And the activated metals are going to be the primary source of GTCC waste from the reactors.

Operational considerations, the way the plants operate, the use of the Branch Technical Position will pretty much eliminate GTCC waste from the process waste streams, with the exception, possibly, of some cartridge filters.

Activated metals from the reactors include consumable items, hardware control blades, which are generated during the course of operation, but the primary volumes are going to be at the time of decommissioning, when the vessel itself is disassembled and the internals are segmented and sent for disposal.

So, during the course of operation, there should be very little waste, GTCC waste. The majority of it will be done at the time of decommissioning. Slide 3.

This slide gives a list of some of the primary components that are going to be GTCC waste. Activated metals, and this consists primarily of stainless steels. There are some specialty metals that are part of fuel assembly components but those are relatively small volume. Stainless steel is going to be the largest part of it. There will be some instrumentation pieces that are GTCC by themselves and contain some special nuclear material. It is usually

in small quantities. In the course of operation, we can typically average these with the rest of the component, dispose of them as low-level waste.

There are some cartridge filters from pressurized water reactors that occasionally become GTCC waste. The reason for it is a little questionable sometimes. A lot of these are based on carbon-14, which is estimated and our methods for estimating that are not always the most accurate. There is a lot of very conservative assumptions that are used in that. So, it is possible that some of the cartridge filters are, with some better calculations, could not be GTCC.

I did look at DOE's estimates in the materials presented or prepared for this presentation. I think the DOE estimates, in general, are fairly reasonable. They do tend to be a little bit conservative because the activations and LSEs that they used in their estimates include quantities of certain elements that are not well-known in stainless steels. They are probably over-estimated and I don't think it takes into account the advantages we can take with concentration averaging or refined activation analysis.

I don't think the DOE estimate takes into account plant life extension adequately. The analysis looked at 60 years but there is talk out there right now

of going to 80 years. That might affect the volume estimates a little bit. And there are also some new alloys being developed for use in nuclear power plants that do contain actual measured quantities of some of the elements that will activate to classification-controlling radionuclides. And that should also be considered for the future. Next slide.

Getting a little more technical, presenting a little bit of the average concentrations of some of the class-controlling radioisotopes in hardware. And this is pretty much what is seen right now in Class-C hardware. Niobium-94 is a fraction of about 0.47 for Class-C fraction. Niobium-94 in stainless steels, again, is based on an elemental composition, essentially a less-than value, minimal value, based on contamination in the material, in the base material. So, our numbers for niobium-94 are likely to be overestimates. Those elemental compositions are based on NUREG/CR-3474, which did some testing at Battelle Labs to come up with elemental compositions. But the sample size was fairly small and some of our clients have done their own testing and have seen niobium concentrations in stainless steels far lower than the standard or the 3474 values. So, my personal belief is that we are probably overestimating that stainless steel.

Nickel-59 is a very small fraction, typically in Class-C. Nickel-63 then becomes the dominant radionuclide for determining that waste is greater than Class-C in the long term.

In the course of operations, individual components are typically within a factor of 2 or 10 of the class limit and so they are concentration averaged in accordance with the Branch Technical Position.

Transuranics are the other radioisotope that is of concern for GTCC waste, primary transuranics are not going to be an issue with commercial power reactors. We only see significant transuranic activities when there is significant fuel failures. That is, the industry has done a very good job of reducing that over the years. Even some of the sites that have experienced fuel failures early on in the 1970s and early '80s, they did not generate significant quantities of transuranics. So, it is primary on a contamination layer. Next slide, please.

So, GTCC waste from nuclear power reactors is actually going to be pretty much like the Class-C waste that they are generated, consisting of the activated metals. When we go into stainless steel from core regions, we see Table 1 fractions about a factor of 18 of the Class-C limit. And again, that is primarily niobium-driven, which, I will repeat again,

is probably an overestimate.

Table 2 fraction up to a factor of 16 of the class limit, primarily driven by nickel-63. It is not significantly different than the other kinds of low-level waste that is disposed of.

GTCC waste from other metals, again, there are some fuel component constituents, high nickel alloys that will generate higher levels, very small volumes. And again, the cartridge filters. Those are primarily driven by tech and iodine, which, again, are estimated radionuclides. They are based on scaling factors and there is considerable latitude in developing those. I think they are, again, overestimates.

Last slide. In conclusion, most of the GTCC waste from commercial reactors is similar to the Class-C waste they generate. The same materials, a little higher activity.

The isotopes driving classification are mostly the shorter half-life radionuclides. Nickel-63 has a half-life of about 100 years. That is manageable in a near-surface environment with the proper controls. And I think if we develop a site with those additional controls or analyses, I think it is very feasible to dispose of this kind of material in that manner.

Thank you.

CHAIRMAN BURNS: Thank you. Mr. Kirk.

MR. KIRK: Let me start. First of all, thank you very much for the invitation. I am very pleased to be here to share WCS's views on greater than Class-C waste. Next slide, please.

WCS commends the NRC, the Texas Commission on Environmental Quality and the Department of Energy for making significant strides that could provide a possible pathway for the disposal of commercial and federally-owned or -generated greater than Class-C waste. I think this is a matter of national significance at the moment. And I would also like to compliment the staff, too. They did an outstanding job when they prepared SECY-15-0094. It is an outstanding report. I think it was very well thought through.

The SECY paper also discusses and potentially allows for disposal of waste based on the hazards that is posed to public health via a site-specific analysis. And it also could potentially provide a pathway for orphan disused sealed sources, as specified in the Energy Policy Act of 2005.

It also potentially provides a pathway for other orphaned type waste to help accelerate the cleanup of certain DOE sites. For example, those bearing transuranic waste. Next slide.

WCS agrees with the staff that Option 2 is

preferable, is consistent with historical NRC statements expressing a desire to retain the option of allowing Agreement States to regulate the disposal of greater than Class-C waste.

Texas also has extensive knowledge of the WCS facilities that would allow greater regulatory flexibility. The actual license that we submitted, it was reviewed for about five years before it was issued in 2009. And since that time, additional experiences have been acquired over the site with various amendment requests. For example, the major amendment that would allow the disposal of large quantities of depleted uranium.

Texas could also request that the NRC approve a proposal to license the disposal of greater than Class-C waste, pursuant to Part 61.55.

The NRC's regulatory oversight could also be provided through the Agreement States Integrated Materials Performance and Evaluation Program. Next slide.

Option 2. It would also establish a clear-cut federal and state licensing pathway for the disposal of greater than Class-C waste. And it also avoids having to construct a new cell for the disposal of commercial GTCC that would be licensed by the NRC. It is one thing to amend your license to take additional

waste after you have a license but it is a completely matter to prepare an application and go through the review process. When you submit a license application, as you know, an environmental impact statement is prepared, it is resource intensive and we think Option 2 is the preferred alternative.

A separate rulemaking, we agree, is needed to ensure that waste that contains certain alpha-emitting transuranic radionuclides at concentrations exceeding 100 nanocuries per gram, that it is not orphaned.

We believe Option 2 is consistent with the framework, more closely aligned to ensuring that waste is disposed of based on the risk, as opposed to its origins or statutory definitions.

For example, certain transuranic waste that has concentrations of 99 nanocuries per gram is safer disposal in a near-surface disposal facility. However, if that same waste stream has concentrations of 101, then it is not under the current framework.

WCS did submit a petition for rulemaking that we have unanimously approved by the TCEQ commissioners on September the 10th but some clarification is really needed. I think the commissioners' actions started an important conversation and it directed the staff to reach out to

the NRC to clarify its regulatory responsibilities. It did not approve any specific changes to the exact regulations at that time.

Our petition, what we intended it to accomplish, we intend to at least address the issues that there were certain Class C dilemmas that are in the regulations that would need to be removed and that is really what the petition focused on.

The petition also helped to better align the Texas regulations in a manner more consistent with state and federal statutes and regulations.

One of the key provisions in the Texas Radiation Control Act, they define what is called federal facility waste. And federal facility waste has to be disposed of in our federal waste disposal facility. And federal facility waste is that waste which is the responsibility of the federal government, as defined in the Low-Level Waste Policy Act Amendments of 1985. And as such, the federal government would be responsible for disposing of all DOE-owned or -generated low-level waste and commercial greater than Class-C waste at our federal waste disposal facility. Next slide.

What you see here is an aerial photograph of the site. The large facility in the center is our federal waste disposal facility. Again, commercial

and DOE-owned or -generated greater than Class-C waste can only be allowed to be disposed of in our FWF. It would not be allowed to be disposed of at the compact facility.

It is also important to note that the Department of Energy is responsible for taking title of the FWF after post-closure. That was mandated by Texas statute and it required an agreement with the Department of Energy as a requirement of our license. Next slide.

What I wanted to do here is focus on the sort of the technical basis that established the Class-C limits from the start. Now the NRC established the Class-C limits in the initial Part 61 rulemaking, based on certain scenarios for protecting the inadvertent intruder, many of those initial assumptions that don't hold true today. For example, the scenarios that defined the Class-C limits, it was based on an agricultural resident scenario that relied on water for irrigation and drinking water. It was also limited to disposals or evaluated for disposal facilities in a humid environment. It required disposal of Class-C waste at depths of five meters below grade or with intruder barriers designed to last at least 500 years. Waste that exceeded the Class-C limits, they were considered not generally suitable for near-surface disposal back in 1981. Next slide.

I think when you look at the slide, just at face value, you could see that the Barnwell facility was opened in 1969, I could see how there could be questions raised about what did you dispose of greater than Class-C waste under those scenarios I just described at the Barnwell facility. However, a lot has happened since 1981. The industry has matured considerably. If you look at our slide at the bottom that pictures our facility, we believe that waste that wasn't suitable for near-surface disposal back in the '80s could be demonstrated to be safe today.

For example, if you dispose of the waste at much deeper depths, if you had multiple intrusion barriers, if you located the facility in an area that has minimal rainfall, high rates of evapotranspiration and lack of potable water sources.

The point being, the historical scenarios do not reflect the practices today of a modern disposal facility, especially one located like WCS in an arid environment. Next slide.

The DOE may select a commercial entity as one of its preferred alternatives, as part of their environmental impact statement. The draft environmental impact statement that did evaluate the disposals at an enhanced near-surface disposal vault facility very similar to the design of the federal waste

disposal facility. The slide at the bottom of the page, this is a depiction of what a near-surface vault facility would look like.

The characteristics or the attributes of that facility would include more barriers, deeper depth of disposal, and enhanced waste packaging.

The DOE's Final Environmental Impact Statement is supposed to be issued, hopefully, by the end of this year. Next slide.

Site characteristics of the WCS facility, we can stack these containers, as you can see on the bottom, they are stacked on what is called modular concrete canisters. We can stack those seven-high. But all the waste is disposed of in impermeable clays, about 600 to 800 feet thick. There are more or about the same impermeability as concrete. It is also far removed from any water tables. It is about 600 to 1,000 feet below grade, which you encounter any sort of water but it is also not potable.

Our site is an arid environment. We receive less than 15 inches of rainfall a year and a potential to evapotranspirate more than six inches of water per year. Next slide.

This has to do with enhanced waste packaging. One of the things that makes our facility very unique is we make our own modular concrete

canisters for some of the Class-A waste, it was high-dose rate, and all the Class-B and C waste is placed into these MCCs. It is grouted in place. But sometimes we have to make specialty MCCs such as high-density MCCs that we have used for irradiated hardware. Irradiated hardware can have very high dose rates. These containers are probably two-feet thick. They also have a steel insert. It allows us, today, to handle pretty hot activated metals and we dispose of those today at our facility.

These MCCs, they weigh up to about 100,000 pounds and they are ten-feet in height. They are very intruder-resistant and that also reduces radiation levels and impedes the mobility of radionuclides. Again, as I said, we can stack these seven-high in our FWF and the disposal depths are greater than or it is possible, more than 30 meters. Thirty meters is key because that is the definition for a near-surface disposal facility. So, a portion of our facilities waste can be disposed of at even deeper depths. Next slide.

In conclusion, again, WCS commends the NRC, the Texas Commission on Environmental Quality and the Department of Energy for their leadership in moving forward on this very important topic. We think it could provide a disposal pathway for orphaned disused sealed

sources, as envisioned under the Energy Policy Act of 2005, as well as helping with the decommissioning at certain DOE sites that would need to be addressed by the transuranic waste rulemaking.

Waste that is not suitable for near-surface disposal in the 1980s maybe suitable for disposal in an enhanced near surface disposal facility like WCS. And again, we think Option 2 is the preferred alternative.

And that is the conclusion of our presentation. Thank you for your time.

CHAIRMAN BURNS: Thank you, Mr. Kirk. Dr. Makhijani.

DR. MAKHIJANI: Thank you, Mr. Chairman, Commissioners.

In the past I have once been very gratified that the Commission did agree with one of my many interventions regarding large amounts of depleted uranium. And I know that part of this proceeding is at least due to that Commission decision that large amounts of depleted uranium weren't automatically Class-A based on past rulemaking.

Since that time, however, I have been very disappointed in not only in what has been published but in the systematic setting aside of sound science, sound advice, without any serious scientific or technical

reasons being given. So, I am very glad you are in data-gathering mode and I hope that -- I don't expect that everything I say will be accepted but if it is, or it is not, that there will be sound reasons forthcoming for that from you and your office. So, thank you very much in anticipation for that.

