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U.S. NUCLEAR REGULATORY COMMISSION

BRIEFING ON URANIUM RECOVERY

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TRANSCRIPT OF PROCEEDINGS

Public Meeting

Before the U.S. Nuclear Regulatory Commission:

Allison M. Macfarlane, Chairman

Kristine L. Svinicki, Commissioner

George Apostolakis, Commissioner

William D. Magwood, IV, Commissioner

William C. Ostendorff, Commissioner

APPEARANCES

Federal Representatives:

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Director, Radiation Protection Division

Cliff Rader
Director, National Environmental Policy Act (NEPA)

Benjamin (Frank) Martin
Deputy Chief, Solid Minerals Division
Bureau of Land Management, U.S. Department of Interior

Susan Hall
Scientist, U.S. Geological Survey

Nancy Nuttbrock
Land Quality Division, Wyoming Department of Environmental Quality

Dennis Yellow Thunder
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P R O C E E D I N G S

CHAIRMAN MACFARLANE: Good afternoon. The Commission meets today to discuss issues associated with the licensing of new uranium recovery facilities? The recovery of uranium is used in the supply of fuel for our nation's nuclear industry. It's also a very important environmental issue to those that may be affected by the increasing number of in-situ recovery and other mining activities that are already underway or being planned. The NRC coordinates with many federal, state, and Tribal partners in our regulation of recovery operations. We also interact with citizens groups on this issue. The Commission is interested today in hearing their perspectives on uranium recovery, and the NRC's role in ensuring their health, safety, and protecting the environment.

First this afternoon, we're going to hear from a panel of external folks representing a variety of topics and viewpoints on uranium recovery. Let me ask that each panelist keep their remarks to 10 minutes. We have a great deal to talk about today, and please be respectful of the time, and please pay attention to the timing lights. When they go red, you are out of time.

[laughter]

We also have a number of ongoing adjudications related to specific in-situ leach sites. The Commission and the panelists have all been provided a list of those issues in litigation, and we've requested the panelists not to discuss any of those issues as they relate to a specific site. I also ask you to consider avoiding the use of acronyms so the public can better understand what we're discussing and me too.

[laughter]

Following a short break, we're going to hear from a panel of NRC staff on recent licensing actions, environmental review efforts, and associated interactions with the affected public. Before we begin, let me see if any of my fellow Commissioners would like to make any opening remarks. No? In that case, we will push onwards.

I'm going to turn the floor over to Jonathan Edwards, who's the director of the Radiation Protection Division at the Environmental Protection Agency, and Cliff Rader, director of the National Environmental Protection Act Division at the EPA. And I note that you are sharing your 10 minutes. Go ahead.

JONATHAN EDWARDS: Good afternoon, Chairman and Commissioners. We're pleased to be able to appear before the Commission, and I'm here to briefly discuss the Radiation Protection Division's regulatory and environmental protection activities concerning uranium extraction. We've prepared a slide with three key messages that I'll talk to now. Hopefully those can be presented. Thank you.

EPA's Office of Radiation Protection derives its authorities regarding uranium extraction from several statutes. And the three principal ones are the Uranium Mill Tailings Radiation Control Act, or UMTRCA; the Atomic Energy Act; and the Clean Air Act. EPA is an important federal partner working with the Nuclear Regulatory Commission through its licensed activities as well as the Agreement States, and of course the Department of Energy and its role of overseeing closed uranium mill tailing impoundments.

Specifically, it's Section 206 of UMTRCA that authorizes the EPA to establish standards for oversight of uranium and thorium milling and byproduct materials in order to protect public health and the environment from both

radiological and non-radiological hazards. So that's where under the UMTRCA paradigm, the radiation control aspects are then also directed to co-join with compatibility with the Resource Conservation and Recovery Act, or RCRA. So it's not directly under the RCRA paradigm, but we're directed to write our regulations so that it's consistent with RCRA practices.

These health, safety, and environmental standards are contained at 40 CFR 192, and that is indeed the regulation that we are presently revising to be proposed to the public for comment. And of course, the NRC implements that along with the Department of Energy. EPA originally issued the standards for uranium extraction in 1983, with the most recent revision in 1995 -- so going on 20 years since the latest revision. When these standards were first set, as you are aware, conventional mining and milling was the almost exclusive practice. And of course, in-situ recovery has surpassed conventional milling as the dominant form of uranium extraction in the U.S. and is expected to constitute the bulk of future processing. So to count for this evolution in the industry and to recognize the environmental challenges posed by the significant increase in the ISR operations, EPA is now taking a look at 40 CFR 190, and in the process of proposing updates to our regulation and to those standards.

We plan to focus our revisions on ISR and, in particular, the groundwater protection and restoration aspects of ISR operations. In 2011, we asked our science advisory board and sought their scientific and technical advice as an independent advisory body on our rulemaking. And in particular, we charged them for their advice in four specific areas related to groundwater protection at ISRs.

First, the design and implementation of groundwater monitoring

networks. You know, what would it take to have a sufficient enough monitoring data to be able to establish a baseline and then to look at post-closure, post-restoration conditions.

Secondly, we asked them for what advice they had on approaches for characterizing baseline groundwater conditions. Third, what are the approaches for post-restoration groundwater monitoring? And then lastly, their advice on uses of suitable statistical techniques in the environmental data oversight. And, again, this ties pretty closely with the RCRA paradigm in hazardous waste regulation. And finally, the final SAB report was issued last February and is online at the EPA SAB site.

Our effort to update the rule has been collaborative. In addition to internal EPA work group from various offices, we've been assisted by the Nuclear Regulatory Commission staff. NRC staff has supported our efforts by providing monitoring data from ISR sites as well as valuable support during our SAB advisory. So this collaboration is important since of course the NRC is ultimately responsible for implementing the environmental standards the EPA sets. As required under UMTRCA, we will continue to consult with the NRC as we move forward with these proposed changes.

So quickly, to recap, EPA has reviewed the current health and environmental protection standards for uranium and thorium mill tailings, and it has decided that updates are warranted, specifically for ISR. The agency expects to propose the rule changes that focus principally on groundwater protection and restoration at the ISR sites. And then finally the NRC staff has assisted our efforts, and we really appreciate this collaboration. Thank you for this brief amount of time to speak before the Commission. And I now turn it over

to my colleague, Cliff Rader.

CLIFF RADER: Thank you. Well, thank you for this opportunity. I am the director of the NEPA Compliance Division. That's the National Environmental Policy Act, which requires agencies to look at the environmental impacts of their actions, and in particular we really focus on when agencies do an environmental impact statement, and EIS. I can tell you that out of my office, the majority of the work and the reviews are done by our regional offices, our 10 regions. And specific to these types of projects, it's our Region 8 office in Denver and the Rocky Mountain West. When EPA reviews an environmental impact statement, we look at both what we think are the potential environmental impacts as well as the level of analysis. And we actually give a rating to each EIS for both of those factors.

Are the slides available up there or not, because -- actually I don't have one there. Is that the first one? So, out of our Denver office, there's been a lot of effort over the past year and a half or two years to work much more closely with NRC staff, and that's been going very well. The NRC staff has met with EPA in advance of publication of the EISs, and they've been able to share ideas and concerns and levels of what types of alternatives should be looked at, and we really are pleased to see that level of cooperation and see things are really improving.

And on the next slide -- the looking forward slide, I believe -- some of the issues that we've looked at are including, you know, options for waste disposal. You know, are looking at potential ways to, you know, improve monitoring of both groundwater and air quality impacts. But again, I think what I've heard from our regional office, that things are going fairly well and they're

really looking forward to continuing to cooperate with the NRC staff. And with that, I conclude my remarks.

CHAIRMAN MACFARLANE: Okay. Thank you for being ahead of time. Okay, next we are going to hear from Frank Martin, who is the deputy chief of the Solid Minerals Division at the Bureau of Land Management. Mr. Martin.

FRANK MARTIN: Ladies and gentlemen, my name is Frank Martin. And we'll talk a little bit about the status of the BLM NRC MOU, which has been in place now since 2009 and is working extremely well. Modifications to enhance coordination, define roles and promote information sharing. If we could have the slides, please.

BLM manages about 750 million acres of federal mineral estate. We manage all the mineral estate for all federal agencies, not just the mineral estate, which is -- whose surfaces managed by BLM. BLM also manages 250 million acres of surface estate as well. Next slide, please.

Almost all of -- currently all of the mining of your operations that we have are under the mining law of 1872. And under that law we have three levels of use: casual use, which requires no notification of the government at all. Notice level operations, which is basically exploration and requires that we be notified but we don't have a permit approval of any kind that's associated with that. And then, finally, the plan of operations, which involves -- is what happens when we have a larger surface disturbance and always, of course, when we have a mine plan that has to be approved. Next slide, please.

On March 17, 2012, the Government Accountability Office, or whatever they're currently called reported to the ranking member of the Committee on Natural Resources, the House of Representatives, with a

recommendation that the Secretary of the Interior and the Chairman of the Nuclear Regulatory Commission, should enhance our coordination on financial assurances for ISR operations through development of a memorandum of understanding that defines roles and promotes information sharing. And so what we chose to do was to modify the existing -- we jointly chose to do, of course -- was to modify the existing MOU. As far as implementing the recommendation in the past year, the NRC and BLM staffs revised the existing memorandum of understanding to strengthen interagency communication, improve the facilitation, and sharing the special expertise and information, and also to coordinate the review of financial assurances within the boundaries of our mutually existing authorities. Next slide, please.

The MOU's been modified most importantly to include the actions under Section 106 of the National Historic Preservation Act to ensure the historical sites are properly cataloged and protected contemporaneously with necessary actions and investigations under NEPA, which is what we normally do and I'm sure what you all do as well. Thorium has been added to uranium, bringing all mining and processing of potentially fissionables under the MOU. We've strengthened the MOU language to require each agency to provide the other with the opportunity to participate in all NEPA and Section 106 actions and to combine such actions as much as possible to eliminate duplication and improve efficiency. Next slide, please.

The MOU changes encourage both agencies to join together in cooperating on NEPA tasks such as environmental assessments and environmental impact statements and will encourage interaction of our respective experts with attendant cross fertilization of ideas and information sharing. The

steering committee charter has been revised to require that technical expertise be available and shared where needed to strengthen each agency's capabilities. Next slide, please.

The charter of the steering committee has also been revised to include the improvement of oversight of financial assurance, and this change will focus oversight to avoid inadvertent gaps in coverage for financial assurance and eliminate any overlap or redundancies. So everybody will be protected, hopefully. And the next slide, please.

This is just a map that shows the state of Wyoming. We have some projects that are outside of Wyoming, but almost all of them are in Wyoming. And we have nine authorized and nine pending plans of operations or mine plants and 22 authorized and one pending notice to explore for uranium. And as you can see, they're pretty well scattered throughout the state. And, last slide, please.

BLM looks forward to continued cooperation -- close cooperation with the NRC in the future as we work together to deliver safe, efficient, and environmental responsible energy to American, and I thank you.

CHAIRMAN MACFARLANE: Ok, thank you. Really staying ahead of time today -- so far [laughs]. Just wait [laughs]. All right. Next we are going to hear from Dr. Susan Hall, who is a scientist with the U.S. Geologic Survey and the current chair of the OECD's uranium group, and I would like to just say it's a pleasure to have so many geologists around the table.

[laughter]

SUSAN HALL: Good afternoon. I'll take care of any of the slot of time that you have to have right now, so.

[laughter]

No, I'll keep on point. Setting the stage for more detailed discussions to follow, I'll present an overview of U.S. uranium resources and supply. In 2011, 54 million pounds of U-308 was delivered to U.S. producers, operating 104 reactors in the U.S. About 91 percent of this uranium was of foreign origin. Four million pounds was produced by U.S. uranium mines. The source of this uranium was about 20 percent came from Canada; 19 percent from Russia; 18 percent from Kazakhstan, Namibia, and Australia were also large contributors. This mirrors world uranium supply in general. A large percentage of uranium is derived from Afghanistan -- sorry, Kazakhstan. Canada and Australia are also steady, large producers of uranium.

If you look at reasonably assured resources worldwide, which are compiled by the International Atomic Energy Agency, Organization of Economic Cooperation and Development, and their biennial red book publication, Australia will continue to be a large source of uranium for the U.S. as well Namibia, Niger, Kazakhstan. U.S. has a fairly large resource -- identified resource -- but much of that is in higher cost categories, which are not currently economic.

Of the 9 billion pounds of U-308 that's identified worldwide, 60 percent is in mines that are operating or expected to come online in the next 10 years. This is what's corroborated by a study that I worked on with Mick Coleman of Energy Information Administration. It is about to be published imminently. And this is about 30 years of supply of 2010 rates of demand does not take into account the reactors that are under construction or planned worldwide.

Looking towards -- turning towards the U.S. specifically, the

evaluation of U.S. uranium resources is divided -- responsibilities are divided between the Department of Energy, who tabulate reserves, and U.S. Geological Survey, who estimate undiscovered resources. The two programs work fairly well together and they have these -- responsibilities have been defined since 1984 at the end of the National Uranium Resource Evaluation Assessment Program that was run by DOE from '74 to '82.

In 2008, Energy Information Administration estimated there was 530 million pounds of U-308 at $50 a pound cost category, it's about 10 years of supply. If you double the cost, you more than double the estimated resource -- in-situ resource. These resources are identified in Wyoming and New Mexico and in the Colorado Plateau area, as well as Texas and in other non-identified portions of the U.S.