Overview slide, please, second slide. So, I will make a few points. One in regard to the idea that you can do 10,000 year modeling for near-surface disposal, which is a large part of the basis for the discussion that you can dispose of GTCC waste in near-surface disposal.

I will talk about 61.55 and how it should be tightened. I will talk about 61.41 and the dose limits that are proposed in the new rule, which would apply to GTCC disposal if it is disposed of in near-surface disposal. I think my bottom line is that GTCC and GTCC-like waste that the DOE is considering, along with quite a large part of what is now called Class-C waste or equivalent Class-C waste in the DOE should be disposed of in deep geologic disposal and not in near-surface disposal.

The original intent of GTCC in 10 CFR 61.55 was sound but it was vague. And it should be tightened and made mandatory.

So, that will be the thrust of my remarks.

A few years ago, I think in 2009 -- next slide -- an NRC-invited geochemist Peter Burns said the following. And this is in a transcript of that briefing. I was particularly amused -- quote, I was particularly amused by the climatic divisions, none of which can be relied on, even perhaps at 1,000 but certainly not in 10,000 or 100,000 years. As an example, I am a geoscientist. So, I have this rare ability to see into the far distant past. I know, for example, that Death Valley was filled with about 1,000 feet of water 10,000 years ago. And that tells you how much the climate can change in the arid regions. And that is about what we are doing to the climate. The proposed rules have ignored completely the specifics of what we are doing to the climate. It ignored completely this advice from Dr. Burns. No computer model can fix this uncertainty that Death Valley was under 1,000 feet of water. What is going to happen to the WCS site in Texas in 10,000 years? Is it going to remain arid? What is going to happen to the water tables? This is unknown to anybody at this table and unlikely to be known to anybody at this table.

So, 10,000 years, my first point, is a completely unsuitable time frame for near-surface disposal. It is difficult enough for deep geologic disposal but should be ruled out completely for

near-surface disposal.

So, what should be done? I have a complex set of suggestions that go together. I believe your 100-year institutional rule is good, 500-year barrier is also good. This is time that humanity has some experience with, unlike 10,000 years. Even the Catholic church has been around for a small fraction of that time.

Now, one can say that radionuclides that decay substantially within 500 years, like cesium-137, strontium-90, and so on, one can calculate their doses and their migration within that kind of time frame and arrive at some reasonable idea of future impact.

For longer radionuclides and radionuclides that build up like depleted uranium, recycled uranium, I have suggested that a kind of Gedanken experiment be done. Were Einstein in charge, he might do that. I suggest that the peak radionuclide inventory be considered to be in the water and dose evaluated. And that kind of procedure should be used to set curie limits of what can be disposed of in shallow land burial. So, in addition to concentration limits, I think curie limits are required. I believe, in line with your institutional control period, that a long-lived radionuclide should be defined as one with a half-life of greater than ten years. So, all of these suggestions

go together with a period of performance being defined as 500 years but with very strict curie limits being placed and obviously, you would rule out a long-lived radionuclides and large quantities of depleted uranium.

Specifically, I would remove the word transuranic from Table 1 in 10 CFR 61.55. That would solve a lot of problems. It would include all the uranium isotopes of alpha-emitting isotopes. It would include others, too.

There are a number of specifics. I am not going to go through them. Next slide, yes -- no. Go back to the previous slide. Next slide. I think you skipped one. It doesn't matter.

There is one very important point I want to make in regard to 10 CFR 61.41. It is said that you are eliminating organ doses and going to equivalent doses because you're modernizing the science. This is completely false. It is a disingenuous and sophist argument. The basis of internal dosimetry remains organ doses. To calculate equivalent doses, you need organ weighting factors. Organ weighting factors average men, women, children. They are rather arbitrary. Today, gonads are important. Tomorrow, breasts are more important. So, you don't need this mediating factor. I suggest that 10 CFR 61.41, in order to modernize the science, go to committed organ doses

alone and limit them to 25 millirem and include a sublimit for drinking water and incorporate the drinking water rule.

I do think that the NRC should tell the public why modernizing the science requires the inclusion of weighting factors and elimination of organ doses, when organ doses remain the basis of modern internal dosimetry. In fact, the government's entire compensation program of nuclear weapons workers worth billions of dollars is based entirely on organ doses and the cancer risk is not based on the equivalent dose. So, one arm of the government is doing something that would relax standards in relation to actinides and strontium-90, sometimes by an order of magnitude or more. This, I think, is completely unacceptable. I have made this point before and never received even the suggestion of a satisfactory answer why organ doses are not the basis of modern internal dosimetry. They are in FGR-13. ICRP-103 has said that individual doses should not be calculated on equivalent dose basis and yet, the NRC and the EPA is proceeding along these lines.

I suggest I have given you specific language for -- I won't read it, since I don't have a lot of time -- for 10 CFR 61.41. But basically, organ doses should be limited to 25 millirem and incorporate drinking water rules.

I would like to make a point about an intruder. I did go and look up the definition of intruder in the dictionary, a number of dictionaries. Intruder means somebody who is there in an unauthorized basis, usually with criminal intent. When you have no more site control, no more barriers, there are no intruders. There are only members of the public. You are calling people -- after your barriers go down, you are calling people who go onto the site as intruders, even if they may be farmers. You are calling people in their own country intruders in their own country because you have no more site control. That is on the face of it, rather ridiculous, I would say.

Intruders within 500 years? Yes. So, if you want to say intruders may get a higher dose with 500 years, okay. But after 500 years, they are only members of the public and 61.41 should apply, today's 61.41 titled in the manner I have suggested.

The implication that what I have said for GTCC waste are that basically you need deep geologic disposal with a rule like that for deep geologic disposal. We have 40 CFR 191. It would need to be modified somewhat to be based on organ doses. I have given you a catalogue for my comments on the GTCC Draft EIS, which contains there are a lot of other wastes like GTCC. And, basically, I think the DOE wastes that are

like that and NRC wastes should be managed together, possibly in one separate repository that should be considered. It is quite important to do that, both for economic and environmental reasons. We don't want this stuff to be mixed up with spent fuel. It would be very expensive and spent fuel is kind of stuck.

So, I have, I think, given you a fairly coherent body of recommendations, at least in my view, and if it is not coherent to you, I would certainly like to hear from you so I may correct myself in public.

CHAIRMAN BURNS: Thank you, Dr. Makhijani.

We will open now for questions and Commissioner Ostendorff will start today.

COMMISSIONER OSTENDORFF: Thank you, Chairman. Thank you all for being here. As others have said on the Commission, this is a complex set of topics, a lot of moving parts, a lot of interfaces with various technical, and policy, and, perhaps, legal issues. I will steer clear of legal issues in my comment and questions today. I will stay with technical and policy-level questions for this group.

Let me start out with Ms. Schleuter. I will ask you a question and I will also ask others if they want to respond or provide any perspective.

With respect to the State of Texas having the authority under Option 2, if the Commission decides

that, you mentioned -- you discussed the benefits of having Texas proceed down the Option 2 path but you also briefly mentioned there could be, maybe I implied it from your comments, some challenges. But are there challenges if the Commission decides to have Texas license the facility?

MS. SCHLUETER: At this time, I am not aware of specific challenges. But remember, I am basically operating off of the information that is in the SECY paper. So, I trust that there has been some dialogue between NRC, DOE, State of Texas and so forth, that we haven't been privy to. This is part of the reason that we suggest a public stakeholder meeting be held at the appropriate time. No rush, obviously.

And I trust that there are discussions that have taken place between yourself and, obviously your Office of the General Counsel, which is not going to be public.

COMMISSIONER OSTENDORFF: Yes, I am not talking about legal challenges.

MS. SCHLUETER: Right, technically, no.

COMMISSIONER OSTENDORFF: I'm putting that to the side.

MS. SCHLUETER: Yes, technically, I would say no, I am not aware of any issues that would be specific technical challenges, if you will.

COMMISSIONER OSTENDORFF: Does any other member of the panel want to comment on that or have any thoughts?

DR. MAKHIJANI: Yes, when we commented during the licensing of the enrichment facility in New Mexico, we did a specific calculation in regard to the WCS site in Texas, for which I have never received an adequate response from anyone, WCS, or the NRC, or the licensing board.

We showed that very small changes in the assumptions about the erosion rate --

COMMISSIONER OSTENDORFF: No, I want to make sure -- my question is not necessarily a technical question for geology but as far as the challenge for the State of Texas, as opposed to the NRC conducting the licensing. I just wanted to make sure that --

DR. MAKHIJANI: Well, let me start at the end of my point, then. During my time in which I studied, intervened in that case, and subsequently in the intervention that I made here, and to the State of Utah and also in Texas, not to the State of Texas, I found that the NRC oversight of its Agreement States was sorely lacking. I testified under oath at that time, in 2004, I think, that one of the documents that had been used to license the site in Utah contained numbers that would dispose of uranium for greater than the weight of

the earth. I complained about this a number of times. I filed an official intervention through a local group to DRC. I spoke about it personally with commissioners, including the former chairman. And have been dismissed. The document is no longer in use. How did it come to be in use? How did it come -- how is it that the state could have licensed a site based on a document that contained egregious and scientifically incredible results?

And even though I raised it here and in Utah, I found that on neither side, neither in the state nor the federal level, was there any serious investigation done of how this came to be.

So, I think leaving it even more to the state for GTCC waste is entirely inappropriate.

COMMISSIONER OSTENDORFF: Thank you for the response. Do others want to respond to this question?

MR. KIRK: Yes, my only comment would be I thought this through quite a bit and my thought would be if we had to build a disposal facility just for commercial or comingled commercial waste, GTCC, and we had to build that facility just for it, now you would need to dispose of it deeply in order to protect the intruder. And our thought would be that the NRC would license this disposal facility, you would place the

waste as deep down as you could in your disposal facility maybe at depths greater than 30 meters, then you would have a vast open space. And what else could you put in that facility? Would you put in just Class-A, B, and C waste that an Agreement State would then regulate? And you would sort of set yourself up into a scenario in which the NRC licensed a disposal of GTCC but then the Agreement States also have responsibilities for Class A, B, and C. And let's give them the assumptions of how we dispose of the waste today.

So, that was a lot of my point about efficiencies in regulatory space.

COMMISSIONER OSTENDORFF: So, just to make sure that I understand your point there. If the NRC, under Option 1, would license such a facility, would that necessarily require a separate physical construct facility within your facility to handle this waste?

MR. KIRK: My thoughts are right where I stand today, I think you would. I don't know how else you would have it licensed so you only dispose of greater than Class-C waste under a Part 61 license that the NRC had. And then yet you had other waste streams that you have all already disposed of at our existing facilities. And I don't quite get how that would work.

COMMISSIONER OSTENDORFF: Okay, so then let me stay with you, Mr. Kirk, just for a moment there.

Aside from that example that you have provided, what other impacts on Waste Control Specialists does the commission decision on the SECY paper have for your organization, Option 1 or Option 2? Now, you have given us one example. Are there other examples you would want to articulate to the commission?

MR. KIRK: Well, the other point I would make is that when it comes to the volumes of greater than Class-C waste, it is very small volumes. It is high activity but small volumes. So, the question is, would we take such an effort only to dispose of commercial or comingled GTCC waste in a separate facility? Would that be worth it just for such a small volume of waste?

COMMISSIONER OSTENDORFF: So just from a business standpoint. Is that what you are saying?

MR. KIRK: And also just the efforts of going through the licensing process. You know you have to prepare your license application, you submit it and an environmental impact statement is performed. They are expensive. And then you go through the licensing review process that takes you years to complete. Whereas, if we could amend our existing license today and where the NRC and an Agreement State could collaborate on the technical basis and jointly sort of review the performance assessment, I think that is a much more efficient way to handle things but it also

ensures that the NRC has their roles and responsibilities to look at the safety basis that goes behind those decisions.

COMMISSIONER OSTENDORFF: Okay. I want to provide -- I'm going to stop right there just for a moment. Do others want to respond to Mr. Kirk's comment there? Because I think this is a very key part of the Commission understanding of what is before us here in the SECY paper.

DR. MAKHIJANI: Briefly, Commissioner, I think that both Option 1 and Option 2 should be rejected, obviously, because I am for deep disposal of GTCC and other waste like it. Thank you.

COMMISSIONER OSTENDORFF: Other comments on Mr. Kirk's response or Dr. Makhijani's response? Okay.

MR. KALINOWSKI: I am definitely not a policy or a political-type person. I think if there is a technical basis for being able to safely dispose of the material, and regardless of the facility, then it should be implemented and whatever policy mechanism you need to employ to let it be done efficiently should be used.

COMMISSIONER OSTENDORFF: Okay, let me ask Ms. Schleuter this comment because I think the notion of a carved-out greater than Class-C waste facility

within a broader facility that Mr. Kirk has raised is important for us to understand the implications of that. So, do you have anything further you want to say, other perspectives from industry on that?

MS. SCHLUETER: No. I think just to build on what has been said, I mean as you know, under Option 1 or 2, which the staff has developed, I mean either way, Waste Control Specialists site in Texas is the site which is being considered for permanent disposal of the waste. So, it is really just then who regulates it.

And the staff has made a case, I think, in the paper very well that having the state continue to regulate all aspects of waste disposal in Andrews County is the most efficient way to go, for a whole host of reasons. The staff clearly points out that for the NRC to take on that role, you are talking about a significant investment of resources. That is pretty difficult to justify, from my perspective, when Texas has the program in place, technical expertise. NRC has an oversight role. They are already overseeing the program, they will continue to do so. So, why would the NRC staff then take on that huge burden of a steep learning curve for becoming familiar with a portion, again, a portion of the site and having two regulators on-site, which could confusing for any licensee?

So, in our mind, it was just based on the

paper alone, a pretty clear, obvious best choice in Option 2, from a strictly resource perspective and gaining and building on the experience of the Texas regulator in this case.

COMMISSIONER OSTENDORFF: Okay, my time is up. Thank you all. Thank you, Chairman.

CHAIRMAN BURNS: Thank you, Commissioner. Commissioner Baran.

COMMISSIONER BARAN: Thanks. Thank you all for your presentations. It has been a good discussion, so far.

Mr. Kirk, I wanted to follow up on your response to Commissioner Ostendorff's question, which I thought was a very good one, just the basic question about kind of the reasons why, from your point of view, from WCS's point of view, would make more sense for Texas to license a GTCC waste cell versus NRC doing that.

You expressed your concern that if NRC is the licensing agency, then WCS would need a separate NRC license GTCC disposal cell, instead of being able to dispose of GTCC waste in its existing or WCS's existing federal waste disposal facility cell.

Do you think there is a clear relationship between who does the licensing, which agency does the licensing and whether WCS will need a separate GTCC cell? I mean couldn't NRC decide that disposal in the

existing cell would be adequate and couldn't Texas decide that disposal in the existing cell wouldn't be adequate?

MR. KIRK: Yes, I think they could do that. And my thought is we don't know what the technical requirements are now, what the NRC is thinking from a technical standpoint. So, it is hard to envision all of the different scenarios.

Where I stand today is my thought was we would have a separate disposal facility just for the GTCC and it would be a very small volume and we would not want to comingle the other types of waste that we receive from the Department of Energy at our federal waste disposal facility. That was my thought. But we haven't seen the technical requirements so, it is hard to answer that question.

I mean I guess if what you are getting at is if you place all the GTCC waste that you have at the base of your disposal facility, and that is with the NRC license, I guess that would have somewhat of a footprint on it but other waste would go on top of it. There would be other waste that would be adjacent to it that the State of Texas would also have been regulated and authorized its disposal. So, for just the clear lines of demarcation, my thought would be we would have a single cell. But now again, these are new concepts that

we are just now starting to deliberate and understand ourselves.

COMMISSIONER BARAN: Yes, it is preliminary so it is hard to know exactly how it would look.

MR. KIRK: Exactly.

COMMISSIONER BARAN: So, I take it that one concern I am hearing is the idea of having two regulators at one site and that could be confusing or even two regulators on one cell and the problems that might cause.

Let me ask kind of a related but coming at it in a slightly different way, which is are we going to have problems or is the process going to be unnecessarily complicated if we have two regulators involved in the licensing or approval of a GTCC cell?

So, NRC regulations, as you know, and probably everyone on the panel knows, establish a presumption that GTCC waste will be disposed of in a deep geologic repository. But the regulations leave open the door to intermediate depth disposal, if the Commission approves it. And so, if Texas were to handle the licensing of a GTCC disposal cell, the Commission, NRC, would still need to approve any non-repository proposal.

Are you concerned -- and maybe start with

you but others on the panel could answer. Are you concerned that basically this essentially would create kind of a two-step licensing process that involves two different agencies; Texas would be the primary licensing entity but NRC would still have to review everything to satisfy itself that the alternative being proposed is an adequate alternative to deep geologic repository?

MR. KIRK: Let me see if I can answer your question. My thought is that with Texas, as an Agreement State and the NRC could work in a collaborative fashion. NRC could carry out its roles in licensing the facilities through the vehicle in the Atomic Energy Act, where Agreement States and NRC can work together collaboratively for the NRC to carry out its licensing functions and responsibilities.

So, it was my thought that the NRC would still carry out a licensing role as part of the review but Texas would be the licensing authority and it would be an amendment to our existing license as opposed to a brand new license that would be set apart from the existing license that we have with the State of Texas today.

COMMISSIONER BARAN: Okay and I know it is not really fair to ask you to outline what you think the NRC process would be. We would have to figure that out

here. But what are you -- you have given us a lot of thought, obviously, and you are trying to think through the different possibilities and you talked a little bit about how you are envisioning what this would look like.

If Texas did the licensing but NRC still has its approval role, at what point in the process do you think would weigh in or would you expect NRC to weigh in? I mean would the licensing essentially have to be complete and then it goes to NRC and NRC says yes, that looks okay to us, it is not a deep geologic repository but it is safe. Or does it happen earlier than that?

MR. KIRK: My thought would be there would be early deliberations between Texas and the NRC. But the role of the NRC, at least I think they would want to look at is the technical basis that underpins the decision. Now, can you dispose of GTC and if so, how much? And that is based on the performance assessment.

So, the way I envisioned it, we would submit a license amendment to the State of Texas, like we do today. The NRC would have a role in the review of that performance assessment and the determination of any limits that would be established. And then once those limits were established and that process was defined, the license could be issued by the State of Texas but it would have been done so in a collaborative fashion with the NRC as envisioned under the Atomic Energy Act.

COMMISSIONER BARAN: Okay, thanks. That's helpful.

Dr. Makhijani, let me ask you. I know you expressed your view that all GTCC waste should be disposed of in a deep, geologic repository. If WCS, though, submits an application for intermediate depth disposal or, I think, Mr. Kirk called it enhanced, near-surface disposal, if we or Texas were to get such an application, do you have a view about whether NRC should do the licensing or Texas Commission on Environmental Quality should do the licensing?

DR. MAKHIJANI: Well, let me agree with Mr. Kirk on one thing, what he just said. You need to decide early whether there is a technical basis for this. If you take Dr. Burns seriously and just the one fact that Death Valley was under 1,000 feet of water 10,000 years ago, out of the starting gate, there is no technical basis. That kind of thinking is the foundation of my recommendation. So, there is no technical basis. NRC should early rule it out.

If you don't rule it out, at least you should respect Dr. Burns and I would like to find out what you exactly mean to say to him. With specific reference to the WCS site, is it going to be under five feet of water, 50 feet of water, no water? Is it going to be in howling desert winds that will erode everything

away? It is certainly possible. We are being told extremes of climate.

So, I agree. You should decide on the technical basis. You have been considering it for a while, though. What I would say is that you haven't done a very good job. It is that you have ruled out a lot of very good advice you have already gotten in favor of expediency. Not you, as the Commission, but certainly as the staff. Because I know the Commission with due respect, pardon my saying you, saying institutionally to the staff, because it has been very frustrating over a long period of time for two decades now, actually, more than two decades, I think.

And so, I would say yes, consider the technical basis. I would say if you revisit what the staff has done and presented to you, it hadn't done a very good job. So, decide this technical basis before it gets to the point of whether you are going to license or Texas is going to license because there isn't a basis to do it. There isn't a physical basis to it.

Mr. Kalinowski said if there is a technical basis, go ahead. How do you deal with the fact that no performance assessment can deal with the idea that Death Valley was under 1,000 feet of water 10,000 years ago, and we are talking about 10,000 years? I am actually saying tighten, shorten the period of performance but

do it properly.

COMMISSIONER BARAN: So your comment, as I understand it, is largely focused on site conditions and our ability to predict or not predict what those are going to be out into the future, which I understand.

Talk a little bit about, if you will, Mr. Kirk's points about features of the facility itself. Does any of that change your view when he describes modular concrete canisters and all the specifics of the facility, do you credit any of that? And does it lead you to believe that there is any GTCC waste at all that could be suitable for disposal on a site like that?

DR. MAKHIJANI: Well GTCC waste is generally long-lived. So, I would say yes, what WCS is doing in terms of the photos that I have seen here and other things that I have seen described, good for hundreds of years. So, I didn't say exclude all strontium-90 from near-surface disposal. I didn't say that. Quite high concentrations already allowed under Class-C. They are not nontrivial concentrations, thousands of nanocuries per gram, if I remember correctly.

So, I don't object to that because I do see a substantial of investment and care is taken to make those canisters and it is better in an arid environment. The experience with wet environments has been very bad,

generally. And so this is an improvement. But we cannot use this improvement of what we see today to negate the fact that these are very long-lived wastes and, basically, we are benefitting and we are dumping on our children -- well, children's children, future generations. And no structure that looks very robust today, if you can't even model or say what the conditions are going to be -- do we know how howling the winds are going to be in Texas and how much erosion there is going to be, followed by extreme rainfall and storms and hurricanes?

So, if we can't say that, how can we say whether these things are robust or not if we can't define the conditions under which we are requiring them to be robust? In a few hundred years, okay.

COMMISSIONER BARAN: Great, thank you.

CHAIRMAN BURNS: Thank you, Commissioner. Again, I thank everyone for their presentations. I think as Commissioner Svinicki said at the opening, I think this is a good opportunity for us to sort of start our deliberation and evaluation on this area and I will be the first one to confess for me that I am hardly at the deep geologic level in terms of my understanding of and barely near-surface. I will try but it is helpful to hear from all of you this morning.

I just have a question for Ms. Schleuter.

What I heard in your presentation that there are some other moving parts related to this issue beyond this, the question of whether the Option 1 or Option 2 that is in the staff paper. And if you could elaborate more. I think you were talking about in terms of the pending Part 61 rule, some of the questions on the waste classification tables. But could you tell me a little bit more about that?

MS. SCHLUETER: Yes, actually, I am beginning to think that the use of the word challenge in my script was a poor choice.

There is always moving parts and various pieces of the puzzle. And I think that the community at large, whether it is the industry, the NRC, the site operators or what have you, we are just always trying to look at that complete mosaic and to make sure that as decisions are made today, that we are thinking carefully about the implications in the future.

And so the waste classification table is just an example where within the context of Part 61, whether you do the limited rule or the large comprehensive rule, there has been this issue on the table from time to time as to whether the waste classification table should change and if so, how should they change. Should they incorporate more up-to-date science and so forth. And that is fine. It is just

another moving part and a factor that I trust the staff, as well as Texas, has probably given that some thought. They have got a lot of comments on it in the context of the earlier rule. It is not a critical path forward. It is not a bump in the road that cannot be overcome. It is simply making sure that the staff has thought through if you do go in the future and make decisions today and then change those classification tables, let's just make sure that we have thought through maybe what the impacts of that rulemaking would do, so that we don't have unintended consequences and have some sort of whiplash effect with regard to the way that waste is characterized and categorized under Part 61. It is an awareness issue. It is not a critical milestone.

CHAIRMAN BURNS: Okay, would anybody else like to comment?

Okay, Mr. Kalinowski, one of the points in your slides is there is a discussion in terms of when we look at the potential estimates for the volume of this type of waste that, as there is consideration in going into the extended life or, basically, second license renewal or some power reactors that may -- the volume may be underestimated, could you elaborate on that for me?

MR. KALINOWSKI: Well, there is two factors at play with estimating the GTCC waste from the

activated metals. On the one hand, as I noted, we tend to overestimate certain radionuclides, just to be conservative. On the other hand, there are some issues out there where plants are looking at extending reactor life beyond 60 years, which is going to generate some additional components.

The vessel materials, themselves, are going to reach, essentially, equilibrium. So you probably aren't going to see volume changes from that material in itself, but you are going to increase the amount of material from consumable components and then also, as I said, there are some new alloys that are being developed that may increase the amount of GTCC waste, just because they are actually using quantities of certain elements that are measurable in the alloy, as opposed to being a de minimis value.

CHAIRMAN BURNS: Okay, thank you.

And Mr. Kirk, one thing I would appreciate if you would elaborate on, you talked about in terms of where things were in let's say about 1981 or in the context, I think, the early rules. And so the assessment basis for determination, you know the acceptability and that we are at a different place today. Help me again, in terms of understanding what are the differences.

Are the differences related to the -- I know

you showed the picture of a disposal at Barnwell versus the manner in which your company is managing waste. So, I am just trying to understand what are the differences that help me understand the path today, why that path might be a better one, in light of what exists in either existing requirements or existing assumptions might be.

MR. KIRK: Let me see if I can capture that. I will start with the waste classification table. Class-C waste that was defined back in 1981, it has a bar of such value. And that was based on a set of assumptions that went into the Draft Environmental Impact Statement. When the Draft Environmental Impact Statement was developed back in the late 1970s, they assumed that that facility was located in a human environment, primarily on the East Coast. They assumed that there was a shallow water table that someone could drink from, that someone could use it to irrigate their crops. They assumed some agricultural resident was on the site itself. They consumed the food products. They drank from the water itself. That was the basis for how they determined the Class-C limits back in 1981. If you look at our facility, the Class-C limits wouldn't be here. It would be much higher because the assumptions are completely different. At our facility, the waste is disposed of, it could be at very deep depths. The only way that someone could actually

probably receive an exposure would be to drill through all of those MCCs. And to my understanding, that would be a very technical challenge for a driller. So, that is really not feasible but you could envision that potentially happening. And we own all the mineral rights at the facility. So, even assuming that someone could come there at some point in the future, if they are drilling for oil, there are some institutional controls that would also -- that would be abated, if you assumed that its controls were durable controls.