In 2013, there are five operating ISR mines, four conventional mines that are exploiting these resources. Conventional mines are concentrated on the Colorado Plateau, and the ISR mines, of course, are in Wyoming, Texas, and Nebraska. There are a number of mines that seem to be very close to production, including two breccia pipe deposits in Arizona and two ISR targets in Wyoming and one in Texas.

I'm going to run through the major producers operating in the U.S.: Cameco, Energy Fuels, General Atomics, UEC, and Mestena Uranium. These operators control about 300 million pounds of U-308, which is roughly 50 percent of the EIA estimates in the $50 a pound cost category.

Energy Fuels owns and operates the White Mesa Mill, the only operating uranium mill in the U.S., and they exploit a number of underground deposits around this area, providing feed to the White Mesa Mill. They also

operate one of the breccia pipe deposits -- Arizona 1 and a couple more are about to come online.

Cameco operates the Crow Butte Mine in Nebraska and Smith Highland in Wyoming. Their exploration strategy seems to be to test targets near their U.S. operations and to develop satellite properties. They have about 102 million pounds of resources estimated.

General Atomics, under the Cotter Corporation, owns the Canyon City Mill, currently on standby. They most recently operated the Schwartzwalder deposit in Colorado and own a number of properties on the Colorado Plateau area, URAVAN Mineral Belt. But their flagship property, in terms of resources, is Mt. Taylor Mine in New Mexico, which is a 100 million pound deposit. It's quite significant. It's on standby. It has been since 1989 when it was -- it's partly developed as an underground mine. It's located on ground that's culturally sensitive to Native Americans, and the most recent word is it's being evaluated for in-situ leach mining.

Uranium Energy Corporation operates the La Palangana Mine in South Texas, shipping their resin beads to their Hobson plant. They've just recently received all the approvals necessary for their Goliad mine, just in December, so I imagine that'll be coming online soon as well.

Mestena Uranium, private corporation operating on private -- large private landholding in South Texas. Not a whole lot of information about the Alta Mesa Mine, but it's about 6.5 million pounds of uranium.

There's a great deal of activity in the -- intra mountain basins of Wyoming, Nebraska, and South Dakota. They're abundant roll front deposits that are being explored and exploited by a number of companies, known better by

people in this room than I, so I'll say no more than that. Most are ISR targets. There is one conventional heat bleached target -- the Sheep Mountain deposit Energy Fuels Mine in Crooks Gap, Wyoming – Crooks Gap Mining District.

New Mexico, most of the exploration and development is still focused on the Grants Mineral Belt, which is a very prolific mineral province in the state. There's another large deposit that is in the central Colorado Mountains: the Hansen/Taylor Ranch Project, a 90 million pound plus deposit in a number of satellite properties. In some places, surface ownership is severed from the mineral rights and last I heard they were proposing to mine the deposit using a hydraulic borehole mining.

The largest undeveloped uranium deposit in the U.S. is the Coles Hill Deposit in Virginia. There's a currently moratorium on uranium mining in Virginia, so this deposit remains in-situ.

Overall, U.S. exploration and development activity have been on an uptick since 2004 in terms of the number of holes drilled, production, the amount of money spent on exploration and land positions. And U.S. mining prediction is on a slow upward trend as well.

Future reserve development is expected to continue on the Colorado Plateau, mostly conventional mine targets. Development requires access to milling. There are some new ISR targets in New Mexico that are working their way through the system as well.

A trend that we have just started to notice is in some of these older mining areas: Wyoming, Texas, Nebraska, South Dakota, for many years has been producing via ISR mining methods. The brownfields exploration is transitioning to green fields as some of the deposits are either being defined or

condemned. So there's a lot more reconnaissance style exploration going on in the field. And we may see some uranium from phosphate deposits. There are some promising new techniques in terms of the extraction of uranium from phosphate mining streams and fertilizer plants in Idaho and Florida.

USGS is working to try to validate the undiscovered resource assessment that was reported at the end of the National Uranium Resource Evaluation Program in 1980. Unfortunately, many of the -- the resource can no longer be validated. The undiscovered resource can no longer be validated because many of the supporting records have been lost over the years. So we're working to -- on forensics to try to recreate these records and to determine if we can rely on these undiscovered resource estimates that are 20 years old. We're doing some detailed work on the Gulf Coast of Texas to that end. And then we're also working to try to evaluate geologic provinces that were not addressed during NURE, in particular, the Metasomatic vein shear zone deposits of the southeast U.S., of which Coles Hill is one representative. We're looking at uranium contained in phosphate deposits, trying to get a resource estimate -- undiscovered resource estimate for that uranium. And we are looking at Calcrete uranium deposits that are very important worldwide, have not yet been identified in the U.S. Is there something that -- some geologic factor that's missing that we don't find them here? So we're moving on to that evaluation as well.

And I think I am out of time. So if anybody has any questions, our two publications that are due to be released in the very near future -- a USGS scientific investigation report analyzing world uranium resources that was written in conjunction with Energy Information Administration. And there's an article on some of our detailed work in South Texas coming out in Natural Resources

Research. I would refer you to them.

CHAIRMAN MACFARLANE: Great. Thank you very much. Okay. Next we're going to hear from Nancy Nuttbrock, who is from the Land Quality Division in the Wyoming Department of Environmental Quality.

NANCY NUTTBROCK: Thank you. Thank you for the invitation to be here today. My name is Nancy Nuttbrock. I'm the administrator of the Land Quality Division of Wyoming's Department of Environmental Quality. For the next 10 minutes, I'd like to discuss with you four points. The first two you had specifically asked for me to touch on, and that's the status of the state permit reviews, and also interactions with NRC on our applications. Should the colored lights allow, I'd like to also talk about potential for a process improvement and the Land Quality Division from this point forward. I'll just shorten it and use an acronym, LQD. The LQD uranium industry work group that's been ongoing for 14 months now. So, next slide, please.

In no particular order, I'll take you through some of the major permitting activities that the state of Wyoming is working on right now. AUC's Reno Creek project. The Land Quality Division received the mine permit application on January 25 of this year. So by February 25, just a few days from now, we'll be making a determination as to whether that's complete or incomplete. Should it be determined complete, over the next 150 days, we'll be doing a technical review of that application.

Strathmore has submitted an application for its Lower Gas Hills project. And, by the way, this is the only project on this list that's a conventional service mining operation. All of the rest are ISR operations. We received this application on October 31st of 2012, we had declared it incomplete and are --

had requested additional information from Strathmore, which was sent at the end of December. So we're still in the process of evaluating that application in terms of completeness.

UR Energy -- its Lost Creek Project -- we issued a permit in October of 2011; construction on that project began in October of 2012, so that's underway. Uranium One has two projects that we're working with currently. The Ludeman Project was declared complete in August of 2011. We've been going in multiple rounds of technical review with Uranium One and we're currently awaiting a response from the latest technical round of review, and we're nearing the end of the technical review for that particular application. They've also submitted an amendment for their Willow Creek operation and we expect -- we expect to be in full swing with that here in the first or second quarter of 2013.

Uranerz's Hank Nichols Ranch -- in July of 2011, NRC issued its material license and construction has commenced. We anticipate production to start sometime second quarter of 2013. Cameco's Smith Ranch, Highland and Reynolds combo -- the Smith Ranch and Highland are currently permitted. There was an amendment to expand into a Reynolds property. We've been working with Cameco to combine what would have been three permits into one permit area, so that's been a major effort. Again, we're at multiple rounds of technical review there and again, we're nearing the end of the technical evaluation of this application as well. Next slide, please.

Interactions with NRC on Uranium Recovery applications -- I'll break this into three points: quarterly conference calls, project-specific involvement, and general interest of both of the agencies.

Recently, we've merged our conference calls. In the past it had

been an instance where the DEQ -- its Land Quality Division, its Water Quality Division, and various federal and state partners would have the same conversations over multiple conference calls over a given quarter. Well, this last month, this last week in particular, we've merged those conference calls in a way be most effective for those people on the phone. Last week we had 30 people on a conference call discussing anything ISR related across the state of Wyoming, and that included many NRC staff, Wyoming's Department of Environmental Quality, Land Quality staff, Water Quality staff, BLM Region 8, EPA. So it was a 30-person conference call and I think going forward those sorts of quarterly conference calls are going to be invaluable to those monitoring the uranium industry across Wyoming. So that's a good move for everybody involved.

Project-specific involvement -- NRC staff has been very responsive to the needs of the Land Quality Division in terms of dialogue and exchange of ideas as we collectively move through these application processes. And just by way of example, Uranium One's projects, the Ludeman Project, and Cameco's projects are both -- are both technically complicated and require the input of NRC and many state and federal agencies, so we've really appreciated your staff's involvement to that level.

General Land Quality Division and NRC interests -- I have an interest in moving forward with understanding the rules of the state regulatory authority in conjunction with the NRC's in both non-Agreement State status and potentially, given a feasibility study I'll talk about on the next slide, what would -- what would that look like if Wyoming was to pursue Agreement State status.

And I just -- I think there's a note that I'd like to make here toward

the end of this slide that duplicating effort on behalf of Land Quality Division or DEQ's divisions in NRC is just not a sustainable effort. We have to look at better ways of working together and being more efficient. Next slide, please.

Potential for process improvement -- two points here. On the top of the slide, NRC program liaison and Land Quality Division Uranium Coordinator -- I'd heard in the past that having a local presence from NRC in the western region, particularly in Denver, potentially in Wyoming given the amount of increased activity that Wyoming is projecting to see, would be a big benefit to the industry and to those trying to administer the regulatory authority over Wyoming.

Counter to that, I'm looking at the possibility of establishing a position within Land Quality that would specifically focus on uranium activities and do so on a statewide endeavor such that we can realize higher consistency in permitting approaches from industry and a better consistency among the divisions and districts of the Land Quality Division when dealing with those applications. I have a great interest in realizing consistency across the state. This person would also serve as the point of contact for NRC, for EPA, for any other state or federal agency; they would have one point of contact within the state of Wyoming to fully understand what's going on with the state.

So the last point on this slide is the Land Quality Division and NRC MOU. Memorandum of Understanding is something that's been talked about over the course of years. Now since submitting these slides to you a week or so ago, Wyoming's legislature is considering a bill that would allow for a study to look at the feasibility of the state of Wyoming becoming an Agreement State. So support for this bill is considerable at this point. Our legislative session ends February 28, so at that point we'll know whether or not the state of Wyoming's

legislature has an interest in pursuing such a feasibility study.

If, at the end of that feasibility study, it's determined that there is a benefit for the state of Wyoming and its industries to become an Agreement State, then certainly the state of Wyoming would move through that process. If, after the feasibility study, it's determined that it's not a benefit for the state or its industries to pursue Agreement State status, then I think the idea of an MOU is certainly appropriate and that's something that I have an interest in pursuing, and I've been in conversations with your staff and we feel that there's certainly avenues that we could approach for an MOU and definitely topics that we'd like to include in such an agreement. So stay tuned; we'll know more come the end of February. Next slide, please.

One thing that I'd like to touch on in the next minute is a local effort that I've -- that I've started. Back in December of 2011, I realized very quickly we needed to optimize the processes between industry and the Land Quality Division. I set up a workgroup; it includes members of many of the uranium players within the state of Wyoming and seven of my staff and the Wyoming Mining Association. We've been meeting monthly since then. We've -- last week, we had our 14th meeting. We meet the second Wednesday of every month for an entire day, and it's amazing what we can get done. It's an energetic, open exchange of ideas, interests, and concerns. Next slide, please.

When we met first in December of 2011, I wanted to understand what the hindrances had been over the course of years. What had gone unaddressed, and what could we do to streamline the process? We identified a list of issues and we've been working through those month by month. Most recently, we've been discussing the history of ISR jurisdiction and concurrent

jurisdiction and the historical perspectives and forecasting the feasibility of the NRC Agreement State status by way of this new legislation being proposed. I'd open this as an opportunity for NRC and its staff to bring broad issues to Wyoming's uranium industry by this mechanism. We have our dates scheduled through 2013. And I've mentioned to your staff that this is an opportunity to visit with the entire industry in one setting.

In closing, I'd like to leave you with a message. Wyoming's uranium's industry is thriving, and the land quality division is actively collaborating with its operators to focus its regulatory efforts on minimizing environmental impacts while supporting the development of Wyoming's resources. Thank you.

CHAIRMAN MACFARLANE: Thank you. Okay. Next we are going to hear from Dennis Yellow Thunder who is a natural resources technician for the Oglala Sioux Tribe.

DENNIS YELLOW THUNDER: Good afternoon, Commissioners. As just mentioned, my name is Dennis Yellow Thunder; I'm from the Oglala Sioux Tribe on the Pine Ridge Indian reservation in South Dakota. And I'm here on behalf of our Tribal president, Mr. Bryan Brewer, and on behalf of Oglala Sioux Tribe to voice our concerns about the uranium mining process in general, our interaction with NRC and the 106 process, and the other items that are listed on the agenda. To begin, I'd just like to mention that everything we are discussing here as far as uranium mining touches our people very deeply in many ways. When it comes to this type of extractive industries being so close to the borders of our reservations, we feel that impact of those industries in many different ways in respect to our culture, in respect to our way of life, and generally, and more importantly, in the way that it's going to impact our future -- the future of our

children, our grandchildren, and actually the future of everyone in that general area.

In regards to the uranium recovery licensing process, this morning we are discussing on ways in which we can improve that process in regards to our Tribal people, to our cultural ways. I think the most important way that we can probably I would say improve our -- become a bigger part of that is to be involved in a licensing process from the beginning. From the initial stages of planning, design, and development, the Tribes can be involved in early stage so as to avoid any types of Section 106 processes that may arise in the unforeseen manner whether these projects are being designed and built -- can avoid that. We can avoid any type of, you know, process that might become waylaid or delayed in any way by not addressing these issues in the beginning. So that was one way that we discussed this morning which we can improve or have better report with NRC and the licensing process.

As far as the interactions with the NRC, the NRC staff that have come in -- that I have been in contact with -- in my two years of having been a natural resources technician for the Oglala Sioux Tribe, initially not having very much knowledge of the uranium mining processes, the extractive industries, and all of the regulations that are involved in that, it seemed to be kind of a rocky road when it came to interactions with NRC and the Tribes, not only the Oglala Sioux tribe but other various Sioux nations.

But as time has gone on, as we have progressed it's always best to try to improve those relationships -- to try to improve how the NRC interacted with the Tribes, and from my perspective, from my point of view, I believe that we are making slow but steady progress when it comes to interactions with the

Tribes and how the NRC has approached us on different matters and particularly when it comes to our cultural resources the TCP surveys that are conducted and the importance of those cultural resources to the Tribes.

And in this general area, when it comes to this particular area, I had a whole presentation, a whole written type of thing that I wanted to share with you, but when it comes to these cultural resources in the 106 process, it's best to speak directly from the heart and to try to relay the message to you of what these cultural resources mean to the individual Tribal nations. When a project is going to impact some type of culturally significant area, we feel that in our heart. We feel that the vitality, the spirituality, and the life of these particular sites when they are destroyed can never be regained again. The vitality is lost; their significance, their importance to us as people, when they are destroyed, it's lost. It's something that can't be gained back.

That is something that I shared with a lot of the members of the NRC staff that has come -- has been so gracious as to come to the Oglala Nation to visit and to consult with us, so to speak. And that was my message for them when I met with them -- was the importance of these sites and the importance that the Section 106 process be followed and strengthened -- the 106 process needs to be strengthened when it comes to these culturally vital areas so that we can avoid any unforeseen circumstances that may arise when it comes to a project carrying on through.

So that was my main message when it came to speaking on behalf of our Tribe with the NRC and other federal agencies, with the BLM, the DOT, Federal Highways, Department of State -- it's the same message that I tried to portray to them, was the significance of these cultural sites and the importance

that they carry not only for us, not only through history, but that are going to have for future people -- future -- not just for us, but for everybody. For all nations to have their historical sites remain intact so that they are there for the future generations to observe, to believe in, and to carry forward. That was my -- the message that I shared with the other agencies that I have spoken to and I have the pleasure of speaking to many federal agencies. And it's an honor today for me to be here sitting at the table with the esteemed Commissioners -- the Nuclear Regulatory Commissioners and it's an honor for me to have come here to speak on behalf of my Tribe and on behalf of our Tribal president.

And I would say that I think we are going to build better relations with the NRC as we move forward from some of the dialogue that we've already had this morning with some of the NRC staff. I'm looking forward to a better rapport, a better sensitivity to these cultural resources, and building a better relationship so that we can move forward for everyone involved -- for all nations that are involved in the name of progress, in the name of energy, we can achieve those goals by working together and seeing the significance of these cultural sites and the importance of these cultural sites. By doing that, we'll reach our goals. We'll reach the goals of the NRC and the quest for energy and we'll also meet and reach our goals for protecting and avoiding and minimizing the damage that occurs to the cultural resources that are already out there and those that we may come across as we do move ahead with the different projects. All of these mines that were mentioned -- the Ludeman, the Crow Butte, Three Crow, North Trend expansion -- we've had contact with these -- all of these different mines in one way or another. Letters come into our Tribe, so we have to address these issues.

In closing, I would like to say that I believe that we can build a better future and build a better rapport and build stronger ties with NRC as we move forward. Thank you.

CHAIRMAN MACFARLANE: Thank you. Next we will hear from Katie Sweeney, general counsel for the National Mining Association.

KATIE SWEENEY: Thank you. I appreciate the invitation to be here today to highlight some of the key issues of importance to the uranium recovery industry. In formats like this, we have to focus more on concerns that need to be addressed rather than processes that are going well, but please don't take my comments today as any indication of overall views of the industry-NRC staff relationship. We don't always agree on everything, but we do find that NRC is willing to listen, not only to industry's views but other stakeholders and try to find solutions.

If I can have my first slide, please. One of our biggest issues, pretty much the top of the list, is resource constraints. This is a pretty significant problem. You'll see in the graphics that are upcoming in the NRC slides, but no matter how you slice the pie, NRC doesn't have the resources it needs to complete all the work before it. We see it's kind of a juggling act right now; NRC's trying to deal with the operating facilities and then the applications, and really, that leaves other work getting undone, including NRC guidance documents. An important one for us is the revision of the Standard Review Plan for in-situ recovery operations, and that's supposed to be the Bible for the ISR facilities. And there are some updates that are needed, but that work is being deferred due to resource constraints.

NRC staff has begun alerting applicants to the possibility that

reviews will be deferred. In fact, one of my members sent me a note yesterday saying they got an email from NRC that indicated that deferrals may be coming. NRC staff cannot predict if a deferral will occur or not or how long an application may be deferred. The response from my member company was, “How are we supposed to do business with all that kind of uncertainty?” So the resource issue is a big one. We do appreciate the fact that staff is supplementing with personnel from other branches and exploring other options.

National Mining Association remains committed to assisting and finding solutions to this problem, but we do think this problem highlights the need to wisely use the resources that NRC does have. Two ways of accomplishing that are streamlining regulatory processes and focusing on significant risks. We think there’s been some mixed success on streamlining processes. The Generic Environmental Impact Statement, or GEIS, for in-situ recovery operations -- that was something that the industry had pursued and NRC developed that was intended to streamline the application process for new in-situ recovery facilities. We don’t think the benefits of that have been fully realized to date. Definitely it was underutilized for the first three applications that came in during its development which led to some significant delays. We did -- I have heard recently, and I think this is heartening, that it is being utilized well for some of the newer applications, but then I also heard from a couple members who said on license renewals the GEIS would also be appropriate for staff or NRC contractors to use, and yet some of the questions they’re getting from NRC contractors are those that would have been answered had they looked at the GEIS. So room for improvement with that one.

The Bureau of Land Management-NRC Memorandum of

Understanding -- took a while for that to get off the ground, but there definitely has been progress made. I think Frank Martin talked well about how NRC and BLM have worked together on cooperation on the NEPA analysis. I did not know that the NRC-BLM MOU had been updated, so that was interesting and I was excited to hear Frank talk about it -- how it now includes the 106 process as well, because we'll get to that because that's an issue that has been causing delays for industry and NRC as well.

Performance-based licensing -- performance-based licensing conditions -- those were instituted about a decade ago, and we need to make sure that we continue to maximize the benefits of this approach and not undermine it. Another way to maximize use of existing resources is to expand the use of risk-informed performance-based approaches to ensure that limited resources are focused on higher risk activities. We believe this approach results in a more efficient and effective program that optimizes protection of public health, safety, and the environment. Next slide, please.

Somewhat related matter, because costs of course can be contained by wise use of resources, are NRC's fees. Not unexpectedly, applicants and licensees have faced increased costs with the increased activity in uranium recovery. NMA members, however, want to know how their money is being spent and the lack of details on invoices has been a chronic problem. In fact, you don't know how many hours were spent on which part of which reviews. There's just really a lack of information and the contractors' invoices are worse than the NRC invoices. But I just received, last week, a much appreciated letter from NRC's chief financial officer that gives me hope that we can resolve finally this issue, and he indicated that NRC fee invoices can be tailored to meet

industry needs when coordinated communications occur between the licensee or applicant, the program office, and the CFO's office. So we look forward to talking with the CFO some more on that and hopefully coming up with a solution and perhaps in the same meeting we can talk about the possibility of developing cost estimates or flat fees for routine activities in the uranium recovery area. Next slide, please.

Another critical issue that's been slowing NRC approvals is the National Historic Preservation Act Section 106 process. I think that all engaged recognized the need for a predictable process, but what's the best way to achieve that goal? We have some ideas on improvements and I thought Dennis's was a good idea -- to have the Tribal representatives involved from the earliest is a good one to include. That's a good recommendation. You know, obviously, if there were timeframes or thresholds for substantive consultation that would be very helpful. The question is though should that be done or could that be done through a programmatic agreement or through some type of NRC guidance. I hope to get the letter that I submitted on the Tribal protocol yesterday in earlier so people could be looking at that, but I think it will be included on the website for these materials. But it's National Mining Association's views that a programmatic agreement is preferred over guidance. I think it provides more certainty and it gets all the interested parties involved and provides the opportunity for them to be signatories as well to the programmatic agreement. Next slide, please.

Okay, EPA subpart W rulemaking -- this is the Radon Regulations under 40 CFR, Part 61. And why should NRC be involved? NMA thinks that EPA's position is completely flawed legally, and the administrative record doesn't

-- that directly contradicts their legal position. And they are demanding approval of evaporation pond construction at new facilities. And I don't -- I think that Cliff earlier, at least on his slides, had -- there was a mention of subpart W and NRC being engaged in helping them enforce that, so EPA's looking for NRC to be engaged as well. We think that this is very similar to when NRC -- when the Commission was directly involved with negotiations with EPA over the revisions -- the rescissions of subpart I and subpart T, and those all related to dual permitting of EPA and NRC over certain issues at uranium recovery facilities, and we think this is another instance where there's going to be dual permitting or dual regulation, and that should be something that NRC should be willing to go to bat about.

Last slide really quickly, the pre-licensing site construction, we appreciate the final rule. We know it's out there, but we just would like some additional clarification. In our view, it doesn't prohibit the construction, but it discourages it. But it's up to the licensee to float that risk, but the final rule also says that it can be grounds for denial if the licensee does go ahead and do that preconstruction activities. If the risk is on the licensee and they might have to make corrections to assist or to meet NRC standards, we don't think that that should be the basis for denial, if they're going to make any necessary changes, and we'd just like some clarification on that. Sorry for going over. Thank you.

CHAIRMAN MACFARLANE: Thank you. All right. Last, but not least, we will hear from Geoffrey Fettus, Senior Project Attorney for the Natural Resources Defense Council.

GEOFFREY FETTUS: Chairman MacFarlane, members of the Commission, thank you very much for having me today, and all of my esteemed

fellow panelists. I'll restrict my oral statement to just two points. I won't read the longer piece I submitted for the record, but I hope that's submitted for the record as well as the attached report.

The first point I'd like to discuss with the Commission today is one I didn't actually go in, in significant detail in the statement I wrote for today, but it's an important aspect of the larger report that we submitted, and I think were the topic of discussion with you today. Because I think Katie said it right. Today is the day to bring up issues of concern, and that is the need for substantially improved scientific analysis, especially on the geology and the hydrogeology to get after the environmental and public health impacts on uranium extraction and processing, and also the associated availability of that information to the public, to states, to Tribal leaders, as well as fellow federal agencies.

So, in order to improve our technical understanding of the impacts of ISL uranium mining, we worked with a hydrologist from the University of Colorado to do some preliminary analysis and modeling of groundwater flow at ISL mines. We have nothing like this agency's resources, although I hear Katie's point that you're under resourced on a whole host of issues, and I would probably concur with her on that. We might have a different set of ideas on how it would come out, but I think we would probably share the same concerns on the ability to get your work done.

But in any event, we took a run at it and we did what we could. It's discussed in some detail in our report. We chose to study the Christensen Ranch ISL site, where right now we have no historical or current involvement. What we learned buttressed our desire to ensure that the regulatory process for ISL be substantially improved. Specifically, we modeled ISL mining operations

and restoration operations, including groundwater sweep, reverse osmosis, recirculation, and we looked at a prediction in solute movement for an additional 20 years after the completion of restoration. And we were somewhat comforted to find out that the initial analysis in this one instance with an enormous paucity of information showed that the spread of contaminants was notable but not as great as we initially feared. That's good.

So, where's the bad news? The bad news was the extraordinary paucity of information and a number of caveats that had to go into the modeling, and this was an extraordinarily competent hydrogeologist with the best information that anybody could pull together. So, if our technical expert is getting this information, we expect that the same difficulties would face our colleagues at the Wyoming DEQ, and even NRC regulators or contractors trying to get this information.

After describing several limitations inherent in the study as a result of the extraordinarily scant data, we noted that quote, "The diffusion of chemicals out of the immobile region can occur over many years or decades. Thus, even if the water in the mobile zone appears clean, it may become contaminated over time by this diffusive process."

So, our experience is consistent with everything we've seen from the work of Dr. Hall at USGS and other places where anybody who has looked at this, the long term environmental health impacts are simply at this level unknown. We know that no single ISL mine has ever restored its water quality to pre-mining water quality. There have been several contaminants that have been returned to baseline or pre-mining water quality, but several have not been returned.

In short, our review which was only a preliminary effort done in part

to fill the analysis left vacant as we see it by the Generic Environmental Impact Statement indicates that ISL mining degrades the groundwater systems where mining takes place, and does so in a region already suffering from environmental harm inflicted by the extraction of oil, gas, coal bed methane and other resources. It also degrades water resources in an ever more arid and consistently drought plagued region of the county in a world affected by climate change, but as of yet there has been no comprehensive review of ISL industry effective or adjacent aquifers, or an assessment of the potential options for lessening or remediating its environmental harm. Such a detailed technical review is long overdue and certainly beyond capacities of a single NGO, but it's hoped that this paper and my testimony here today can spur the long overdue inner-agency assessment necessary to ensure the uranium mining industry does not repeat the mistakes of the past. Such technical review must take place in order to fully inform the actions we've called for here today, that and this was the point of the short statement I wrote, that the NRC should move swiftly to update the relevant environmental protections for uranium recovery as a whole with specific emphasis on groundwater protection standards for ISL mining. The sooner the improved standards can be put into effect, the sooner the public health and the environment will be protected.