Our water table, it is deep. It is 600 to 800 feet. It is not really -- looking at existing practices today, people do farm but they farm about ten miles north of the facility, where they actually irrigate crops because they use a water source that is available. There is not a water source available at our site today that people actually use to irrigate the crops.

The water that we get today is not from an on-site drinking water well. It is pumped in from Eunice. It comes from a completely different portion of the country. So, those exposure pathways that were evaluated back in 1981 just don't apply at our facility. Now, you don't have the drinking water source. You don't have the irrigation source. It would be very hard for someone to drill through that waste to bring it to

the surface. And to me, at least in my mind, that is the only scenario that one can envision where someone could be exposed to greater than Class-C waste. And especially if you put it on the very bottom of the disposal facility or near the bottom because they would have to drill through each of those MCCs. As you saw them, they are very robust. They are dense. It would be very difficult to drill through those.

CHAIRMAN BURNS: Okay, yes, that helps. But I think from what I understand from your answer, part of it is looking -- it may be the question of the location where you are versus if we did out here in Rockville Pike in terms of the nature of some of the geology or the meteorology and those types of issues, the question of the standards and you have it from your perspective, in terms of looking at how the licensing goes, there is some advantages from that.

MR. KIRK: Yes.

CHAIRMAN BURNS: Yes, okay. Dr. Makhijani, I wanted to touch on one question. I want to make sure I understood the point you were trying to make on the question of the intruder versus the member of the public. And as I say, at one level, I am trying to understand perhaps the semantic difference and why it matters, in terms of your comments. Because again, as you say, often we think of the word intruder in

pejorative way. I can think of worse ones of trespasser, or we could probably go on. But I am trying to understand in the context of your comment in terms of the protection that needs to be achieved, what the importance is from your perspective.

DR. MAKHIJANI: Thank you, Chairman Burns. Well, as you know, in the proposal, the intruder would be allowed to get a higher dose than 10 CFR 41(a) or (b), the proposed (a) or (b), and that would be beyond 500 years. And my point simply is once you, yourself, have said there are no barriers or institutional controls, by definition, there cannot be an unauthorized presence, whatever you want call it. If you call it intruder, okay.

There can only be intruders when it is unauthorized. So, while there are barriers and while there are institutional controls, certainly somebody who goes onto the site when you are telling them in an effective way, don't go, you would be hurt, then I think it is okay to say on the sign, you are going to get a radiation dose more than a member of the public, stay out.

But after your signs and barriers are gone, I don't believe you are in a technical or moral position to tell anyone that they should get a higher dose than a member of the public is allowed during the period of

operation or post-closure less than 500 years because everybody is a member of the public. If you admit somebody can go on and live on the site, that is a member of the public. That is not an intruder.

So, I think the whole concept of intruder, as proposed in the regulation, is wrong.

CHAIRMAN BURNS: Okay, thank you. That helps.

Commissioner Svinicki.

COMMISSIONER SVINICKI: Well again, I add my thanks to each of you for participating in today's meeting. Again, a lot of ground has been covered but there is two issues that I think pose some unique complexities, at least that has been my experience as a commissioner, I think in both cases, answering the question of how did we get to where we are today, you have to look at kind of a complex history of a fabric of different accretion of knowledge and changes over time. Low-level waste is one of those areas. Medical use of nuclear technology, Part 35, that is another one, at least for, personally, is very complicated. So that when something arises, you kind of have to fasten your seatbelt because you are really going to have to pour into it.

I do appreciate some of us are visual. Visual information helps. So, I do appreciate the

photos that were provided of WCS. I would note, though, as someone who has visited there that I think it is very hard to get a sense of the scale. I did have an opportunity five or six years ago to go and stand at the excavation level of one of the disposal cells and I think the scale is hard to understand from the photo. But without opining on some of the practices of disposal throughout our atomic history in this country, which is the practices of the past were quite different but when one visits a modern facility like that, I think visiting, there is, at least for me, no substitute for that maybe because I am kind of a visual person.

One thing that my colleagues didn't explore, Ms. Schleuter, and I do appreciate that Ms. Schleuter and Dr. Makhijani talked about the interfaces with Part 61 and other things. I think it is very difficult to discuss these issues. So, one by one, I think sometimes we stovepipe our thinking and, as an end result, we don't really look at all dimensions in a way to help us arrive at the strongest conclusion that we can.

There was some discussion that the industry tries to minimize the generation of GTCC waste. I would like to hear a little bit more. I think it was touched on in passing that is just some of the modern management practices.

And then my other question was at power plant sites I visited, it seems some of the GTCC is stored sometimes on the ISFSI pad, the independent spent fuel storage installation pad and some of it might be in the pool, if it is activated components.

Could you talk a little bit more about -- I will limit it because I think that is who we have at the table for power plant sites -- what are the current storage methods? And then what are the minimization of generation methods that are used?

I don't know which of you that is.

MR. KALINOWSKI: I will try and answer the question. You are correct, some sites will store GTCC waste, hardware-type materials on their ISFSI pads, essentially, because there is no place else to put it.

A lot of it will also be stored in the spent fuel pools. And that is usually the primary, or at least the initial storage location because when it is taken out, there is high dose rates. If they have room in the pool, they just as soon leave it there until they have some need to move it. The practice of leaving it in the pool for a certain amount of time also allows radioactive decay to reduce the dose rates to the point where it can be more easily handled and placed into dry storage containers. Dose rates from this material are primarily driven by cobalt-60, which has a five-year

half-life. So, if you wait five years to move it to dry storage, then you have essentially gotten rid of half of your radiation problem.

Again, the types of materials that they are storing are going to be limited to some of their more exposed hardware. In the case of decommissioning plants, usually it will be the actual core area of the components, not the fuel but the core structure.

COMMISSIONER SVINICKI: Okay, thank you.

MR. KALINOWSKI: Have I answered your question?

COMMISSIONER SVINICKI: Yes, thank you.

Ms. Schleuter, are there any broad insights you could give from the more diverse community on the fuel cycle facilities or other materials generators? I know some use sealed sources and so there is probably tremendous diversity and variety in the other categories.

MS. SCHLUETER: Absolutely there is. There is tremendous diversity based on the inventory type, the form, whether it is stored in vaults. But I have been assured by the people that I have reached out to on this topic that most of the time these or all of the time they are in controlled and secured areas. It is just the level of intrusion detection and monitoring and so forth that is commensurate with the security

program that is licensed by either the NRC or the Agreement State but it does vary tremendously.

COMMISSIONER SVINICKI: Okay, thank you. Thank you, Mr. Chairman.

CHAIRMAN BURNS: Thank you. Well thank you, again, for the presentations.

With this, we will take about a five- or six-minute break. Thank you.

(Whereupon, the above-entitled matter went off the record at 10:20 a.m. and resumed at 10:29 a.m.)

CHAIRMAN BURNS: Welcome back, everyone, and we'll start our second panel when I find my script here, which I have folded into some of my other papers.

Again, we will have our second panel, representatives of other federal and state agencies, as well as the NRC staff. And I'll start this morning by recognizing Mr. Frank Marcinowski, the Deputy Assistant Secretary for Waste Management in the Office of Environmental Management at U.S. Department of Energy, who will begin our second round of presentations.

Welcome, Mr. Marcinowski.

MR. MARCINOWSKI: Thank you, and thanks for having me here this morning. We believe this is a quite important topic that, if you go to my next slide there, you'll see that the original legislation that required the Federal Government to take responsibility

for this -- site of the disposal facility, happened some 30 years ago.

So I think it's time that, you know, we make some progress on this. And we are working to do that, and I think we've got a good start here, working with the NRC staff and with the state of Texas.

The second piece of legislation related to this was the Energy Policy Act of 2005, which had a somewhat unusual requirement with regard to NEPA documents and siting facilities, and that was that after we published our final EIS, we are now required to submit a report to Congress before the Department can take any action in actually siting a facility.

So we've got to submit the report, wait for a response from Congress giving us direction, before we can actually take that final step in selecting a facility. And we have started some discussions with Congress to try and understand exactly what does that mean, and, well, I think it's still to be determined.

Next slide, please?

And there are some important drivers here, too. There is the sealed sources issues, you know, national security concerns. The Department is making some forward steps right now in developing a moly-99 program, which is important for medical uses. And as part of that, there is going to be a waste take-back

program that the Department is going to have responsibilities for. Some of those wastes that may be generated by that are greater-than-Class C waste, or, you know, greater-than-Class C-like waste that, you know, the Department would have responsibility for, but it doesn't fall under NRC regulation.

And not to mention just the forward steps we need in moving our cleanup program forward, because we are reaching a point at some of our sites where we have -- you know, we have been able to deal with a lot of the easier type of waste forms, and now we're getting to those that are the more difficult ones to deal with, and at some of our sites that would fall into a category that, you know, we have identified as GTCC-like. You know, it's Department-owned material, not under NRC regulation, but it has, you know, the same characteristics that greater-than-Class C waste has, and we have no disposal path for that.

Next slide, please.

So these are the two types of categories of waste that we have identified in our EIS, which I just mentioned the GTCC-like, which is -- or GTCC waste, which is everything that falls under NRC is commercial regulated.

And then there is the GTCC-like, which is the Department's -- it's not a formal waste

classification, but it has got the same characteristics. It is a waste form that we wanted to address as part of this EIS as well.

And probably the most prevalent of the Department's own waste in this category is the non-defense transuranic waste, primarily at West Valley, which just doesn't have a disposal path for. I mean, it's identical to transuranic waste. It's just -- it's got this label of non-defense on it, and it -- you know, it's just something we don't have a -- we cannot legitimately dispose of at the WIPP facility.

Next slide, please?

And this is the snapshot of the inventory that we analyzed in the EIS. We estimated, and I think it was mentioned in the earlier panel, that it was probably conservatively 12,000 cubic meters of this waste. And you see the breakdown there that, you know, most of it is commercially owned or, you know, NRC regulated, and then there is, you know, a fourth of that that is DOE owned.

We have separated the waste into two waste groups as well, and this is primarily, you know, the activated metals, the decommissioning that comes from nuclear power plants. It's probably not going to happen for some time, as I think was mentioned in the last panel. And so, you know, but I think the more

immediate concern for us is the -- you know, the non-defense TRU waste, the sealed sources that currently don't have a disposal path, any waste that we are going to, you know, be responsible for from this take-back program to help with medical isotope issues. Those are the more immediate concerns as we see them.

As I mentioned, West Valley is the primary concern for us, but, you know, there still are significant sealed sources, ones that we have been recovering actually through our offsite recovery program, that the Department has been collecting these -- some of these sources, but -- and we have been trying to find a way to dispose of them, be able to do that.

But the other thing that this would actually -- if we identified a facility, we are -- the Department is also -- has the ability to cost recover from this commercial entity that actually owns these sources. And up until now, we have not been able to do that. And so it's a benefit to the taxpayer and the Federal Government if we are able to make some strides in this and get some programs in place that allow us to take that step and establish a cost recovery program as well.

Next slide, please.

These are the alternatives that were

evaluated as part of the EIS. We looked at the whole range from no action, geologic repository, boreholes, trenches, vaults, you know, from shallow land burial to intermediate disposal to deep geologic disposal. Broadly, what we found is that for sites that were in a wetter environment, such as Hanford -- we looked at, you know, federal facilities as well as some generic commercial facilities, that Hanford, Idaho, Los Alamos, Savannah River, sites that were in wetter climate with a shallow groundwater table, there were potential impacts that could be seen from those type of facilities.

When we looked at the Nevada test site or WIPP, there were no impacts that resulted from our analysis. And then we looked at commercial disposal facilities, and it was the same thing. In a human environment, there are potential impacts. In an arid environment, we didn't see any impacts from the analysis.

Now, it is important to note that we didn't specifically analyze WCS, so that, you know, when we -- if this were to move forward, we would have to do some follow-up NEPA action that would specifically analyze the WCS facility. But the first step is for us to move forward and finalize the EIS that we currently have in hand.

Next slide, please.

And this is just a recap of the analysis. This is pretty standard for NEPA documents. The range of things that are evaluated as part of that, as well as the cumulative impacts. It was done over a 10,000-year period, and I think we covered most of the other items.

One other item is that for those options that we looked at in the last slide, we assumed that the entire waste inventory would go into each of those sites that were -- or options that were evaluated. So it was the total waste inventory that was looked at and the impacts from that.

Next slide, please.

We got significant public comment. As a result of that, we summarized the comments. I don't think any were unexpected. And we addressed those in what will be a response to comment document that will come out along with that. There are transportation as well as technical issues. I think we saw some support, particularly from -- you know, within New Mexico for the WIPP site. There were the environmentalists who were, you know, in opposition to that.

But the state and the -- the state regulator was supportive of that moving forward, and, you know, we saw a variety of responses depending on, you know,

where the site was, you know, and then the -- particularly, it goes back to the -- you know, the wet versus the dry environment.

And with the folks in the wetter climate supposing it, and particularly where we had cleanup sites that were active cleanup sites where we were supposed to be getting out, they didn't want to put more curies back into those facilities.

Next slide, please.

And this is just a list of the factors that were considered to developing a preferred alternative. There was no preferred alternative in our draft document, because I don't think we were ready. There were too many uncertainties at the time. There were regulatory uncertainties. There were various factors that I don't think made it a good time for us to come out with a preferred alternative.