EPA's representatives here today talked about a release of a draft rule. I hope in the question-and-answer period we can find out when that draft rule is eminent. I was quite specific in our written statement that as soon as that draft rule goes forward, we expect NRC's long gestating groundwater protection rule can emerge for public review, and then we can finally move forward with providing not only the public the information that we seek on the larger, long term

environmental public health impacts, but also the certainty that Katie's clients need in terms of where the environmental protection standards are going to be going. They're decades overdue and it's time to get them out. So, thank you and I look forward to your questions.

CHAIRMAN MACFARLANE: Thank you very much. Okay. We will now turn to questions and we will start off with Commissioner Magwood.

COMMISSIONER MAGWOOD: Thank you, Chairman and thank all of you for your comments this morning. It's been quite a panel. I think this is the largest panel I've seen since being on the Commission, but it is a very good panel, and I thought I would start by indicating -- I think the Chairman mentioned that we should try to speak plainly for the public to understand what we're saying. But the reality is that the way we regulate ISL properties is so complicated that very few people even in the federal government really understand. So the idea that the public would understand anything that's going on, on this panel today other than, you know, a few details here and there is probably over-ambitious because quite frankly, I've been in government for quite some time, on and off, and I don't think I've seen anything that compares in the scale of the mess that it is.

That said, the agencies that are involved in this mess do one heck of a job manipulating it. It's a real tribute to the staff, the NRC, the EPA, BLM, the states, DEQ, that they have been able to pull this together and create a framework which I think, I hope, firmly hope does protect public health and safety. We can't fix the overall framework. Only Congress can fix the overall framework, but within the framework we're operating in I think that the staffs do a very good job collectively.

So, first, congratulations to all of you for being so effective in your jobs and making this work. I did have, as I've tried to go through this, I have made visits, or a visit out to Wyoming and South Dakota where I did have the opportunity to meet with the regional offices at EPA out in Denver, BLM, and also of course met with DEQ, John Corra is his name I think. Was that the name, John --

NANCY NUTTBROCK: Yes, sir. He has since retired.

COMMISSIONER MAGWOOD: He's retired?

NANCY NUTTBROCK: We have director Todd Parfitt now.

COMMISSIONER MAGWOOD: Oh, okay. They didn't send me an invitation to the party. I don't know what happened. Well please, congratulations on his retirement if you see him, and I think that those, that the kind of interaction we have with the federal family with the states has been very close and very effective. So, I was actually quite impressed by that. I thought I would start with the questions. This is actually -- ask EPA to answer Mr. Fettus' question. When are we going to see that new rule?

JONATHAN EDWARDS: Yeah Commissioner, I can give you -- what we've done is sort of where we're headed here. In preparation for the consultation with the Science Advisory Board, of course we did do a considerable amount of work in what's called the technical background document for the rulemaking package. We are now, right now in the process of finishing the economic impact analysis document, which we should be finished up in the next couple of months or so. We're then going to move to the significant agency step of what's called final agency review for the entire package, and that should be sometime this spring, sometime in the next two to three months. After it goes

through final agency review, then whatever comments come out from the intra-office workgroup as well as the senior politicals that attend that will be modified into the rule package, and then the rule package then goes to our office of policy, and gets signed off by the senior agency officials, and then transmitted to OMB for inner-agency review, and then ultimately publishing in the Federal Register. So because of the indefinites around that latter part of the thing, the best I can tell you is to expect the proposed rule sometime later this year. I wish I could be more definite, but I hope that gives you a sense for where we are right now.

COMMISSIONER MAGWOOD: Well, this sounds like it's on a track towards getting complete, and that's the important thing, and if it -- and you know, this year, you know, that's certainly more information than I had when I walked in the room today. So, I appreciate that. That's very good to know. Are there any aspects of the process where there is a potential for a further long delay in this or do you feel pretty confident that we're --

JONATHAN EDWARDS: At this point, Commissioner, I don't see any potential hang-ups and all that, but as you probably no doubt are aware, EPA is going through a leadership transition right now, and so I can't predict how that might play into the overall thing, as well as other pressing environmental rules from different programs that may again impact the Office of Policy and what not. But at this point, I can't identify a known road bump in the future.

COMMISSIONER MAGWOOD: Okay. I'm sure staff is staying very close to you on this. We look forward to that. You mention -- you talked a bit about the changes being a certain subpart W. Can you talk a little bit more about that and how that might affect future licensing requirements?

JONATHAN EDWARDS: Commissioner, originally I was talking to

40 CFR 192, the regulation that actually encompasses all of the activities, not only the DOE oversights facilities, but also operational uranium, and then we also have a subpart on thorium activities, and what the rulemaking is looking at right now is adding another subpart very specific to ISR. So, there'll be a new subpart to 40 CFR 192. The NMA brought up subpart W. We are in the process of writing a proposed change to that rule, although I have to tell you that this is the first I've heard of the notion of possibly resending subpart W. So, I would welcome the NMA to send us a letter or perhaps petition the agency for action on that, if they'd like to go there, but right now we're focused on the rulemaking around 192.

COMMISSIONER MAGWOOD: Okay. I think that was a reference to Part 61, subpart W.

JONATHAN EDWARDS: Right, right, the -- exactly, so part W, right.

COMMISSIONER MAGWOOD: I think this relates to the ponds, is that --

JONATHAN EDWARDS: That's right, the radon emissions from the impoundment ponds, yes.

COMMISSIONER MAGWOOD: Right, okay. Good. Well, let me bounce back to Mr. Fettus, because you said something that's kind of interesting, and I wanted to give you a chance to elaborate on this. You indicate that you think that we at NRC should move out with our regulatory process, when the draft becomes available from EPA. That would be pretty unusual for us to do that. Is that, before going through the public comment, result in public comments; it seems like it'd be a lot of risk in that.

GEOFFREY FETTUS: I don't think there's a lot of risk. This has been gestating for so many years at this point, Commissioner Magwood, that there's no question NRC has a very long and thorough history in understanding of what their colleagues at EPA are doing, and the groundwater rule has been in draft form for -- I've been asking for it for years, to at least get it out. Because Commissioner Merrifield was entirely accurate when he said the agency has been trying to pound a square peg through a round hole, or maybe it was a round peg through a square hole, but in whatever geometric shape he used, he was right.

And the problem you guys face, it's a classic -- it's not your fault, but it is your problem, and that is that the uranium regulations were put together at a time when in-situ leach recovery was not the primary method. They were put together for conventional uranium recovery, and you only regulated the processing. We have a whole set of theories, if you want to talk about how a lot of this could be made a lot more coherent with greater authority provided to EPA to treat radioactivity as a pollutant the way it does everything else. But be that as it may, that's a congressional issue. We don't need to belabor that here today.

What we do face though is a nearly two decade gap where the agency has had to jerry rig its rules and how it manages regulating industry in doing a form of uranium recovery that, you know, the amount of time that many of us here spent looking at criterion five through nine, in 10 CFR. I mean talk about things that will confuse the public. Just as you said, this is a mess and as soon as EPA comes out with its long overdue draft rules, you know, I'm sure there will be road bumps down the road, but there also may be years until they can get through to a final rule because they could get sued. They could -- a

whole host of things could happen, but all the while this agency goes along permitting folks in something that Commissioner Merrifield called a mess.

So I just think the federal agencies have it well within their capacity. There are some superb staff at both places that have it well within their capacity to start to provide a sense of coherency as to where the industry is going and what the standards are they're going to have to start meeting, rather than this ad hoc license condition after license condition mess.

COMMISSIONER MAGWOOD: All right, I appreciate that. I've got about 30 seconds left. I know you can't answer this question in 30 seconds. I'm going to ask it anyway. Let me direct this back to the EPA. You heard a suggestion from NMA about the programmatic agreement. You have a lot of experience with programmatic agreements. I think BLM does as well. Do you have a thought about whether the 106 process is a good target for that?

JONATHAN EDWARDS: I can tell you a lot of EPA actions don't necessarily trigger 106 compliance, but we have seen and when reviewing many NEPA documents, or EISs where agencies do have programmatic agreements, and you know, for us it always seems to make sense to have that overarching agreement, rather than project by project.

COMMISSIONER MAGWOOD: Appreciate that. Let me close out first, I didn't have a chance to ask Mr. Yellow Thunder any questions, but I appreciate your statements. We heard that very clearly. I've heard similar statements in the visits I've had, including visits to South Dakota. So, I appreciate that you came here and delivered that message in person. I look forward to perhaps having a chance to talk with you further in person about this.

And I just want to congratulate Dr. Hall on being the point chair of

the uranium group at the OECD Nuclear Agency, as former Chairman of the steering committee of the Nuclear Energy Agency. I know how important that work is, and it's kind of nice having an American doing that. So, I appreciate that you're doing that. So, thank you very much. Thank you, Chairman.

CHAIRMAN MACFARLANE: And I believe the first woman Chairman. Good. All right, Commissioner Ostendorff.

COMMISSIONER OSTENDORFF: Thank you, Chairman. I add my thanks to those of others for you being here today. I believe that four of the five Commissioners here, except for Commissioner Svinicki, this is our first meeting on uranium recovery since we've been in office. The last meeting was March, 2010, right before we joined, for three of us. So, this is an important topic.

I want to, perhaps, start out with an area that Commissioner Magwood touched on. It concerns the groundwater piece and so I have a question for EPA, then also for NRDC here. There is a -- are you familiar with an NRC staff memo, this goes back to July of 2009. There was a staff assessment of groundwater impacts from previously licensed in-situ uranium recovery facilities. Are you familiar with this?

JONATHAN EDWARDS: I don't know off the top of my head, Commissioner, but I bet staff probably --

COMMISSIONER MAGWOOD: Let me make a -- and I'll ask Mr. Fettus the same question here. There's a comment here, and again, it's almost four years ago and I recognize it's perhaps a bit outdated, but the staff memo at that time, and again, July, 2009, says, "The staff is unaware of any situation indicating (1) that the quality of groundwater at a nearby water supply well has

been degraded, (2) the use of a water supply well has been discontinued, or (3) that a well has been relocated because of impacts contributed to an ISR facility." So, I'm looking in the context of groundwater contamination issues, some ISR operations. I didn't know if there was any general views that EPA had with respect to our staff's prior assessment, and I'll ask Mr. Fettus NRDC's position on this.

JONATHAN EDWARDS: Well, I would have to concur with what Mr. Fettus said in that, you know, generally over the years there's been a lack of data in order to really analyze this. I can't say that I've known of any major excursions as you've sort of pointed to in this last staff memo. But on the other hand, there is a concern because of the -- is the lixiviant is injected underground there. You are mobilizing a tremendous amount of the metals there, and so when you have metals like arsenic, vanadium, molybdenum, you know, silver, those sorts of things. There are obviously concerns that you need to restore that groundwater after the operation, ensure that there's some sense of stability and that you've got some confidence that there is some long term ability to say, "Yeah, that is stable there."

So, again, that's what we talked to the SAB about, you know how can we make sure that the monitoring at the baseline establishment prior to the operation, that there's a sufficient amount of time post-closure and post-flushing of the water body such that there is confidence to say that we aren't going to have those problems with nearby wells, or excursions that might damage the environment.

GEOFFREY FETTUS: Thank you, Commissioner Ostendorff. That same memo, and this is the July 2009 memo, that same memo, the NRC

admitted, and this was just a short study of 11 restoration sites at three ISL facilities. And so, this is exactly what I'm talking about when I say I think the science is out still. The science hasn't been done. This was an extremely brief study. The data showed that over 60 percent of the constituents were restored to their preoperational concentrations, which means 40 percent were not restored to their preoperational concentrations. Of course the NRC's short memo and then the more extensive but not nearly enough GEIS failed to do in any analysis where they actually went out and looked at a lot of these aquifers, and looked at what Mr. Edwards was just describing. So that memo that, in fact, I think supports the point I'm trying to make, that the technical work hasn't been done on the hydrogeology, and it's leaving the states, and the areas, and the Tribes, and the public around these areas, we don't know what's coming for the long term. And we don't know what the long term degradation is going to be, and I will tell you having been a former western land lawyer for the state of New Mexico, whiskey is for drinking and water is for fighting. And water is what it's all about, and the idea of what is a viable water source over the next 10, 20, 30 years in the American west, and over the past 10 to 20 years has changed enormously. So if we're going to be potentially sacrificing for the long term, meaning for aquifers, then it needs to be something that we need to do with a much clearer scientific understanding, and not moving forward on this permitting process right now, and the final licensing that I'm discussing. So, thank you.

COMMISSIONER MAGWOOD: Thank you. Nancy let me ask a question from the state of Wyoming's perspective, and I know that I'm sure you get involved in all kinds of mining activities other than uranium mining, and so I'd just be curious. Are there any big differences in approaches between uranium

mining in your state for safety or environmental concerns compared to other types of mining?

NANCY NUTTBROCK: I would say that the concerns expressed here around the table are shared within the state, certainly pertaining to ISR. The regulation of the ISR industry is certainly much more complex I would say, yeah and given the multitude of federal and state involvements, and jurisdictions, then the mining and regulation of other resources in Wyoming.

COMMISSIONER MAGWOOD: From a regulatory perspective, are there any significant philosophical differences on safety between uranium mining in your state and other mining activities? I understand the complexity issue that you're saying, but just from a philosophical approach to safety or environmental protection?

NANCY NUTTBROCK: Philosophically, groundwater protection is of utmost concern not only of the DEQ but of the citizens of Wyoming. But I wouldn't say that's specific to uranium mining. I think that's a general concern of citizens when any mining activity is taking place.

COMMISSIONER MAGWOOD: Okay, now if I can ask the same question of Dennis, please. Assume your Tribe has interactions with other types of mining, other than uranium mining, or maybe you don't. I'm not sure. Do you have involvement with other types of mining activities outside the ISR?

DENNIS YELLOW THUNDER: I believe that generally speaking our reservation is mainly concerned with the uranium mining that's happening around the borders of our reservation, and we don't generally get too involved with any other type of mining activity although we are often involved in the consulting, and consenting, and TCP identification processes in regards to other

Tribes situations in regards to oil and gas like up in North Dakota. Sometimes we are presenting a unified front in those areas as far as the cultural aspect of it, but generally our main concerns are the environmental impacts of the uranium mining that is occurring around the borders, northwestern, southeastern borders of our reservation. So, generally that's the only type of mining that is greatly impacting us right now.

COMMISSIONER MAGWOOD: Thank you. I have time for one last question, and Katie, you identified a lack of NRC staff resources to handle permits for uranium mining. I know that Susan, in your presentation you indicated I think 91 percent of the uranium supply in this country comes from foreign sources, and because the long lead time of 15 to 20 years from discovery to production, et cetera, that there's some predictability of what may happen in the future. And I was curious, you know, how do you characterize -- I'll ask both of you real quickly. How do you characterize the predictability of future mining applications? Our staffs can tell us later on in the next panel that about 40 percent of projected applications that industry tells us we're going to receive never come in. So, I'm curious as to how to look at the predictability of this industry.

KATIE SWEENEY: Forty percent never come in or they come in at a different timeframe than --

COMMISSIONER MAGWOOD: Different time period, okay. That's good.

KATIE SWEENEY: Yeah, and I saw those slides too, and I thought that number was really interesting, because even if 40 percent don't come in, there are still not enough resources for NRC, and it is difficult to predict. And it's

definitely -- the National Mining Association would like to figure out some ways that we might be able to provide, the industry might be able to provide additional information that would firm up some of those timeframes.

COMMISSIONER MAGWOOD: Okay. Susan, do you have any comments on the predictability of the future activities?

SUSAN HALL: I would only comment that, you know, there's a number of hurdles that the companies are facing right now. Katie can probably speak to that more fluently, but you know, a company may get to a certain point and have trouble raising money. The uranium price is quite low right now. So you know, it may come in and they may have to pull out an application for lack of funding, but it will come in eventually. The resources are there. It's just a matter of timing in terms of developing them.

COMMISSIONER MAGWOOD: Okay. Thank you. Thank you all. Thank you, Chairman.

CHAIRMAN MACFARLANE: Okay, thank you. Okay, my turn. Thank you all for your presentations. I found them very helpful, but I note the lack of -- and maybe this is just my technical narrow point of view, but I note the lack of technical discussion on exactly some of the leaching issues, some of the groundwater contamination issues in a panel of nine people, eight people. Can't count. Well, so much for technical capabilities.

[laughter]

All right. A quick question for you, Mr. Edwards. Do you mobilize lead, because lead is a daughter product of uranium and you said you mobilize heavy metals.

JONATHAN EDWARDS: I'm sorry. I'd have to get some technical

expertise on that. Phil, do you --

MALE SPEAKER: Yes.

JONATHAN EDWARDS: We can, yes, yeah.

CHAIRMAN MACFARLANE: I would imagine if you're mobilizing uranium, you could probably mobilize lead; it's not quite as heavy as uranium. I don't know. Okay, so in general I'm interested in the leaching and some of the new technology. Susan, right now is all the in-situ leaching done in sedimentary rocks?

SUSAN HALL: Sandstone hosted deposits, yeah.

CHAIRMAN MACFARLANE: Okay, and if you had, you know, some of these other deposits in phosphates, are there deposits in igneous or metamorphic rocks?

SUSAN HALL: It would be a new set of elements. Typically though what we're concerned with are read-ox sensitive elements. So, arsenic, molybdenum, uranium of course.

CHAIRMAN MACFARLANE: Okay.

SUSAN HALL: And there's different, you know, you have to -- once they're oxidized as part of the mining process, they essentially need to be re-reduced to be immobilized again.

CHAIRMAN MACFARLANE: Right, and when they're mobilized, they're mobilized in solution, they're mobilized on colloids?

SUSAN HALL: They're mobilized in a solution and then extracted on, you know, resins at the surface.

CHAIRMAN MACFARLANE: Right, right, right.

SUSAN HALL: And a lot of operations use carbon dioxide or some

other carrier that will, you know, bind with these elements and bring them to the surface more effectively as well.

CHAIRMAN MACFARLANE: But in these other deposits, there are uranium deposits in the U.S. that are either igneous or metamorphic, yes, and would you use in-situ leaching or not?

SUSAN HALL: I can't imagine that you would. The permeabilities would be so --

CHAIRMAN MACFARLANE: Right, yeah.

SUSAN HALL: -- that --

CHAIRMAN MACFARLANE: I can't imagine either, but I'm just checking.

SUSAN HALL: Yeah, yeah, even some of the sandstone deposits maybe more effectively mined using conventional methods.

CHAIRMAN MACFARLANE: Right, right, so these calcrete deposits, are these surface deposits?

SUSAN HALL: Yeah.

CHAIRMAN MACFARLANE: Okay.

SUSAN HALL: Yeah.

CHAIRMAN MACFARLANE: Sorry, we're just going to speak in code for few minutes.

[laughter]

SUSAN HALL: Everybody else is speaking code around here.

CHAIRMAN MACFARLANE: Yeah, I know. We might as well too, right? So, in terms of these other deposits like the phosphate recovery in Florida or this hydraulic borehole mining, I'm interested anybody, you guys, have any

views on some of these new technologies for extracting with these kinds of methods, and whether you believe there are adequate standards in place to evaluate these technologies and their impacts?

GEOFFREY FETTUS: There aren't adequate standards in place for what's happening now.

CHAIRMAN MACFARLANE: Okay.

SUSAN HALL: Well, the phosphate mining would be you take a stream from a phosphate mining operation already in place, and run it through an ion exchange extraction process, removing uranium from --

CHAIRMAN MACFARLANE: And the phosphate mining is not in-situ leaching?

SUSAN HALL: No, it's actual mining, yeah, yeah. So, I'm not sure of all the details. They've just done pilot testing of this process. A number of countries -- you know, it's a huge resource worldwide, huge.

CHAIRMAN MACFARLANE: [affirmative]

SUSAN HALL: So, a number of countries particularly around the Mediterranean are quiet interested in anything that they can use to economically extract. So --

CHAIRMAN MACFARLANE: So the bottom line is uranium is in everything almost?

SUSAN HALL: There is a lot of uranium running around the natural environment.

CHAIRMAN MACFARLANE: Yeah.

SUSAN HALL: It's just finding it --

CHAIRMAN MACFARLANE: No shortage of uranium.

SUSAN HALL: Yeah.

CHAIRMAN MACFARLANE: Yeah. Yeah, yeah. No, I even did research on uranium and Hemolian granites anyway, a long time ago. What about you guys? Do you have a view on the new technologies?

JONATHAN EDWARDS: I have to tell you, I don't know enough about the technology. We haven't investigated enough to be able to comment on that, Chairman.

CHAIRMAN MACFARLANE: Okay, okay. So Jeff, Do you know if there's data? You've highlighted the paucity of data. Are there data from ISRs done in other countries like Canada maybe or wherever else it might be done to suggest impacts?

GEOFFREY FETTUS: Not a lot. Not a lot. There were some work done in Australia. There was a little bit of work that we found done in Canada, but again not a great deal. What we found in Kazakhstan that was done was very difficult to find, and truly troubling because they used more of an acid solution rather than a base. So, the impacts were substantially worse as far as we could tell with the brief amount of data we could find, but no. It's not like the nuclear waste issues where you can look around the world and find a host of serious geologists and radiation health physicists and others thinking about things.

CHAIRMAN MACFARLANE: [affirmative] does anybody -- do you know if there's any?

SUSAN HALL: Very little, very little information. I looked in state records in Wyoming, and Texas, Nebraska, and pulled together what I could, but even in Texas I think the study you're referring to, I could only find, you know,

approximately half to two thirds of the records remained, so...

GEOFFREY FETTUS: And if I could ask a question of Dr. Hall. Didn't you have to go to somebody's garage or something like that at one point?

SUSAN HALL: It wasn't that bad, but it was the Texas Commissioner of Environmental Quality Offices and --

GEOFFREY FETTUS: Oh, okay.

SUSAN HALL: -- they were not garage like.

GEOFFREY FETTUS: Thank you.

[laughter]

No offense intended, just...

SUSAN HALL: It's an exploration project, finding the data...

GEOFFREY FETTUS: By the way, I'd like to thank Wyoming and the staffers we had help us at the DEQ in terms of trying to get that information. They were all to a person terrific and helpful.

CHAIRMAN MACFARLANE: So Susan, your impression is that there is this paucity of data?

SUSAN HALL: Right, right, yeah, and especially internationally there's almost none.

CHAIRMAN MACFARLANE: Yeah.

SUSAN HALL: There's Kazakhstan, there's one study that was published that --

CHAIRMAN MACFARLANE: The Canadians had done any work on this? No?

SUSAN HALL: I'm not sure they've even done any on ISR mining.

CHAIRMAN MACFARLANE: I guess they have their -- they don't

do sandstone.

SUSAN HALL: Yeah, they're mostly -- right now they're mining the unconformity deposits that are really high grade.

CHAIRMAN MACFARLANE: Right. They're really old.

SUSAN HALL: They have water problems, but it's in keeping the water out. Yeah.

CHAIRMAN MACFARLANE: Yes.

SUSAN HALL: Protozoa gage.

CHAIRMAN MACFARLANE: Yeah, protozoa stuff, more code. Okay, question for Mr. Yellow Thunder. Are there areas of a cultural sensitivity that you believe the NRC is not really attuned to properly, and if so can you help identify that?

DENNIS YELLOW THUNDER: There are certain areas -- actually when you want to -- if you want to speak to the fact of the areas, we regard our whole ancestral homelands, which is from the eastern borders of Missouri, eastern shore land of Missouri down, as far down as Yankton, South Dakota, as far as Sioux Falls, back down into that area all the way up to the Montana and Wyoming areas are regarded as our ancestral homelands that there are very important and significant traditional cultures that lie within those ancestral boundaries. And to some extent there are some very culturally sensitive areas that are within the Black Hills of South Dakota, which we regard as very sacred and very culturally significant. And it is generally in that particular area along with other sites that are of cultural significance to other Tribes. They have their own Black Hills. They have their own culturally significant sites that you want avoidance of, to preserve them for the future, but right now I think as far as the

Oglala Sioux Tribe is concerned, it is the Black Hills and that surrounding area in which there are proposed projects that we regard as being very sacred, and want to bring that message to NRC of the importance of those particular areas. There are burial grounds up there. There are caverns. There are stone circles. There are effigies. Those are very important and so to narrow it down to Black Hills and that surrounding area, Devils Tower, Bear Butte, Harney Peak, Pe Sla of course you've heard of that one as the Rosebud Tribe has purchased. Those are some of the more significant areas that I think, and I believe, that the NRC and its staff, field staff and others are making I believe a very strong effort to understand --

CHAIRMAN MACFARLANE: Okay.

DENNIS YELLOW THUNDER: -- and that was what I was referring to earlier is we are building a better rapport when it comes to those extreme sensitive high density areas like that, and so basically I think the Black Hills is one of those areas that you're referring to --

CHAIRMAN MACFARLANE: [affirmative]

DENNIS YELLOW THUNDER: -- that the NRC and its staff, field staff, project managers, or these other individuals that are involved are making progress in becoming in tune with those areas. So, I think yes we're making progress and hope to make better progress as we move forward, but the Black Hills specifically is one area which is very culturally significant.

CHAIRMAN MACFARLANE: Thank you. Thank you. Commissioner Svinicki.

COMMISSIONER SVINICKI: I want to add my thanks to all of you for being here today. My colleague, Commissioner Ostendorff makes me feel like a little bit of a grizzled veteran I guess this may be -- this is at least my third if

not my fourth Commission meeting on uranium recovery, and the staff, the NRC staff when they present shortly, will show a graph of what was happening to uranium prices in the year when I joined the Commission in 2008. So, that is some correlation to the increase in our staff activities, and at one point I think the Commission was at least attempting to meet annually on this topic, and then that also makes you reflect, I think as some have mentioned is that we seem to convene and have the same list of topics that we discuss, and the same rulemakings that we talk about over a period of years. And I can't put any argument to that. We do have a lot of the same topics each time we convene to talk about this.

My colleagues have covered a lot of ground. I did have some specific questions that arose from things I heard or thought I heard in some of the presentations. So I might return to that. I wanted to begin with the Section 106 process, and I'm not an expert in that process, but I thought I discerned that there was at least some general agreement that the Section 106 process could be improved, and then I thought I heard maybe some specific agreement that a potential improvement would to be to have the Tribes involved earlier in the process. I think that Mr. Yellow Thunder mentioned that and that Ms. Sweeney agreed with it. So I couldn't help but note that and I wondered if there's general agreement that improvement is needed in specific agreement that this would be an improvement, and are there barriers to having the Tribes involved earlier, and if so what are they?