I think in the years since we've put the draft out, there are -- some of those factors have cleared up, and so I think we are ready to move forward with a preferred alternative. I don't -- well, you know, it hasn't gone through the entire departmental approval process yet, but from -- you know, I think what we would like to see is options.

I don't think, you know -- I think, you know, it may look at, you know, one or more facilities

that could be used for this. I mean, you've got -- well, there's transuranic waste there. There's an obvious location for transuranic waste. But then, you know, WCS is also a very viable alternative for, you know, some, if not all, of this waste as well.

So I would expect -- or I would predict that you might see, you know, multiple options identified as a preferred alternative when we publish that document.

Next slide, please.

And this is just a process moving forward. We have prepared the final EIS. We are hoping that in the next -- hopefully by the end of the year, if not shortly thereafter, we will publish the final EIS. Then, I mentioned the report to Congress that we've got to wait -- got to put together and submit to Congress. The box has the list of factors that we are supposed to cover in that.

Then, we await congressional action, and then hopefully we can move forward with a record of decision.

I really can't speculate on timetable there, because the awaiting congressional action, I just don't know what that entails at this point.

And next slide? And this is my last slide. So we are currently finalizing the EIS. Like I said, we're hoping to get that published in the next few

months, and that -- I think the preferred alternative will have options in it. It will be multiple facilities, is my prediction.

That's the end of my presentation.

CHAIRMAN BURNS: Well, thanks very much.

And next we'll have from Charles Maguire, the Director of the Radioactive Materials Program at the Texas Commission on Environmental Quality. Welcome again, Mr. Maguire.

MR. MAGUIRE: Thank you, Chairman, Commissioners. It is good to be here with you again.

I love the opportunity to leave the 102-degree temperatures in Texas and come. It was so pleasant last night driving from the airport up here, and the -- I put the windows down in the cab, just so I could grab the full benefit of it. It's great to be here.

We enjoy the opportunity that we have to brief the Commission. We think there are some very important policy issues that are at stake, and today is no exception. And so it is really an honor to be here.

I wanted to compliment NRC staff for their work on this. I think back in January when we sent our letter the -- we understood that this was an extremely complex issue. That may be the all-time understatement.

Your staff -- we have worked with them closely. We consider them colleagues. They treat us that same way, and that's a real difference in terms of some of the other work that we do with our federal partners. But it has been a really good experience for us, one where we have learned a lot.

I hope, as you have looked into the materials that they have provided you briefing you for today's efforts, that you perhaps fully understand why we felt the need to send you the letter. We looked at this. We did not think it was -- there was a clear regulatory pathway, and so we felt like we needed to find out in order to be able to respond to the rulemaking petition given to us by WCS.

So second slide, please.

So to make a point of what we are asking, at the request of TCEQ's commissioners, staff initiated discussions with NRC headquarter staff related to potential amendments to Texas rules related to the disposal of GTCC, GTCC-like, and TRU waste streams, separate and commingled.

Specifically, we wanted to know if Texas' role as an agreement state for federal statutes, NRC rules, and 10 Code of Federal Regulations 61.55, and Section 274(b) of the 1954 Atomic Energy Act authorized promulgation of state rules that could license GTCC

waste streams for disposal.

The second question -- and maybe the real point of the letter -- is could the state of Texas authorize the disposal of the waste that DOE currently holds or is required to take possession of that is GTCC, GTCC-like material, considering that some of that material exhibits transuranic characteristics and may currently be commingled.

So why are we asking that? And I think maybe from our discussion it is somewhat obvious, but we were given a rulemaking petition on September 10, 2014. The TCEQ Commissioners considered that petition where WCS was requesting a change to TCEQ rules to remove prohibitions against the disposal of GTCC, GTCC-like, waste streams, including those commingled with transuranics at the Texas licensed facilities in Andrews County.

Current Texas law, and in part federal law, did not establish a clear regulatory pathway with technical requirements for disposal of all of those -- GTCC, GTCC-like, and TRU waste streams.

The TCEQ Commissioners requested staff to initiate discussions with NRC and DOE regarding potential amendments to the Texas rules, including definitions that would be consistent with federal and state law and the regulatory role of Agreement States

in the disposal of these types of waste.

To engage in a well-informed stakeholder process, which our rulemaking requires, we really have to have adequate and clear information from our federal partners to be able to inform stakeholders adequately if we were to proceed with a rulemaking.

So where do we go from here? If there is an established pathway, and that -- I'm sorry, that would be the fourth side. If there is a pathway established that would allow Texas to license the disposal of those waste streams, subject to conditions set forth by the NRC, then the next step would be for Texas to conduct its rulemaking process.

Ultimately, the TCEQ Commissioners would decide if there is to be a change in the Texas rules. If Texas issues a final rule to remove the current prohibition, then it is likely that WCS would apply for a license amendment that would, if approved, allow for the disposal of these waste streams.

The amendment request would have to be evaluated and complete our public participation process prior to the approval or issuance before any greater-than-Class C, greater-than-Class C-like, or transuranic waste could be disposed of at the WCS facility.

The most critical aspects of our evaluation

of that rule will be TCEQ's review of WCS's performance assessment prepared by WCS, as well as some other information required by Part 61. Because the performance assessment and other requirements in Part 61 are vitally important to establishing and ensuring a consent-based site for disposal -- and I've made the point before, it's one thing to get the consent to establish the site. It is quite another to maintain that consent. And so the performance assessment approach is going to be vitally important if we are to proceed with this.

We are working closing with NRC staff already. It is really good for us to have access to them and make them a part of our process. We have had a lot of dialogue back and forth about the performance assessment model that WCS has provided. That model is in a constant state of improvement and revision.

It is probabilistic as well as deterministic, and so we can look at very adverse circumstances to look and see how it affects the dose. And we can then take that sort of in the concept of defense-in-depth and look at what sort of license conditions we might need to have to be able to make the disposal of this work.

I want to be clear: we are not at an endpoint on that yet. We don't even have an application

for an amendment to the license. But we are working -- we are working very closely with NRC staff. They are extremely capable.

While it's 102 degrees in Texas, I don't expect any of them to want to move to Texas. But maybe when the snow is eight inches deep up here, maybe I can make an offer. But the --

(Laughter.)

We are working with them. It's good. It's improving the model. WCS has been very responsive to our request, and so we are trying to move forward with that.

Thank you, and I look forward to your questions.

CHAIRMAN BURNS: Thanks very much, Mr. Maguire.

We will next hear from the NRC staff. We have with us today Mike Weber, the Deputy Executive Director for Materials, Waste, Research, State, Tribal, and Compliance Programs. Cathy Haney is the Director of the Office of Nuclear Material Safety and Safeguards. And Larry Camper, who is the Division Director within the office.

So, Mike, I'll let you all begin.

MR. WEBER: Good morning, Chairman, Commissioners. It's a pleasure for the staff to brief

you this morning on this rather complex topic, and also to participate on this panel of government agencies with our partners, Department of Energy and also with the great state of Texas.

I also want to take this opportunity, because it's the first public event since yesterday's announcement, to thank the Commission for promptly and very effectively appointing Victor McCree as the next Executive Director for Operations. We look forward to continuing to work with Victor in his new capacity, and we will commit to ensure a smooth and effective transition for that.

I want to start by -- and I'm on Slide 3 of our presentation -- by beyond just discussing the purpose of today's briefing, which is to brief the Commission and public on the analysis and recommendations that the staff has already shared with the Commission.

Just to provide a little historical context, in the 30 years since the Low Level Radioactive Waste Policy Amendments Act was passed by Congress, we have come full circle on this issue. At the time, in the 1980s, there was a concern that the obligation to dispose of greater-than-Class C waste would be a high hurdle or a barrier potentially for states moving forward with the development of their low level

radioactive waste disposal facilities.

And so the Act reserved this to the Federal Government as a federal obligation. Hence, the Department of Energy's involvement in our briefing today. But despite that 30 years, and all best intentions, as reflected in the framework, little progress has been made on providing for disposal capacity for greater-than-Class C waste.

So now we have a state, the state of Texas, coming forward and offering to assist the government, the nation if you will, by posing this question about the legitimacy of a state regulating the disposal of greater-than-Class C waste.

So with that brief introduction, I will turn it over to Cathy Haney, and then Cathy onto Larry.

MS. HANEY: Thanks, Mike.

Good morning, Chairman and Commissioners. Before I begin my formal remarks, I'd like to make one note, and that is that this is probably Larry's last presentation before the Commission from the staff making a staff presentation. He will be retiring after 34 years of federal service. And while Larry has held many positions at the Nuclear Regulatory Commission, I think he will be most remembered for his work in the low level waste area, in the environmental area, and the decommissioning and the uranium recovery areas.

COMMISSIONER SVINICKI: Whether he wants to or not, he is going to be remembered for that.

(Laughter.)

MS. HANEY: And I would add that his dedication to the NRC mission and public service has helped to shape national and international policy in all the areas that I mentioned, as well as specifically what we will be discussing today.

So, Larry, thanks for all your work.

MR. CAMPER: Thank you, Cathy.

MS. HANEY: So, with that, I'd like to move to Slide 5, and I'll begin by focusing on the roles and responsibilities of greater-than-Class C waste. And in the Low Level Radioactive Waste Policy Amendments Act of 1985, or as we'll refer to today as the Amendments Act, Congress addressed all classes of low level radioactive waste, including that of the greater-than-Class C.

The responsibility for the disposal of greater-than-Class C waste was assigned to the Federal Government in the Amendments Act, and the Amendments Act also notes that NRC license generated GTCC waste, quote, "Shall be disposed of in a facility licensed by the Nuclear Regulatory Commission."

The Department of Energy has assumed the responsibility for the disposal of GTCC.

Next slide, please.

Regulating GTCC waste is addressed in Part 61 and Part 72. Part 72 discusses the regulatory framework for storage of GTCC, whereas Part 61 provides a limited regulatory pathway but no technical criteria for the ultimate disposal of GTCC.

The staff is working on several issues related to GTCC and transuranic waste disposal, and the first driver for these activities is the work that we heard about from the Department of Energy with regards to the environmental impact statement that we expect to see soon.

The second driver is a Staff Requirements Memorandum coming out of a briefing with the Commission in September of 2014 asking for a paper on the regulatory history and the disposal challenges.

And then the third driver is the January 30, 2015, letter from the state of Texas that we have heard about.

So with that brief introduction, I would like to turn the presentation over to Larry.

MR. CAMPER: Thank you, Cathy.

Good morning, Chairman Burns, Commissioners. It is a pleasure to be with you, of course. It is bittersweet. And, Cathy, I thank you for your comments. I want to focus upon the staff

activities in this challenging arena.

Next slide, please.

As you know, under Section 274(b) of the Atomic Energy Act, or AEA, the NRC may relinquish portions of its AEA-derived authority to states that have entered into an agreement with our agency that is Agreement States.

This is the genesis of the Texas question as to whether an Agreement State can regulate the disposal of GTCC waste. In 1985, Congress amended the Low Level Radioactive Waste Policy Act of 1980 -- let's call this LLRW from now on -- to clarify the responsibilities of the states versus those of the Federal Government.

As Cathy cited, the responsibility for the disposal of GTCC waste was assigned to the Federal Government in the Amendments Act, and it requires that commercially generated GTCC waste -- that is, GTCC waste resulting from activities licensed under the AEA by the NRC -- shall be disposed of in a facility licensed by the NRC.

Next slide, please?

Promulgated in 1982, 10 CFR Part 61 deals with the disposal of LLRW regulated by the NRC or an Agreement State. It contains certain provisions related to GTCC disposal. 10 CFR 61.7(b)(v) states

that there may be some instances in which waste with radionuclide concentrations greater than permitted for Class C would be acceptable for near-surface disposal with special processing or design, and these instances will be evaluated on a case-by-case basis, and that has happened.

On May 25, 1989, the Commission amended its regulations at 10 CFR 61.55(a)(2)(iv). It includes not only a provision whereby GTCC waste could be disposed of under Part 61, as approved by the Commission, but also the Commission's preference to dispose of GTCC waste under Part 60 or 63, recognizing -- at that time, recognizing that an intermediate disposal facility was not sufficiently developed, no intermediate disposal facility was proposed or planned by the Department of Energy, and the small volume of GTCC waste would not make a separate and intermediate facility cost effective.

The Commission chose to take an alternative and technically conservative approach versus revising the definition of high level waste as proposed in the associated advance notice of proposed rulemaking. The Commission recognized the possibility that the Department of Energy could choose to develop an intermediate facility and did not want to foreclose that option. The proposed rule noticed that such a facility would be evaluated against the performance objectives

of Part 61.

In the final analysis, this amendment specified that more stringent methods are to include geologic repository disposal, along with an explicit provision that proposals for other methods of disposal under Part 61 could be submitted to the Commission for its approval.

The Statements of Consideration for the final rule noted that the Commission found no health and safety basis to limit GTCC disposal to federal facilities, to the exclusion of other facilities licensed under the AEA.

Next slide, please.

What you have here is a Venn diagram that will show the relationship between low level radioactive waste and transuranic waste. I'll talk about this in some detail.

Next slide.

While GTCC waste may have a complex legislative and regulatory history, the issue of transuranic waste raises even more compelling questions. Transuranic waste is important because, according to the Department of Energy, most of the GTCC waste inventory has significant quantities of transuranic nuclides.