And then Ms. Sweeney, I would ask you specifically to address -- I'm sure that your member companies are very active in trying to have public awareness and education in the areas where they operate. So, I know that

there's a government-to-government interaction that occurs between the federal government and the Tribes, and of course the member companies can't conduct that since it's a government-to-government engagement. But could you speak to this issue of why maybe there's only engagement that occurs later?

KATIE SWEENEY: I think part of it is that the fact that the Tribes are waiting for the government-to-government engagement, and there is educational efforts on the part of the applicants and the licensees to reach out to the nearby communities and nearby Tribes, to let them know in advance of the application being filed, what's going on, what's being planned, what the scope of the project might be. But it is difficult to have direct interaction with the Tribes before the formal process begins, because they do want to have that government-to-government consultation, which is understandable. I think one of the reasons that we were suggesting a programmatic agreement is because you could actually have the Tribes as one of the signatories to the agreement, and then you could hammer out a lot of these issues up front, and have better interactions between industry and the Tribes, the Tribes and NRC, and other interested stakeholders.

COMMISSIONER SVINICKI: That sounds like it's a term of art that I wasn't really sure of the specific aspects when you referred to a programmatic agreement. It sounds like EPA has some activities that utilize a programmatic agreement. What are the key components of that if it's a term of art, is it liken a memorandum of understanding?

KATIE SWEENEY: No, it's a more binding on the parties, not that a memorandum of understanding isn't binding, but it's got a little more heft to it than that. But it is something that's contemplated by the regulations for the

ACHP that programmatic agreements are one way to address the Section 106 consultation process, and a programmatic agreement could be on a regional basis. It could be on a national basis. NMA submitted as part of its comments yesterday as an attachment, national level programmatic agreement that BLM had done, that addresses their 106 consultation process for their permitting on federal lands. Frank could probably talk more about it if you had questions about specifics, but yeah. It's a process that's contemplated under the law.

COMMISSIONER SVINICKI: Okay. Frank, did you want to add anything to that? Are you in general agreement?

FRANK MARTIN: I'm sorry, I have trouble hearing.

COMMISSIONER SVINICKI: Okay, on the programmatic agreements, I wasn't familiar with the term. It sounds like it's a kind of a term of art for some processes, but it sounds like it can be tailored for different applications. I don't know if you have a lot of use with programmatic agreements.

FRANK MARTIN: Not that I'm aware of.

COMMISSIONER SVINICKI: Okay, all right. Thank you, and then I guess, Ms. Sweeney, to stay on some of the comments you had made, you indicated that you had a response from the chief financial officer on the level of invoice detail. My understanding is that our system actually, the NRC staff is tracking a lot of the costs at a pretty significant level of detail, and it would just be a matter of finding out the different components of data on tailoring the output of the invoice. I'm told though that our databases are quite powerful and that we track an awful lot of information that was not reflective in the invoices that we send. So, hopefully, there will be some way to move forward and have maybe

something that would be a more constructive amount of information, at least it sounded encouraging to me, what it was the power of what our system was capable of doing.

And then on the final rule on pre-licensing site construction, you said clarification was needed on the final rule, and I mentioned the fact that we need and talk about the same issues. I guess the only thing that's more discouraging is to hear that we finally got a final rule done on something and it wasn't clear. I know the staff worked hard on that. I remember reviewing it and voting on it myself, and I thought it was a pretty significant effort on the NRC's part. So can you help me understand a little bit more there of what, how -- and were those comments that NMA submitted but the staff just addressed them in some other way, or...

KATHIE SWEENEY: They did address the comments in the final rule. There was a response to some of the comments that we made particularly on the previous Commission decision at Nuclear Fuel Services, but our -- the crux of the problem is the final rule does say that, you know, NRC isn't going to prohibit such activities, discourage but not prohibit. But then at the same time says that, "The application can be denied if the preconstruction activities happen."

COMMISSIONER SVINICKI: Which sounds like very strong discouragement.

KATHIE SWEENEY: Yeah, and we're just thinking if the risk is on the licensee that they might have to correct something or undue something to get their license approved, it doesn't seem to me that there should be that language in there that would say that NRC can deny the approval.

COMMISSIONER SVINICKI: Okay, well it might just be something akin to fairly standard language that we need. I can certainly ask the NRC. I'm not going to ask you to try to pause it while the NRC staff structured their language in a way they did. I can take that up with them.

I guess I'll just close with a statement. You had indicated that one of your member companies received notice I think you said yesterday, about some uncertainties related to review of their application. I'm going to take some measure of responsibility for that and I'll explain why. It's that starting the latter half of last year, the Commission met in a series of programmatic meetings with the NRC staff, to look at different areas of activity, what the challenges were, what the level of activity, what priorities were being set. And in the area specifically of ISLs, we talked about this. We get letters of intent as Commissioner Ostendorff was mentioning, how many applications do we get on what schedule, and I encourage the NRC staff, and then the Commission as a whole adopted some directive language to the staff in the memorandum that came out of the meeting, that told the NRC staff that we needed at least to try to give some signals and transparency to applicants if there were schedule uncertainties. Because I think, again, perhaps the only you know, worse news then it might be delayed is that we knew it was going to be delayed and we didn't tell the applicant. So I just thought that there was really no down side to the fact is that if they had -- the NRC staff had indication of potential delays, and I think we're all not talking about the elephant in the room. Since this is February 20th, all federal agencies if sequester takes place will be affected. I'm surprised that our partners from EPA didn't -- it was tee'd exactly up by Commissioner Magwood, are there any potential things that might delay this rulemaking --

[laughter]

-- and I can't believe that every federal employee doesn't reflectively say to that, "Sequester is the answer to that question." So you know, I will just say that I think that the Commission as a whole has told the staff to try if and when that sequester occurs, we need to be as transparent as we can be about the effects of that on people who have things pending before the agency. I'll end with --

KATHIE SWEENEY: I appreciate the transparency.

COMMISSIONER SVINICKI: Okay. All right. Thank you. Thank you, Chairman.

CHAIRMAN MACFARLANE: Thank you. Commissioner Apostolakis.

COMMISSIONER APOSTOLAKIS: No questions.

CHAIRMAN MACFARLANE: No questions? No questions. All right, then that means we go faster to our break. We will take a break of five minutes. Let me thank the panel again. We will be back here in five minutes.

[break]

CHAIRMAN MACFARLANE: Okay. I think we're going to get going. Now we are going to hear from the NRC staff and I will turn it over to Mike Weber who is the Acting Executive Director for Operations.

MIKE WEBER: Thank you, Chairman. Good afternoon. Good afternoon Commissioners. It's our pleasure to appear before the Commission today and make a presentation on the staff's Uranium Recovery Program. Uranium recovery is a small but important part of the Agency's program. About one percent of the Agency's resources are devoted to the Uranium Recovery

Program where we focus on ensuring protection of people and the environment. It's also important because as the Chairman pointed out in your opening remarks, uranium not only fuels the nuclear power plants and the research and test reactors, but is also used in fabricating the targets that are used to prepare medical isotopes and for other applications.

In the last several years, uranium recovery has seen renewed interest in the United States. This is driven by not only the increase in the price of uranium, but also in the expiration this year of a megatons-to-megawatts program. And thus, we expect that some of the imports that have been occurring over the last several years will no longer occur and thus it drives more of a domestic interest in the uranium supply.

To provide our presentation today, I'm going to turn it over to Mark Satorius. Mark's the director at the Office of Federal and State Materials and Environmental Management Programs and his staff to lead us through. Mark?

MARK SATORIUS: Thanks Mike. And good afternoon Chairman, Commissioners. The next slide, please.

Today we will discuss the Uranium Recovery Program with a focus on the licensing of new recovery facilities and cover the substantial progress that we've made since we last briefed the Commission on this program in March, 2010, and also to go over a few of our challenges. With me today are Drew Persinko, the deputy director of the Division of Waste Management and Environmental Protection, Bill von Till, who's the branch chief of the Uranium Recovery Licensing Branch, and Kevin Hsueh, who is the branch chief of the Environmental Review Branch. And they will be covering topics as we go through our presentation.

Before we get started, a couple of key messages I'd like to share with you is that the Uranium Recovery Program consists of new licensing, managing existing facilities, inspections, guidance development, and outreach. Planning and budgeting are based, as you heard on the previous panel, on letters of intent from applicants that provide application submittal dates. We have undertaken a number of program efficiencies, which include the development of a generic environmental impact statement and conducting pre-submission application reviews. And lastly, the focus is gradually shifting more to oversight and inspection as new sites are licensed and put into operation, which results in less resources available for new licensing.

Could I have the next slide, please? As you can see from this slide, the price of uranium was stable for quite some time, bouncing between $10 and $20 per pound. In 2006 to 2007, prices soared as Commissioner Svinicki mentioned earlier, for many reasons, one being such as the indication of a nuclear renaissance for both new builds here and abroad. Since the peak in approximately 2007, the prices fluctuated between $40 and $80 per pound. We're now seeing a large growth in applications over the next several years based on the letters of intent that we've received. And as has been mentioned before, we have faced and continue to face a challenge in planning and budget execution due to the inaccuracies of some of these letters of intent. These letters of intent have traditionally turned out to have an inaccuracy of about 40 percent. So if we get 12 letters of intent to come in in 2014, we may actually get three or five in 2014, with the others coming at later dates when funding may be available or other applications may have been satisfied.

So I'm going to turn it over to Drew Persinko and he's going to

proceed with the staff presentation.

ANDREW PERSINKO: Okay. Thank you, Mark. Good afternoon Chairman. Good afternoon Commissioners. My presentation today provides a programmatic overview of the Uranium Recovery Program with a focus on licensing new uranium recovery facilities. Next slide.

Since we last met with the Commission in March, 2010, on this subject, we made substantial progress, most notably issuing three licenses for in-situ uranium recovery facilities. It is the first time in 15 years that the Commission has issued a new license to a uranium recovery facility. Additionally, we conducted pre-application reviews to improve the quality of application and Region IV with its two uranium recovery inspectors and with headquarters' assistance in some cases, conducted 18 inspections at five licensed sites and investigated an operating event at one site.

With 20 technical staff in two review branches in headquarters, we are currently managing three operating facilities and providing assistance to the Region for inspections, working on nine major licensing actions, and developing guidance for heap leach and conventional mills, the word heap referring to a pile of ore.

This fiscal year we expect to complete the safety and environmental reviews for four sites and issue new or renewed licenses or amendments for these sites and support hearings that will begin for two or three of these sites. As we look ahead, we expect that our workload will significantly increase over the next several years based on letters of intent from applicants and the increase in the number of licensed facilities. These letters of intent provide license application submittal dates that we use for planning and

budgeting purposes. Next slide.

With respect to program enhancements, in 2011, we began offering pre-application reviews to help improve the quality of applications. Of the six that we have performed, we have received three applications. For these three, the staff has generally seen an improvement in the quality of the applications compared to applications where no pre-application review was performed. Applicants have been complimentary of this initiative.

In the past, it's taken about 33 months to complete our safety and environmental reviews, which is comparable to the time it takes to complete an environmental review elsewhere in the Agency. Based on experience gained, having performed a number of safety and environmental reviews, we believe that the review time can be cut to approximately 30 months or less, assuming a quality application and timely responses to requests for additional information.

In 2009, we completed a generic environmental impact statement that serves as the starting point for site-specific environmental reviews. We have used the generic environmental impact statement in five reviews and believe that it has resulted in efficiency gains. Kevin will speak about this in more detail when he speaks.

Section 106 of the National Stored Preservation Act requires, among other things, that federal agencies consult with Native American Tribes concerning properties that may have religious and cultural significance to the Tribes that may be affected by the licensing activity. The National Historic Preservation Act created the Advisory Council on Historic Preservation that, among other things, administers the Section 106 review process. Implementing the Section 106 process has been more challenging for uranium recovery sites

than other NRC licensing actions because most of our sites are located in the west where there are normally 20 to 30 Tribes who are actively interested in each application.

Although Section 106 is a separate requirement from the National Environmental Policy Act or NEPA, we implement the Section 106 process as part of our NEPA process as permitted by the advisory council's regulations. We believe that we made improvements to the process in the way we implement the Section 106 process over the past two years and are continuing to explore further ways to improve the process. Kevin will discuss this when he speaks to it later. Next slide, please.

Our review priorities are that we work on licensed sites first that includes activities such as inspections, operational events, and operational amendments, sometimes referred to as licensing maintenance actions. The new licensing that includes new licenses, license renewals, and amendments for expansions into new areas, and then guidance. The order reflects ensuring the safety of operating facilities. We perform safety and environmental reviews for an application in parallel to the extent possible. For new licensing, we do our planning based on letters of intent. We perform our acceptance reviews based on the order of receipt and the detailed review based on the order of acceptance.

The Uranium Recovery Licensing Program has an annual budget of about $6 to $7 million, a relatively small program compared to some other Agency programs. At current resource levels, we have the capacity to work on eight to 10 major licensing actions at a given time. We are currently deferring work on one application. However, we anticipate starting that application next month when resources become available as we complete current work. Because

of the small size of the environmental review branch relative to the work, we make extensive use of contractors. That being said, the size of the staff limits the number of contracts we can simultaneously manage since we must maintain a balance between staff and contracts in order for staff to oversee the work. It should be noted that the Environmental Review Branch also performs environmental reviews to support the Office of Nuclear Material Safety and Safeguards.

We face a challenge in budgeting for and scheduling work because applicants' letters of intent that we used to plan and budget, have proven to be only about 40 percent accurate with respect to the year of submittal. Starting this fiscal year and going through FY15, we anticipate receiving 21 applications based on the letters of intent, one of which has already been received. Next slide?

This slide graphically shows the number of projected applications by fiscal year. The red bar represents the number of submittals according to the letters of intent. The green bar represents what we believe is a more realistic number based on historical data tempered by staff confidence in the FY13 submittals. And the blue bar represents the carryover from the previous year, essentially the difference between the red and green bars in the previous year. The slide shows that a significant amount of work is projected to be submitted, assuming that all applications and the letters of intent materialize.

This bar chart -- oh, here we go -- this bar chart depicts the number of applications that we project to have on our plate for review through FY 5. It factors in our current work load, our completion schedule, timing of new applications, and the cascading effects from year to year due to a multi-year

review. It assumes that 60 percent of the application submittals are delayed by either six months or by one year, and that all applications for which we currently have letters of intent, are submitted, albeit later than in the letter. The applications are projected to begin to increase in the latter half of FY13 and peak at about 20 in FY15.

Based on current resource levels and a flat budget environment, the number of deferrals is projected to increase, even when considering the uncertainty in the letters of intent. These deferrals result from an increased number of submittals and an increased number of licensed sites that will place additional resource demands on the same staff that work on new license applications.

To address the current and anticipated future work load, we've assigned staff from other branches within the division and borrowed from other offices and are looking at other ways of increasing staff levels and capacity while remaining mindful of our Uranium Recovery Program budget. Next slide.

Since March of 2010, we have conducted approximately 60 public meetings, conducted numerous Tribal outreach activities, and conducted both safety and environmental workshops to convey lessons learned. Additionally, we interact often with other federal agencies, such as the Bureau of Land Management, Environmental Protection Agency, and the Advisory Council on Historic Preservation. We also interact with state agencies in Wyoming, Nebraska, South Dakota, and New Mexico, states where many of the uranium recovery facilities are located.

Further, at the request of the Commonwealth of Virginia, we gave presentations about the NRC Uranium Recovery Program to the Commonwealth

as it decides whether to lift the moratorium on uranium mining and milling and whether to modify the Agreement state Agreement regarding a potential uranium site in Virginia. In addition to the normal interfaces with applicants and licensees, we also interact with the uranium industry, having given presentations at the National Mining Association meetings and other industry conferences. Thank you. I will now turn it over to Bill.

BILL VON TILL: Thank you, Drew. Good afternoon Chairman and Commissioners. My discussion topics will include a summary of major licensing actions, actions for license sites, and projections for future actions. This slide illustrates a typical uranium recovery facility in the United States today. In-situ recovery has become the preferred method used by industry. However, it is not feasible to extract uranium from all ore bodies using this technology. This is due to a variety of factors, including depth of the ore body, lack of groundwater formation, lack of permeability, and lack of confining units. Therefore, we still expect some conventional and heap leach applications in the future. Next slide, please.

This slide illustrates the location of uranium recovery sites where we have the majority of actions in sites that I will cover later. All current uranium recovery sites in the U.S. are located in the west and in Texas. However, as mentioned earlier, there has been recent interest in south central Virginia for conventional milling and mining. Next slide, please.

We have granted three additional licenses since we last briefed the Commission in 2010. This slide illustrates the nine reviews we have on our plate now that Drew mentioned earlier. These actions are broken into license renewals, new facility application reviews, and reviews for expansion of existing

facilities. To complete these actions, it takes approximately 4.5 to 5 FTE and $850,000 over the life of each project.

With respect to actions listed in the table, we expect to complete a number of major milestones within the next several months. I'll now go through the table in more detail. For the Cameco Crow Butte license renewal review, the final safety evaluation report was completed in December, 2012, and the environmental review is scheduled to be completed this fiscal year.

For the Cameco Smith Ranch license renewal review, questions are being developed. For the Cameco Crow Butte North Trend expansion, the final safety evaluation report is scheduled to be completed shortly, and the environmental review is scheduled to be completed in this fiscal year.

For the Cameco Crow Butte Marsland expansion review, questions are being developed. The Uranium One Willow Creek license renewal review is near completion.

For the Powertech Dewey Burdock new in-situ recovery review, the final safety evaluation report is scheduled to be completed shortly, and the environmental review is scheduled to be completed this calendar year.

For the Strata Ross new in-situ recovery review, the final safety evaluation report is scheduled to be completed shortly, and the environmental review is scheduled to be completed this calendar year.

For the Uranium One Ludeman expansion, the applicant is in the process of responding to questions.

For the UR Energy Lost Creek Dryer expansion, the review will be completed shortly.

Expansions for existing facilities increase the number of licensing

actions at a facility and the scope of inspections. It's important to note the hearings have been granted for the Cameco Crow Butte license renewal, the Cameco Crow Butte North Trend expansion, the Powertech application and Strata application. Two to three hearings are anticipated to start in full this year with the completion of reviews. And in addition, a hearing petition has been filed for the Marsland expansion review.

Our first priority is the oversight inspection of operating sites. When issues arise that call for us to devote more resources to our first priority, we may experience resulting delays in our second priority, new licensing. Next slide, please.

Next I will cover actions associated with already licensed sites. There has been an increase in operating sites since 2010. Uranium One's Willow Creek in-situ recovery facility became operational in December, 2010. And the UR Energy Lost Creek and Uranerz Hank and Nichols Ranch sites are under construction and anticipated to go operational this year.

Region IV is the lead for inspections for uranium recovery sites and my counterpart is Dr. Blair Spitsberg. For operating uranium recovery sites, I want to emphasize that headquarters staff provides support for inspections, especially in the area of groundwater protection for in-situ recovery sites.

Now we'll turn to the types of actions for licensed sites. These actions are highly variable in scope and duration. Some actions occur at the start-up of a new facility. Some occur during operations. And other actions occur at the groundwater restoration and decommissioning stage of a facility's timeline. Some examples of actions are annual surety reviews, decommissioning plans, restoration reports, change of control requests, flow rate increases, and

dryer expansions, to name a few. Next slide, please.

Now I will turn to the projection of future actions. We maintain a public table on our website with the latest information on anticipated future actions. And we make updates to that table monthly. We work early and often with potential applicants to assure quality applications.

This slide illustrates what we expect in the coming years. I'm using this slide to emphasize a key message. There are many actions anticipated for license sites over the next few years in addition to new applications. Note that we have two green bars on this slide, first showing the license maintenance activities and the second showing expansion reviews. Also this slide assumes a flat budget. By fiscal year 2015, we anticipate there will be 11 sites licensed to operate. We also anticipate that existing sites will be larger due to expansions. I'll now turn the briefing over to Kevin Hsueh. Thank you.

KEVIN HSUEH: Thank you, Bill. Good afternoon Chairman and Commissioners. Today I will discuss the implementation of GEIS and the related SEISs for ISR or in-situ recovery facilities, Section 106 consultations, and the process improvements associated with environmental reviews. Next slide, please.

The staff's GEIS serves as the starting point for its analysis under NEPA or the National Environmental Policy Act for site specific ISR applications. The GEIS determines which impacts was essentially would be the same for all ISR facilities and which will be different and thus require further site specific information and analysis. Staff tiers the SEIS from the GEIS by incorporating applicable GEIS discussions by reference and adopting relevant GEIS environmental impact conclusions in the staff's site specific environmental

reviews.

Since March 2010, staff has issued the first three SEISs tiered from the GEIS and we are currently working on two SEISs and plan to issue them later this year. By tiering SEIS from the GEIS, staff gains efficiency by focusing on important site specific environmental issues. Next slide, please.

This slide shows the contract cost savings of tiering from the GEIS. The cost for GEIS was about $1.2 million. Total cost for completing the GEIS across the first three SEISs was about $3.3 million, which is less than the estimated cost of about $4.5 million for completing three standalone ISR EISs. Staff saved about $1.2 million for completing the first three SEISs alone and expects further savings when most SEISs are completed. Next slide, please.

This slide shows the four steps in the Section 106 process as well as the public's involvement in the process. Each step involves consultation with Native American Tribes, state historic preservation officers and other consulting parties. The amount of time spent in the consultation can be significant. The Section 106 process is complete when any of the outcomes on the right hand side is reached. Next slide, please.

The Section 106 process has presented certain challenges in recent years. There has been a significant increase in the number of Native American Tribes interested in each ISR project. From a few Tribes prior to 2010, to a current average of 20 per project, we are currently interacting with about 30 Tribes in total. As Tribes are sovereign nations, each Tribe’s views need to be respected and taken into consideration. Staff also takes into account views from other consulting parties, including applicants and state historic preservation officers.

More recently, Tribes have been requesting field surveys at the proposed IST sites to identify properties of significance to them. Staff has been working with the Tribes and the other consulting parties to respond to this request to meet a reasonable and good faith standard for identifying historic properties. The same kind of amount of time spent by staff responding to this requests have caused delay in meeting Section 106 milestones for some projects. Nevertheless, staff made progress and facilitated Tribal field surveys for four Crow Butte project sites and the majority of the surveys were completed within four weeks. Staff has applied experience gained from these surveys to the Section 106 reviews for other projects. Next slide, please.

Since March, 2010, staff has completed four Section 106 reviews. We are currently conducting Section 106 reviews for eight ISR projects and expect to complete three reviews this fiscal year and five in 2014. Next slide, please.

Staff has improved its environmental review process based on lessons learned from past experience. I will highlight some of those improvements. We've had substantial discussion with EPA Region 8 to address their comments on the first three SEISs and we will continue to enhance our communication and coordination with EPA on the current and future SEISs. Also, we are cooperating with BLM under our MOU for two ISR projects by jointly preparing the SEIS and conducting the Section 106 process, thus minimizing duplication of efforts.

Further, the MOU has been revised to enhance communication and cooperation. For guidance and feedback on the Section 106 process, staff and management regularly communicate with the Advisory Council on Historic

Preservation. Staff also regularly communicates with certain staff historic preservation offices since they play a key role in the Section 106 process. We have increased our outreach activities with Tribes and continue to involve other key stakeholders and the general public early in the environmental review process. Next slide, please.

Regarding Section 106 process improvements, staff and management have attended comprehensive Section 106 training and frequently interact with other federal and state agencies. In addition, to support our Section 106 reviews, staff has hired experts knowledgeable in the process and respected by the Tribes.

Finally, we are developing Section 106 guidance specifically for uranium recovery projects by building on existing draft guidance coordinated within the agency's NEPA Steering Committee. Staff is also applying knowledge and experience gained in our support to finalize the NRC's Tribal protocol manual and develop NRC's Tribal policy statement. This concludes my presentation and I'll turn it over to Mark.

MARK SATORIUS: Thank you, Kevin. If I could have the last slide, please. We've made substantial progress within this program since we last briefed the Commission in March of 2010. We've made enhancements to our program and we continue to look for opportunities to add additional enhancements. The projected work load is increasing starting at the end of this fiscal year. If the projected work load becomes reality, we would not have the capacity to handle it without deferring work at the current resource levels. We're exploring ways to increase capacity while remaining cognizant of our uranium recovery overall program budget. And that completes the staff's presentation

and we would entertain questions.

MIKE WEBER: I would only add that I would like to note that the Commission has wrestled with this question of resources for this particular program and I just wanted to say thanks for the support that you have all provided. I know it's not easy because it's a matter of what priorities the Commission wants to establish and you've diligently pursued that in each of your considerations. I didn't want this chorus of not having enough resources to sound like we're complaining, because we're not. We recognize that the Commission has tough decisions before it every year in the budget and we respect your decisions.

CHAIRMAN MACFARLANE: Thank you. Okay. Turning it over to Commissioner Magwood.

COMMISSIONER MAGWOOD: Thank you, Chairman. And thank you for the presentation and for all the work on this program. I want to sort of echo comments from the panel today because I think that when I first came on the Commission and I remember going to a conference back in 2010, and it was really just kind of a chorus of doom and destruction, you know, the wheels are off the cart, these applications will never -- you know, it was pretty grim. And I remember talking to Mike and others about how we were going to go forward with this and there was a clear plan to do a lot of outreach to work with potential applicants to explain to them how the process worked and to go through the pre-application process. And really in just a relatively short period of time in government space, two years, it's a pretty well-functioning program, you know. No program's perfect, but this has vastly improved over where it was two years ago. So it's really a huge success story. So congratulations for that.

A few things. You know, Mike is here as the Acting Executive Director for Operations and probably people don't know his real job is as game show host for the Agency. Those who were paying attention know what I'm talking about. Good job, by the way, with doing that.

One of the comments we heard and I wanted to sort of just launch this and ask Mark, sort of talk about this a bit, was from Ms. Nuttbrock from Wyoming, who made the rather interesting suggestion that perhaps we consider stationing an NRC person out west in Colorado or maybe even Wyoming, to help facilitate all this. I'm sure this has come up before in the past. I'd just like to hear you talk about that a bit.

MARK SATORIUS: Well it's interesting you should say -- in fact, as soon as that statement was made, Drew leaned over to me and said, "The Uranium Recovery Office in Denver." The NRC used to have an office in Denver, specifically focused on uranium recovery and it was a staff of, I don't know, 15 or 20? And I think we closed that office, I want to say probably in the mid-1990s. Does that sound about right, Mike?

MIKE WEBER: Or earlier.