In response to the complex LLRW disposal

issue, Congress passed the 1980 LLRW Policy Act, which defined LLRW was radioactive waste not classified -- not classified as high level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in Section 11(a)(2) of the AEA.

As you are aware, LLRW is defined as what it is not rather than what it is. Therefore, according to the 1980 LLRW Policy Act, the definition of LLRW specifically provided that transuranic waste was not LLRW.

Next slide.

Part 61 defines LLRW consistent with the 1980 LLRW Policy Act. Specifically, in 61.2, LLRW means radioactive waste, not classified as high level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in paragraphs 2, 3, and 4 of the definition of byproduct material set forth in 20.1003 of this chapter.

Therefore, transuranic waste is explicitly excluded from the definition in Part 61 for low level radioactive waste. However, provisions describing the purpose and scope in 10 CFR Part 61.1 do not list disposal of transuranic waste among the activities specifically excluded under Part 61. Thus, the scope and the definition do not align.

Table 1 of the waste classification scheme

includes concentrations for transuranic nuclides. Hence, a rulemaking may be needed to address these misalignments, but we'll discuss this in more detail.

Next slide.

In 1985, the Amendments Act defines low level radioactive waste, or LLRW, as radioactive waste not classified as high level radioactive waste, spent nuclear fuel, or certain byproduct material. As a result of the Amendments Act, transuranic waste is no longer excluded from the definition of low level radioactive waste.

The NRC never made a corresponding change to Part 61, although we could have done so. As a result, the definition of LLRW in Part 61 does not align with the Amendments Act of 1985.

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1988, Congress passed Price-Anderson Amendments Act, which amended the AEA by adding the definition of transuranic waste to the AEA, defined as material contaminated with elements that have an atomic number greater than 92, including neptunium, plutonium, americium, and curium, and that are in concentrations greater than 10 nanocuries per gram, or in such other concentrations as the NRC may prescribe to protect public health and safety.

Therefore, the AEA uses 10 nanocuries per

gram in the definition of transuranic waste, but allows NRC to change the value as long as it protects public health and safety.

Next slide.

Consistent with the latter portion of the AEA changes, and based upon the NRC classification table, certain LLRW with transuranic nuclides was found to be suitable for a Part 61 disposal facility. Specifically, 61.55, in Table 1, alpha-emitting transuranic nuclides with half-lives greater than five years, and a concentration that does not exceed 10 nanocuries per gram, are acceptable for disposal as Class A waste. If they are greater than 10 nanocuries per gram, but less than 100 nanocuries per gram, they are suitable for disposal as Class C waste.

The Department of Energy has indicated that up to 87 percent of the non-defense GTCC waste contains transuranic nuclides with concentrations greater than 100 nanocuries per gram. Studies have indicated a more realistic number would likely be lower in percentage that would contain transuranic nuclides. Regardless of the precise amount, this is transuranic waste according to the AEA.

Next slide, please.

So let's turn to the Texas question that Cathy cited. Staff recently provided you with a

Commission paper, SECY-0094, 15-0094, addressing NRC's regulatory history on GTCC waste disposal with a discussion on the types of GTCC waste streams and disposal challenges, along with options for a response to the TCEQ inquiry regarding whether it possesses the authority to license GTCC and transuranic waste disposal.

The options are: Option 1, NRC would license and regulate the receipt and disposal of GTCC waste and waste control specialists and would pursue rulemaking to amend Part 61 to address transuranic waste disposal.

Option 2, the NRC would allow the state of Texas to license and regulate the disposal of GTCC waste, and NRC staff would pursue a rulemaking to address transuranic waste disposal under Part 61.

Option 3, no action.

Next slide.

Under Option 1, the NRC staff would need to perform a review of the license application, including the performance assessment prepared by the applicant and other information required by Part 61. Staff would also need to develop site-specific technical safety and security requirements for this waste disposal.

Because licensing GTCC waste disposal would be a major federal action significantly affecting

the quality of the human environment, we would need to prepare an environmental impact statement. After consideration of the staff recommendations, the Commission could then make the necessary determinations to address health and safety of transuranic and GTCC waste disposal under 10 CFR 61.55(a)(2)(iv), and make a licensing decision.

Because the NRC would be developing site-specific safety and security criteria, and license conditions for the disposal of GTCC and transuranic waste, we would not need to pursue a rulemaking necessarily under Option 1. However, the staff recommends that we would do this to address this issue generically.

Next slide, please.

Under Option 2, the state of Texas would authorize the disposal of GTCC waste. However, the Commission would have to approve a proposal from the state of Texas to license near-surface disposal of GTCC waste in accordance with 61.55(a)(2)(iv) again.

The NRC staff would be available to support the state of Texas in conducting the licensing action, including developing technical safety and security criteria, and could conduct a peer review if requested. Otherwise, the regulation of such disposal would be reviewed under the Integrated Materials Performance

Evaluation Program, or IMPEP.

On March 25, 2015, as Mr. Maguire cited, TCEQ requested the NRC staff to perform a peer review of a performance assessment model submitted to TCEQ by waste control specialists on GTCC waste disposal. The NRC staff has provided limited comments, and TCEQ has requested continuous engagement on this model.

To generically resolve the issue of transuranic waste disposal, the NRC would need to conduct a rulemaking to address transuranic waste disposal in Part 61 similar to Option Number 1.

Alternatively, the state of Texas could license the facility for the disposal of GTCC and GTCC-like waste only. However, this is impractical, given that approximately 13 percent of the total volume of GTCC waste is not contaminated with transuranic nuclides with concentrations greater than 100 nanocuries per gram, and it would not provide a generic approach.

Next slide, please.

Under Option 3, the Commission could decline to extend the Part 61 licensing scheme to allow near-surface disposal of GTCC and transuranic waste at this time without further development of safety and security regulatory framework.

The GTCC and transuranic waste streams can

continue to be safely stored until geologic disposal is developed for these wastes. The NRC would advise the state of Texas that the state does not have the authority to license disposal of GTCC waste or transuranic waste without Commission approval or further action.

Next slide.

So, in the final analysis, the staff recommends Option 2 with rulemaking to address the disposal of GTCC and transuranic waste. The staff's recommendation would provide a pathway; that is, the Commission's consideration and direction to address the jurisdictional question raised by the state of Texas.

The rulemaking, at a minimum, would address the transuranic waste definition in Part 61, which I cited as problematic, and offers the benefit of providing generic regulatory requirements for the disposal of transuranic waste and perhaps for GTCC disposal as well.

Additional practical efficiency would be achieved as Texas has already licensed the waste control specialist facility for disposal of Class A, B, and C low level radioactive waste.

That concludes my comments, and we will await your questions.

MR. WEBER: That concludes the staff's contribution to this panel, and we are happy to listen

to your questions and comments. Thanks.

CHAIRMAN BURNS: Thank you all for your presentations.

Commissioner Ostendorff will lead off with questioning.

COMMISSIONER OSTENDORFF: Thank you, Chairman.

Thank you all for your presentations. I had the privilege years back when I was at DOE to work with Mr. Marcinowski. And, Frank, it's good to see you here today. I appreciate your continued service on dealing with difficult problems.

MR. MARCINOWSKI: My pleasure.

COMMISSIONER OSTENDORFF: Some things never change.

Let me ask you one question. I appreciated the overview you provided from the Department of Energy's perspective of the different types of waste and the EIS issues. That was very helpful. I think I have a pretty straightforward question. With respect to the decision that we have before us, whether the NRC or the state of Texas would license a waste control specialist facility for greater-than-Class C waste, does that have any impact on the Department of Energy or your EIS in any way as far as a licensing body?

MR. MARCINOWSKI: I don't think it would

have any impacts on the -- our completion of the EIS. And, I mean, we have dealt with, you know, multiple regulators at, you know, many of our sites already, but they have, you know, regulated for different purposes. I mean, the state or regulators for the RCRA, you know, the Federal Government, whether it be EPA or somebody else, would regulate for the rad portion of things.

So we are kind of used to working in that environment. I'm not sure how that would apply here, particularly since we have an agreement with the state of Texas for who is going to take ownership of that site, you know, once it's all done. And if we've got intermingled waste, I mean, we'd have to see how the lawyers felt about that before I can give you a good answer.

COMMISSIONER OSTENDORFF: Okay. That's fair. Thank you.

Mr. Maguire, thank you again for being here. I think your presence, you know, highlights to us, reminds us of the importance of the Agreement State partnership we have with Texas and all of the other Agreement States. And it's good to see you again. I, again, appreciated my visit down to your facility back in February of this year, and I have always been impressed with the scope and the professionalism of your organization. So thanks for being here today.

I think we all agree with your comments about this being a very complex issue. And I think where -- I speak for myself -- I think the other Commissioners as well would probably agree -- that we appreciate your sending the letter to us when you did, because I think certainly it put it on our plate, the staff's plate, and I think you have asked an important question. It's not something you can answer in 24 hours. So thank you for your proactive work there.

Let me ask you a question. Larry -- I'm going to come back to Larry later on with questions, but Larry mentioned, you know, if asked, the NRC staff could pursue a peer review if the Commission made the decision to have Texas proceed as a licensing entity here.

Can you speak a little bit about -- or your initial thoughts on what technical assistance or particular technical areas might be helpful if the Commission approved the staff's recommended Option 2?

MR. MAGUIRE: Well, and we have already started with staff to ask that they peer review a very draft version of the performance assessment that would include some GTCC inventories in it. I think that's a large area is working with the performance assessment model.

And, again, this model is probabilistic. We can twist the knobs and punch some buttons and make

it deterministic. I mean, we can look at -- we can look at lots and lots and lots of scenarios with that model, but the key thing is -- is when the model is developed, that the best possible science undergird those algorithms and assumptions that are made in putting the model together.

The NRC staff is very, very, very capable when it comes to looking at the model development, the kinds of things that need to be considered when putting the model together. And so that is a big one. But I think -- I think as the model develops, and as we learn to work with the model -- and I think NRC is headed down a pathway where performance assessment models are going to be a major component in most waste disposal decisions.

As we look at that, our view is, as we also think about the model in terms of defense-in-depth, it will drive licensing conditions. And so clearly if the site were only going to have Class A waste, no depleted uranium, no greater-than-Class C, no B and C waste, the kind of belts and suspenders that you have to have around waste disposal are certainly less. They are still large, but they are certainly less than what they would have to be as you begin to ramp up what kind of waste you dispose of.

And I think that's the area where we would

expect to have lots of integrated conversations with NRC staff in terms of looking at the kinds of license conditions, the kinds of requirements that would really allow us to turn around and say as the state of Texas, working with our federal colleagues, that we have applied the best science we have available.

I don't think Texas would want to turn its back on any source of good science to help it make those decisions. And so certainly coming to NRC would be a very active part of the way we see putting together a license, should we ever get to that point.

COMMISSIONER OSTENDORFF: Thank you. I appreciate that.

Larry, I want to add my thanks to those of Cathy Haney's to you for your service. I know when I first got here we traveled out to WCS and LES back five years ago, and I participated, along with you, in a number of waste management symposia and conferences, and I've seen firsthand the respect that you command nationally and internationally in the areas that you have addressed so capably in your position.

And I think you are just a great example for our entire organization as to technical competence and professionalism across the board, and I just want to thank you for all you have done for everyone, not just the NRC but for the country.

MR. CAMPER: Thank you.

COMMISSIONER OSTENDORFF: That doesn't mean you get off without questions.

(Laughter.)

MR. CAMPER: No. I know how that goes.

COMMISSIONER OSTENDORFF: So let me start out, you know, with the recommended Option 2 before the Commission. Can you -- you know, if the Commission were to approve that, can you talk a little bit about what criteria the NRC staff would use to evaluate the Texas approach? And Part 2 to that would be, and what, if any, Commission direction might we want to consider providing to our staff to address such criteria?

MR. CAMPER: Thank you, Commissioner, for your comments, and thank you for your question.

I think it's important -- if one looks at Option 1, or one looks at Option 2, or one looks at Option 3, the question that comes to one's mind always is, is there a standard? Is there a criteria? And there would be under any one of these options, but let's talk about Texas in particular.

The staff would work with Texas to develop the technical criteria that Texas would need to address as part of its licensing process. A good place for us to start is the technical information that is contained in Enclosure 2 to the SECY that we provided.

There is a great deal of technical information in there that Texas could use as a starting point, and we would work closely with them, assuming they ask us to do that and we know that they will.

It is also important to understand that if the Commission decides to approve Option 2, it is only the first act in the play, if you will. Texas, under the conditions required by 61.55(a)(iv), (b)(iv), (2)(iv), require that a proposal be submitted. That proposal will be multi-faceted.

It is going to identify what are our technical criteria that's pertinent. It is going to identify the licensing process. It is going to identify what hearing process Texas has, because the Commission has to be positioned to make a decision if it's comfortable with allowing Texas to proceed to license the site. So there are many parameters that will go into that proposal.

Charles, in his comments, emphasized the performance assessment. The performance assessment is a key driver. I listened to all of the presentations today about decisions that were made in 1982 and 1989, and the world has changed. The operating parameters for the disposal of low level radioactive waste today is quite different than was envisioned when previous Commission decisions were made.

That performance assessment and what it identified that that site is able to dispose of will be paramount. We will work closely with the state of Texas. We have already started that process to review that performance assessment, and we will work closely along the way, so that if we ever get to the point that Texas comes with a proposal to the Commission, we will know that that performance assessment passes muster.

COMMISSIONER OSTENDORFF: Thank you.

Mike, did you want to --

MR. WEBER: Yes. If I could just add, there are a range of alternatives that would be used to come up with the siting -- or the criteria. And the staff would be happy to work with the Commission to put forward proposals for the Commission to consider.

Ultimately, it will be the Commission's call on what those criteria should be. So, but we didn't want to be presumptive in going forward and developing those criteria until we knew where the Commission stood on the policy matter.

COMMISSIONER OSTENDORFF: Thanks for that explanation. Thank you, both.

Thank you, Chairman.

CHAIRMAN BURNS: Thank you.

Commissioner Baran.

COMMISSIONER BARAN: Thanks.

Mr. Maguire, thanks again for being here. It's good to see you again.

Let me start with a real -- maybe the only basic question on this whole topic, which maybe is obvious, but I just want to confirm, should we interpret your letter to us to mean that TCEQ would like -- would prefer to do the licensing rather than NRC, of this facility?

MR. MAGUIRE: Yes. I would just start by saying the letter that I sent you is probably the most difficult letter I have ever had to write, because I had to ask you if I could without saying that I have already decided that I want to. And so I -- I drove our attorneys up the wall, my management up the wall. The letter was edited more than once, I'll just say that.

(Laughter.)

Probably a couple of order of magnitudes over that. But it is true, and it would be fair to say, that if we are going to have greater-than-Class C waste streams being disposed of in Andrews County, Texas, I think we would prefer to be the licensing authority.

And for some of the things that have been mentioned, now we -- saying that, we do have a marvelous relationship with the Nuclear Regulatory Commission, and we could see ourselves surviving I think if the Nuclear Regulatory Commission were to be the licensing

authority. But there would be a strong preference in Texas for us to be out in front in terms of that licensing activity.

There would also be a very strong preference in Texas that if we are out in front that we have the full embraced endorsement of the Nuclear Regulatory Commission with what we are proposing to do.

COMMISSIONER BARAN: Okay. That's very helpful. Would you have any particular concerns with NRC doing the licensing? If we opted to go with NRC doing the licensing, are there concerns you would have with that?

MR. MAGUIRE: I think the single biggest thing we would want to talk about is how the disposal cell was placed, and I think we sort of have a basic assumption that if greater-than-Class C waste is being disposed of in a disposal cell, it would need to be on the bottom of it.

And so we would just have lots of questions about what is going to go over the top of that, and so is it -- would it be a sale that had waste in the bottom and then lots and lots and lots and lots and lots and lots of sand? You know, another 90 feet of sand on top of it.

And those would be really, really important considerations to us. We would be asked, I'm sure, by

the people that we report to what impact that then would have on the performance assessment for the site as a whole. We have a very strong sense of obligation that the compact facility continue to have not only curie space and cubic feet available but dose to the public available for decommissioning of the three nuclear utilities that are a part of the compact.

So those would be our basic questions.

COMMISSIONER BARAN: Okay. And right now, as I understand it, your regulations, Texas regulations, prohibit GTCC being disposed of in Texas, but there is a proposed rulemaking to eliminate that prohibition. Is that something -- I know you have your own hoops to deal with -- or to work with, not deal with -- work with --

(Laughter.)

Do you anticipate that Texas would proceed to lift the prohibition on taking greater-than-Class C regardless of whether Texas or NRC is the licensing agency?

MR. MAGUIRE: I think the Commission, in instructing us to engage NRC and Department of Energy relative to that rule petition, indicates their interest in perhaps doing that. I think -- I can't speak for the Commission because it is strictly their policy call whether or not to change the rules, but they

have at least indicated in sending us to engage on it that they have an interest in it.

COMMISSIONER BARAN: Okay. And so let me turn to Cathy and Larry for a minute and ask kind of the equivalent, obvious question, which is it's probably a little bit unusual to have agency staff say, you know, "We could license it, or someone else could license it. Let them license it instead."

Can you just walk us briefly through why -- why has the staff recommended that Texas do the licensing here? What are the -- you know, briefly, what are the key reasons why you think that it would be better for Texas to license than for NRC to license?

MR. WEBER: It makes sense.

COMMISSIONER BARAN: There it is. Okay. It makes sense. Can you -- you can jump in here.

MR. CAMPER: Well, it's -- there's a lot of legal stuff here that we'll avoid.

COMMISSIONER BARAN: Yes.

MR. CAMPER: But after careful examination, we did reach the conclusion that Texas could license this. Once we reached that conclusion, then you begin to trip to things that Mike just alluded to. It is far more efficient. The resource estimate that we provided in the paper would be a factor of two more costly if we did it versus the state of Texas.

They are intimately familiar with the site already, and they have a very successful program currently, and they have already reached out to us for a very cooperative arrangement to proceed ahead to develop a proposal, if the Commission goes that way, that hopefully it ultimately would pass Commission satisfaction.

COMMISSIONER BARAN: Okay.

MR. CAMPER: So it's more efficient. It makes more sense.

COMMISSIONER BARAN: Go ahead, Mike.

MR. WEBER: If I could just add to that. At one point in my career, I was the Chief of the Low Level Waste Branch in the NRC, in NMSS. And we actually stopped licensing the Barnwell site, and the Hanford site, because we found that we were adding little to no value because the state was doing a very effective job in ensuring the safety of that facility, and we were adding cost unnecessarily.

So we ultimately found a way within the regulatory framework to terminate our licenses in lieu of the state continuing to be the sole regulator, and that added a lot of efficiency and effectiveness, because then we were asking the licensee similar questions but getting different answers, and, you know, all those sorts of things. So it was just a more elegant

solution.

COMMISSIONER BARAN: And are you concerned at all about -- I asked this question of Mr. Kirk, I think, on the first panel. That because under our regulations the Commission would need to approve any non-repository option, if Texas were the licensing authority for a WCS proposed cell, we would still need to sign off on it.

You referred a little bit to this -- to our review there. Are you concerned that having two regulators involved in the approval process is going to unnecessarily complicate things? Do we lose some of the efficiency we would have gained in having Texas do it by having a separate NRC approval process?

MR. CAMPER: No. I think -- no, for two reasons. One, for Texas to proceed to regulate the disposal of GTCC waste, the Commission will have to approve that. And the Commission will react to what will be a comprehensive proposal. Once the Commission makes that decision, if it did, then Texas proceeds to regulate.

Under Option Number 1, one of two things is going to happen. Either a new cell would be built that we would license, or that portion of the existing cell that would be used for GTCC waste, that license would have to be modified to reflect that fact. Under that

scenario, one could argue that you had two-regulator problem. But if Texas proceeds to license, we would oversee Texas' regulation of GTCC waste ongoing under the IMPEP program, after having worked with them to develop, hopefully, a successful proposal.

COMMISSIONER BARAN: Okay. Well, let me ask, Mr. Maguire, in terms of just thinking through, are there any differences between what your process would look like if you did it and the process we would have would look like if we did it, it sounds like what is contemplated is if Texas does the licensing, it would be a license amendment.

Are there differences, you know, in the scope of environmental review, public participation, hearing rights for stakeholders? Do you guys do the equivalent of an EIS? Do you do the equivalent of a safety evaluation report? Would the process look different if -- depending on who regulates?

MR. MAGUIRE: Well, because of compatibility requirements that every agreement state has, our processes would be very, very, very similar. I will say this. State agencies stand closer to the flame than federal agencies do, and so the public participation aspect of our process is much, much more exposed than it might be for the Nuclear Regulatory Commission, not that you all's doesn't have a lot of

public participation, but it is very transparent, it is very involved, it is long, drawn out, and the public engages things like this.

MR. WEBER: But you should expect that there will be differences, differences driven by state law, a difference, you know, in administrative process, differences driven by the development of their regulatory program. So it's not going to be an identical -- we give the states a lot of flexibility under the Agreement State program, provided that they achieve both an adequate level of protection and a compatible national program.

COMMISSIONER BARAN: Okay. Let me ask our General Counsel one question, purely an information-gathering mode type question.

Margie, Section 274(c) of the Atomic Energy Act states that "The Commission shall retain authority and responsibility with respect to regulation of the disposal of such other byproduct, source, or special nuclear material as the Commission determines by regulation or order should, because of the hazards or potential hazards thereof, not be so disposed of without a license from the Commission."

Do you think it's clear that the Commission could decide in its discretion to handle the licensing of a GTCC disposal facility regardless of how we

interpret Section 3(b)(2) of the Amendments Act?

MS. DOANE: Yes.

COMMISSIONER BARAN: Okay. And that's all I have. Thank you.

CHAIRMAN BURNS: Okay. Thank you very much.

Again, before I start with questions, I appreciate Mr. Maguire's reflections on the weather. And we are actually -- I think this is unusually nice right here in Washington this time of year. But I will just share, I was out in Texas a few weeks ago giving a presentation in Austin, visiting our regional office in Arlington, and then had the chance to visit the South Texas facility.

And one of the nice things we often do is offer congressional staff or congressional members do a -- we had a group of about eight go along, and apparently the feedback I got was they really appreciated the opportunity to visit the plant with us and the NRC representatives, but the question came back to me is why the heck would you have planned this trip now when it was 100 degrees outside?

So, anyway, they were questioning my insanity, and I can understand that, but -- a little bit, but I'm glad we provided some good weather for you here today.

A couple of questions. I want to ask Mr. Marcinowski a question, just make sure my understanding -- it's been a while since I read the Energy Policy Amendments Act. But essentially I think what you're saying -- what the Department is obligated to do is do this generic environmental impact statement and essentially deliver it to the Congress. Is that how I --

MR. MARCINOWSKI: Well, it's actually a separate and distinct report that we would have to produce.

CHAIRMAN BURNS: Oh, okay.

MR. MARCINOWSKI: And that we would, you know, give to the appropriate committee in Congress, and wait for them to somehow respond as to whether they agree with what we are proposing or not.

And in prior discussions with them, they have indicated that perhaps this could be done by a simple letter to the Department, or, you know, it doesn't have to be a complicated process. But we need to renew those discussions with the Hill.

CHAIRMAN BURNS: Right. And you alluded to the possibility of a separate statement, but as I understood that, that would relate to if there was a particular relationship, you'd say, between the Department and the WCS site, or I was trying to

understand what you were getting at in that.

MR. MARCINOWSKI: Oh. We have an agreement with the state of Texas that when the facility is closed that the Department would then take ownership of the site for the long-term management of the facility.

CHAIRMAN BURNS: Right.

MR. MARCINOWSKI: And so we have an agreement with them, and I just didn't know how, you know, any -- that might be impacted if we've got a separate cell now, or some portion of a cell, that has got waste regulated by a different entity --

CHAIRMAN BURNS: Right.

MR. MARCINOWSKI: -- how does that all work. That's what I was just indicating.

CHAIRMAN BURNS: Okay. Thanks for that explanation. I think I understand now.

Mr. Maguire, again, welcome. And one of the things maybe you, I think, touched on in terms of the public participation process, could you just generally describe what it takes in Texas, what the nature of the public engagement is under the Texas law?

MR. MAGUIRE: Sure. So if we got an amendment application for a WCS for the disposal of greater-than-Class C waste streams, we would first of all look at that amendment request administratively.

And once it was determined that it was administratively complete, that would go to a public notice, and the public would have a 30-day comment period. We would receive comments during that period.

Typically, we do not do anything go respond to comments based on the administrative complete notice. But certainly if the public calls something to our attention in those comments that really affected the administrative completeness of it, we would want to address that before moving forward.

Typically, administratively completely holds up under notice, and we begin our technical review. And then I can take -- and certainly a project like this might take a really long time, but the -- we look at the technical aspects of the license, of course the performance assessment would review defense-in-depth. Those things would be a vital part of that evaluation. But there would need to be other things, and there would be consideration given to what sort of license conditions might need to be put in place.

And so toward the end, then, of that technical review process, we would draft a final proposed license, and we would share that with government and with WCS first. And once that has been shared, then we would -- and depending on what changes needed to be made, then we would publish a second notice,

and that second notice would notice what we are -- what the executive director is proposing as final license.

And, again, there is a comment period. During both of the comment periods the public can request public meetings, and they can request a hearing with our state Office of Administrative Hearings. And so if there is a request for a public meeting, we hold those meetings if there is significant public interest, or if there is an interest on the part of an elected official. And so we could have a public meeting.

If there is a request for a hearing, we call that a contested case hearing. Then, once the comment period is closed, we respond to the comments. There is another chance given to the public to request a contested case hearing or an opportunity for them to withdraw their request, if they chose to do that.

But if there are still standing requests, the Executive Director cannot issue a contested license. And so that, then, has to go before our Commission. The Commission determines whether or not there is an affected party and a justiciable issue that could go to the state Office of Administrative Hearings.

If so, then it goes before a judge, administrative law judge. The agency would put on its case, the regulated entity would put on its case, and the public would put on -- the affected parties would

put on their case. The judge then has a proposal for decision. He comes back before -- he/she comes back before the Commission to present their proposal for decision.

The Commission makes a decision based on the information provided by the judge, and they can either deny the license, refer the license back to the Executive Director, or issue the license.

CHAIRMAN BURNS: Good. Well, thanks for that thorough explanation. But it is -- good, it is helpful for -- I think for me in terms of trying to -- in understanding different processes and procedures, very -- you know, different, but in many ways similar to sort of the thorough vetting that -- I know that we would do.

For the staff, one of the questions I asked -- and I'm -- I recognize partly this is a historical issue, but refresh my -- it would be helpful if you'd refresh my recollection. Larry, you alluded to changes in one of the sets of amendments -- one of the Amendments Acts in which it made this change to the transuranic definition, but not adopt -- it was not adopted in NRC regulations.

Can you give me some context of why that hadn't happened earlier? It may well be what was -- you know, there was no, if you will, burning platform or

urgency with respect to it. Anything you can to help with that?

MR. CAMPER: Well, thank you for the question, Chairman. The transuranic issue is, indeed, an interesting one to research. You will find back in the 1970s transuranic waste was disposed of in near-surface low level waste disposal facilities, basically in trenches. Along the way, in 1974, the AEC started a rulemaking that would not have let that happen. That did not become a final rule.

I suspect that when the 1980 Act was created, Congress was aware of that, and, therefore, chose to exclude transuranic waste. Along the way, there was a lot of discussion about transuranic waste after that in a 1985 -- particularly, in the '82/'83 timeframe, transuranic waste was looked at. There were some working groups that took place. In 1985, they removed that exclusion.

We actually developed a working group that looked at the changes that were brought about by the 1985 amendment. And in looking back at the work that the group did, there were a lot of other changes that came about in the 1985 Act. We focused upon them. We did not focus at all -- I can't find a word about the transuranic waste changes.

CHAIRMAN BURNS: Mike?

MR. WEBER: I think Larry will correct me if I'm wrong, but the changes that occurred to the Act, the Atomic Energy Act, on the definition of transuranic waste worked in conjunction with the WIPP Land Withdrawal Act. So it was focused on preparation for that licensing certification process. So it wasn't viewed at the time as NRC's business.

CHAIRMAN BURNS: Yes. Because the WIPP is -- of course, is the Environmental Protection Agency.

MR. WEBER: Right. And DOE, and not involving NRC except with respect to certification of the transportation packages.

So, also, I would point out that the low level waste program at the time was really focused on performance assessment here at the NRC. So we were working on the Branch Technical Position on performance assessment and trying to work with our state partners, because NRC had no licensing responsibility at the time for low level waste disposal.

So we were in the support mode to the Agreement States as part of our partnership, to help them do what they need to do to ensure proper regulation.

CHAIRMAN BURNS: Okay.

MR. CAMPER: Yes. I would add to that, if I might, Chairman, that if you go back and look, I think that the staff -- in fact, Paul Lohouse, who was then

a branch chief for the program, gave a presentation in 1982 where he talked about the fact that we weren't going to do a separate rulemaking to address transuranic waste. Rather, we were addressing it within the waste tables as I cited during my presentation.

I think there was not a recognition there was going to be as much of it as turned out to be. And, therefore, it just wasn't on the scope to make that adjustment.

CHAIRMAN BURNS: Okay. So thanks very much for that.

Commissioner Svinicki.

COMMISSIONER SVINICKI: Well, I will add my thanks to the NRC staff for all of the work that was done, not just those of you at the table but all who contributed to the paper, which is very comprehensive, and also to our federal and state partners who are represented here today.

I think I had -- an issue recently arose in my office. We were looking at a paragraph I had written, and I was debating affected versus effected. I don't know why I find this one grammar rule hard to remember, but I went in to Alan Frazier, who is on my staff, who was just the victim that I found, and I said, "Are you an amateur grammarian?" and he said, "Well, I'm an engineer, so no."

(Laughter.)

And I said, "Well, I am an engineer, too, but, you know, I think what motivates many engineers is we are problem solvers." And that's why we become engineers versus becoming eggheads -- I mean, scientists, is because I think some of us just really like to tinker with things and problem solve.

This is a complicated national issue or problem to solve. It has legal, technical, and policy dimensions. But I just want to credit all of you and our other presenters. I think there is a spirit of problem solving. The other complexities, some of which are very -- just kind of, you know, words and looking at words and meanings, and that's complicated stuff, those things will get sorted out eventually.

But at the end of the day, I think there has been a good spirit of wanting to look to the heart of the issue and put forward solutions and ideas and proposals. And I credit the state of Texas for asking the question -- Commissioner Ostendorff reflected on that -- and you'd be amazed, if you spend enough time in Washington, what you find kind of refreshing. It is refreshing that someone would say, "Well, if we don't know, let's ask." I'm sorry that the letter was painful to generate. It's well done, if that's any compensation to you. And my colleagues have covered,

as I always expect, a lot of terrain here very ably and efficiently.

So that allows me to just turn to Larry Camper now with the remainder of my time. Larry, I also want to join my colleagues in commending you for your long service here. These are -- kind of these departures from NRC are the unpleasant things, not that we don't wish people well. We do. It's well-earned, whatever it is you desire to do in the next phase of your working life or perhaps just to have some recreation and time with family. It is very well-earned, and so I don't begrudge you any of that.

I also have gone to conferences on the subject matter where you are very expert and seen and witnessed the same thing, the tremendous regard and esteem you are held in nationally certainly, internationally as well. And I remember thinking when I spoke on something -- again, I think at a low level waste conference or maybe a waste management conference, and I didn't know you terribly well, but you were there. I think you were moderating another panel or something.

And I thought after you spoke, I thought, gee, that one guy is carrying around a lot of our institutional knowledge. And, you know, it's compliment to you, but it's an organizational

vulnerability. And you are walking around with a lot of it, and now you're walking right out the door with it, which isn't the greatest possible feeling. But we will reside confidence in the fact that you have mentored many, many NRC staff in this subject matter area. Thank you for that. That is an enduring investment in the institution, and we credit you with that.

And I think Cathy said you have 34 years of federal service. These numbers at NRC are always really impressive. People have worked here a really long time, and I -- you know, you kind of wonder to yourself, what motivated a person to work in this area?

I did joke a little bit that you will be remembered, as Cathy described -- and I said whether you want to or not -- I probably talked over the transcription, but Cathy was trying to be very dignified about it. But I have often said at NRC retirement parties that we do not get to choose the contributions that we are remembered for. Others will decide the contributions we make, and that I think what is always revealing is that what you think people find the most gratifying or memorable about their own career is likely very different than the things they think that they are most proud of, that they conquered and contributed.

So I think somewhere between the two is the

accurate answer of kind of the impact that we have had on any institution.

And so what I've observed, and everyone around this table has chosen public service -- even the other federal and state partners who are here, so it's interesting to me. I don't find people who stay in it for their careers, they are not put off by complex issues, as we have discussed today, long hours or hard work.

I think the one thing that I -- and I will have 25 years. I mention that too much, but I will have that at the end of the year. It scares me a little. I don't mention it self-congratulatory. It's frightening how the years go by.

But I think that my moment of frustration is when there -- and it puzzles me to death, this implication that people who choose public health and safety, you know, other public missions, any implication that they would have a kind of a careless or reckless disregard for that very mission that, by the way, they choose to get up every day and devote themselves to.

So that does not square with my observation of people in public -- it's a very honorable thing to work in public service, and I know that it's sad that that's a bold statement I guess to make these days.

That's very, very unfortunate.

Mr. Maguire talked about standing close to the flame. There is another political -- I'm not a political scientist, but there is another political view that says government governs best that governs closest to the people. So I think that's another way of talking about that flame and being close to it.

But maybe I'll ask you this question, and it's just as straightforward as it sounds. Are the women and men who work at the Texas Commission on Environmental Quality committed to the public health and safety of Texas citizens and Texas citizens of the future? If you were aware of a technical issue or anything that needed to be investigated in terms of an analysis or something brought to your attention, would you pursue that?

MR. MAGUIRE: Yes, ma'am. And I so appreciate what you said. I mean, it -- we wouldn't be there if we didn't care and if we weren't passionate about it. And I have to say, and I think WCS would back me up really quickly. I mean, we are very passionate about the program that we work in there.

And when we see things, we take them head on, and we take them head on very, very quickly, because we can't -- we hold the public trust, and we can't -- we can't deny our obligation to do that. And we would be

doing something else if we weren't passionate about that, I think.

COMMISSIONER SVINICKI: And I began my career in public service at a state regulatory agency, and so I feel a little -- I'm not from Texas, and I can't -- but you know what? I found myself thinking, don't mess with Texas. A little bit of my Texas got up there. You know, when there is any implication that a state agency is some kind of, you know, pale substitute for other regulation, I just -- I reject that.

MR. MAGUIRE: It's just not true. But, you know, people do say that, and I think that's unfortunate. But I've spent my career, both on the outside and both on the inside, and I feel far more noble about my last 10 years working for the state and the environmental agency than any other thing I've done.

COMMISSIONER SVINICKI: Thank you for that. And I don't want our DOE colleague to feel that I didn't have some commentary for you. I thought you -- you did a great job in getting me on the edge of my seat. You talked about the preferred alternative, and you said, "The preferred -- I can say this about the preferred" -- I thought you were going to make some news here today on the preferred alternative.

(Laughter.)

You really had me going, because you said,

"There is going to be options." And I thought, he is going to say something, he is going to say something.

But, you know, okay, we will have to stay tuned on your preferred alternative, which is actually going to be I guess preferred options, or the options inside the alternative? How does that work?

(Laughter.)

MR. MARCINOWSKI: Well, I just want to say, my philosophy on waste disposal is, you know, given the nature of the business and the fact that there are regulatory issues, political issues, that crop up all the time, that some are unexpected, that we need options with regard to the disposal facilities.

So if I can have, you know, two or three potential disposal options, in case something happens that affects disposal at one facility, then I've still got an alternative.

COMMISSIONER SVINICKI: Okay. And I'm not questioning -- anything you can get past your NEPA attorneys is fine by me. I'm not going to question it. It's a very complex area of law.

I want to give Mr. Camper the last word. When you think about your time at NRC, what are you most proud of?

(Laughter.)

MR. CAMPER: Whoa. Whoa, whoa, whoa.

Let me make a comment about --

COMMISSIONER SVINICKI: That was supposed to be a question that you would welcome answering.

MR. CAMPER: I'll come to that. Let me make a comment about the issue before us, though, because I want to pick up on something that you said about solving a problem. As I have worked with the staff to --

COMMISSIONER SVINICKI: You realize that Cathy and Mike are very nervous right now.

(Laughter.)

MR. CAMPER: I'll get to them in a minute.

Now, as I have worked with the staff in addressing this challenge, one thing that has struck me very, very strongly about solving a problem is this issue of orphaned waste at greater than 100 nanocuries per gram for TRU is a problem. It is a regulatory problem that we should fix.

There is a lot of it, and right now there is no place for it to go. I strongly urge the Commission to address that. It troubles me a lot.

With regards to your question, it is -- I think if I look back over the years, I can't believe how many great issues and challenges there have been. It is -- I often say every day is just a hoot. I mean, every day I'm meeting with the staff, every day we're facing

challenging issues, every day I'm talking to very bright, intelligent people who work hard and want to solve problems.

And so it has been the -- just the plethora of issues to deal with over many different arenas, whether it be medical or commercial or academic, spent fuel. I mean, the broad spectrum has just been absolutely rewarding, and I wouldn't trade it for the world.

COMMISSIONER SVINICKI: All right. Thank you. Thank you, again, for your service.

Thank you, Mr. Chairman.

CHAIRMAN BURNS: Well, thank you all for your presentations. Do my other fellow Commissioners have any --

COMMISSIONER BARAN: Could I just ask one more question of Larry before we lose him? Not that we're going to lose him in five minutes, but I --

CHAIRMAN BURNS: You can ask Jack because he's over his time, but --

(Laughter.)

COMMISSIONER BARAN: Well, after 34 years, the last question you get should be something really monumental and memorable, something like the question that Commissioner Svinicki just asked you. But, instead, you are going to get this.

(Laughter.)

This is really just more a factual question that I wanted to ask earlier and didn't get a chance to. How does the average radioactivity of the greater-than-Class C inventory compare to the transuranic waste being disposed of at WIPP?

MR. CAMPER: The radionuclides or radioactivity itself is very similar, but the concentrations are much greater on the non-defense GTCC. Big numbers. In fact, a Sandia inventory report provides the concentrations of WIPP waste. For a handful of radionuclides, the NRC staff compared the GTCC inventory and volume concentrations to the current WIPP concentrations.

For all isotopes, the average GTCC concentrations are 50 times or more, sometimes up to 1,200 times higher, except for cesium-137, which the GTCC concentrations would be approximately equal to remote-handled TRU waste at WIPP. So while the GTCC is radiologically similar in terms of isotopes, it is much more concentrated, although it does have a broad range of concentrations ranging from reactor internals to contaminated clothes.

COMMISSIONER BARAN: Okay. Thank you.

CHAIRMAN BURNS: Well, thank you all. And I want to add my appreciation for Larry's service over

the years. It was always a pleasure for me when I was in the General Counsel's Office to work with Larry on some of these issues, as well as now -- now that they come back.

So I wish you well. As I would say to my French friends, bon voyage, bon courage.

And, with that, we're adjourned.

(Whereupon, the above-entitled matter went off the record at 11:55 a.m.)