MARK SATORIUS: Or earlier. So that's -- that was an effort I think to be responsive in that way. I'll be honest with you, we've not considered that. Whether it might be a direction we would want to take a look at, I think we'll always need to be open to suggestions. But I just thought I'd provide that piece of history where there was an office that was in place for, I don't know, I think probably 10 or 12 or 15 years.

MIKE WEBER: The uranium recovery field office was started at the partial request, certainly of the Commission, but also with a lot of congressional

interest and it was when there was a projected growth in the uranium recovery business such that it made sense from an Agency perspective to get out closer to where the potential sites were. As time progressed and the interest in uranium recovery waned, it became increasingly difficult for the Commission to justify the large expense of maintaining an independent office in a location and cover the large administrative overhead costs associated with that. So, it hasn't been revisited recently. Certainly if the business case were to be made that would favor that, that would be something that the staff would entertain.

COMMISSIONER MAGWOOD: Now I've -- it's -- you know, it would certainly be convenient to have someone there, but whether there's a business case to justify it at this point, I think it's hard to tell. But I take what the state representatives say quite seriously. If they believe there's a tempo of activities that would make things work more easily, it's at least something I think staff should give some thought to. But, you know, leave it at that.

And you spent most of the time today talking about the budget challenges and of course we heard that from the previous panel as well. And a lot of this circulates around the letters of intent and what you believe and what you don't believe about the letters of intent. When you look at how to budget for things like this, are letters of intent really the best mechanism? Is that really the best tool to use to try to project the budget going forward? Is there?

MARK SATORIUS: I'll just start. And I think Drew has probably something to add. Maybe. Maybe there's a better way of doing it. I think it's a good place the start at least. It's just, you know, an anchor point before you go venturing out and we don't just -- we get them -- I think we make a quarterly call for letters and we get them pretty regularly. So it's not like they come all at once.

In other words, we ask for letters of intent annually so that they kind of get backlogged up and they all come in at once -- we get a trickle of them throughout the year. So to me that makes a little bit of an argument that there is some consideration by prospective licensees in that they're doing their appropriate due diligence and coming in when they're ready, when they have the appropriate financial backing and any other type of initiatives that they need to have underway. But Drew, I would appreciate what you might have.

ANDREW PERSINKO: I don't know if it's the best way. I don't know of a better way, right now. But we focus most of our attention working with the NMA trying to encourage them to improve the accuracy of the letters and some licensees do it better than others -- some applicants do it better than other applicants, too, quite frankly. But I think the industry has told us that they may have an initiative where they're going to try to improve the accuracy of the letters of intent.

MIKE WEBER: I would also add that we try to be consistent across the Agency. So just like in new reactors and in fuel facilities, the Uranium Recovery Program takes a consistent approach by asking for that kind of early planning information because the better we know, the better we can help prepare for the potential receipt of those new applications. And now with the focus on pre-application reviews, we need to know that even earlier so that we can be prepared to support those activities. We try to be as supportive as we can, reflecting the Agency's priorities, on safe operation of existing facilities.

MARK SATORIUS: And Mike just brought up a very good point that the pre-application audits that we do really do give us a high return on that investment because the quality of the submittals are much, much better after

they've had a pre-submission audit.

COMMISSIONER MAGWOOD: Certainly agree with that one. Is there a cost associated with submitting a letter of intent to the Agency?

ANDREW PERSINKO: Not really. I mean, the letter comes in and we use it for our planning purposes.

COMMISSIONER MAGWOOD: There's a large sigh coming from the industry.

[laughter]

ANDREW PERSINKO: Maybe there's a cost associated with preparing it, but from our perspective, the letter arrives and we then go in and adjust our schedules and our various tracking mechanisms to reflect if there's a change to the submittal date and then we factor that into our projections.

MIKE WEBER: We should also point out that uranium recovery is somewhat unique among the activities that NRC regulates. It is a minerals recovery operation and minerals businesses are inherently kind of on a boom and bust cycle. So there are challenges that we recognize the applicant's face that might not be as pressing in other parts of the regulatory activities that we administer.

COMMISSIONER MAGWOOD: Let me switch gears and we heard from Mr. Yellow Thunder I think was his name about some of the Tribal interactions we're having and I was actually quite pleased to hear what he characterized as slow but steady progress. That's -- in this world, sometimes that's the best you can achieve, I'm afraid. But I do think there has been some progress and we do have the Tribal protocol that staff has been working on. Could you give us an update where is that, how are we doing?

KEVIN HSUEH: I think that Tribal protocol that they find out and with the FRN on tribal protocol manual out for public comment and also have some questions to ask for public input in terms of Tribal policy statement and public comment period I think ends on April 1st. And then after that I think there's an information paper is due to the Commission later this year. So the staff is -- environmental reviews staff and also working with other staff in the office and working together and so and try to all of the lessons learned and try to fit into that Tribal protocol manual and also policy statement.

MICHELLE RYAN: Thanks Kevin. I just wanted to add -- Michelle Ryan from the FISME inter-governmental staff. As Kevin said, the Federal Register notice went out in October. We had a 180 day comment period so it is ending April 1st. We've established an NRC working group comprised of staff from the various program offices. As part of that work, we've reviewed other federal agency policy statements and protocols.

In addition, we've engaged in extensive outreach, including presentations, mailings, informal discussions, letters to Tribal colleges and universities in addition to 566 federally-recognized Tribes, national Tribal organizations, inter-Tribal organizations, and we've partnered with federal agencies to engage some Tribal organizations in their existing meetings. So it is an ongoing process and we're building on the previous information paper submitted in 2009 with the existing draft Tribal protocol manual.

COMMISSIONER MAGWOOD: Excellent. It sounds very thorough. Thank you very much. Thank you, Chairman.

CHAIRMAN MACFARLANE: Commissioner Ostendorff.

COMMISSIONER OSTENDORFF: Thank you, Chairman. I want

to add my thanks and well done to that of Commissioner Magwood. I know that there were problems in any program, but the progress that Commissioner Magwood pointed out, I think is very real and I think that one can always improve and make changes to get better, I think, that the progress over the last few years has been significant. So, thank you and your teams.

I'm going to start out -- I'm going to ask this -- I'm going to kind of focus this on Mark, and Mark you can pass this off to whoever you want to have answer this if it's not yourself. I want to go back to Geoff Fettus' comments at the first panel. I think there are some significant issues that he has raised and that are raised in NRDC letter of February 20th. And there's a lot of material in here; I'm going to focus, just really, on kind of the groundwater piece. I think that might be worth looking at. We had the July 2009 memorandum from our staff that talked about there being no evidence of significant problems in this area based on their review not quite four years ago.

And then, in the NRDC letter there were comments about a lack of data. There is no cataloging of ISR restoration history, that there are controls that should be in place that are not, that there're potential conflicts. I'd just be interested in the staff and whoever you want to have comment on any reaction and comments on NRDC correspondence.

MARK SATORIUS: I think I'm going to ask Bill to take that on, but I'll just say, just from a broad perspective, you know, there's another side of the story here, and I think you're going to hear --

COMMISSIONER OSTENDORFF: That's what I want to hear. I want to hear both sides, yeah.

BILL VON TILL: Thank you, Commissioner. Groundwater

protection is really an integral part of our program with in-situ recovery facilities. We have a strong focus on groundwater protection in ISR facilities through inspection, oversight, licensing, extensive groundwater monitoring to measure potential leaks from the recovery area where they're doing most of their recovery horizontally, vertically, mechanical integrity testing of the wells, and then, of course, the requirements of restoration. We do have restoration requirements in our 10 CFR Part 40 Appendix A, and there's basically a background MC -- maximum concentration limits and alternate concentration limits.

I also want to point out that before the industry can operate, they also have to get an exemption from the EPA under the safe drinking water act in the portion of the aquifer where the industry is going to do their recovery, and what that basically says is that they have to make a determination that it does not currently serve as a source of drinking water, and it cannot now and will not in the future serve as a source of drinking water. So the area -- the portion of the aquifer is already -- has elevated levels when the industry comes in.

Now the 2009 report that you're referring to is still accurate. There's still -- we have not seen with NRC sites, in-situ recovery sites impacts to water supply wells. There are excursions and leaks and so forth from time to time. They are looked at, they are reported --

COMMISSIONER OSTENDORFF: On that point, before you go further, do you -- does your group collect that data?

BILL VON TILL: Yes. And on the data --

COMMISSIONER OSTENDORFF: What do you do with it?

BILL VON TILL: We have requirements in our license to report any leaks, excursions, and so forth in the license application tied down to the license

has requirements for what that applicant -- what that licensee should do in that case: reporting it by 24 hours, characterizing, taking corrective action, and so forth.

Now the data part, we agree there's been some lack of data, and what we've done, we've gotten a contractor to start to come up with a database for all the in-situ recovery data that we have, and that project is in process. Part of my staff, Dr. Elyse Striz, is heading that up with our contractor at the center to try to come up with a better database on groundwater restoration, groundwater background, groundwater quality data in general. So, we are doing that. Again, our priorities are, you know, operating sites and new licensing and so forth, but that is occurring in parallel. So, that's --

COMMISSIONER OSTENDORFF: So, this is data for operating sites.

BILL VON TILL: This is data for operating sites.

COMMISSIONER OSTENDORFF: Is that -- do you envision -- is that currently or in the future will it be promulgated on a website or what's the method of communicating this information with the public?

BILL VON TILL: We'll have to look at that. At this point in time we're just collecting the data and we'll have to look at the mechanism to get that into the public, but we do plan to do that.

MARK SATORIUS: That would be an initiative that I think that we would go is that we need to be able to provide that information so that it's publically available for our stakeholders to see. One important thing is that as opposed to the reactor program and the inspection program, in this inspection program we have a number of inspectors in Region IV that perform the in-situ

recovery inspections. That takes part of our staff. We send hydrologists out to provide the support to the inspectors so the inspections are done, kind of, hand in hand with FSME staff as well as the Region. So we provide the expertise on those type of matters involving groundwater monitoring that Bill has just kind of described.

COMMISSIONER OSTENDORFF: Okay. Mike?

MIKE WEBER: If I could just add briefly. This is not a new issue. NRC used to sponsor research in this area. So, in the 1980s we had large projects with PNNL to look at the effectiveness of groundwater restoration when in-situ recovery was an emerging technology for uranium recovery. I happened to work in that area at the time in the NRC.

Having said that, there is merit to the points that NRDC is raising, and part of the time I think we're talking pass one another because while our analysis shows no impact on current wells, you do see that when restoration has been conducted, for some elements they have not been able to get back to the baseline levels. They have gotten back through restoration to maintain the water quality class, but that doesn't mean necessarily that the pre-existing levels in baseline are restored for all those elements, all those compounds. So you have to be careful, you know, to compare apples to apples so that we're on a common factorial basis when we have that discussion.

In addition, I think the comment made that it really would benefit all of us to have regulations that are specifically written to address in-situ recovery is a sound point. That's why NRC embarked on developing requirements. That's why the Environmental Protection Agency is working on requirements in that area. I recall when we were interacting with the EPA in 1983 on these

regulations, and we were asking, well, what about in-situ recovery? And in our dialogue it wasn't something that people felt comfortable addressing at the time because it was a newly emerging technology at the time. Of course, time marches on, and it's now the predominant technology used for recovery in the United States. So our regulatory framework has to maintain its currency to keep up with developing technology.

COMMISSIONER OSTENDORFF: That's very helpful, thank you. Thank you all for your answer there. Let me -- Kevin, I'm going to go to Slide 21 and maybe ask a question or two depending upon time for that. This is the Section 106 process, and I guess that the bottom line is I look at the bottom Failure to Agree piece which kind of catches one's eye, you know. How do you know when you fail to agree, and who makes that call?

KEVIN HSUEH: Thank you for that question. I think that what we say Failure to Agree is that when all the consulting parties, they're trying to reach a memorandum of agreement, in this case, to a point that the agency could say, well, it seems that it's not going to go anywhere or spend maybe months and try to get the consensus and cannot get to a point. And they go to the ACHP say we simply cannot agree. That is one possibility, and I -- my understanding is there are also other consulting parties and can go to ACHP and say, well, it seems that it's not going to happen. Hopefully we won't get to that point, but I think that it's a mechanism there for ACHP to chime in.

COMMISSIONER OSTENDORFF: Okay. Let me jump in here just because we're running out of time. Staying with ACHP, what kind of feedback have they given NRC on the functioning of the 106 process?

KEVIN HSUEH: Their feedback, I think that we interact with the

ACHP frequently, and we update them, and I think that in the past we have a case -- actually, we went to ACHP and they said, well, NRC had conducted a good faith and reasonable effort and so that we can complete our Section 106. So, overall, I think that the feedback has been positive.

COMMISSIONER OSTENDORFF: Okay. Drew, do you want to add something there?

ANDREW PERSINKO: I was just going to mention the one case. We did have one case early on where it wasn't -- I wouldn't really call it a failure to agree yet, but the ACHP weighed in. We were trying to work out the details of the memorandum of agreement, the MOA, and during that meeting there were some differences of the various parties, and the ACHP became a party to the consultation, and they weighed in and they said, we believe the NRC met its reasonable and good faith effort. And so, they weighed in, they were the judge, and they weighed in on that case.

COMMISSIONER OSTENDORFF: Thank you, Chairman.

CHAIRMAN MACFARLANE: Thank you. Okay, I'm just going to jump on top of the first line of questioning that you started with, Bill, and because I'm also interested in whether this data was collected in one place and whether it was publically available so I would encourage you to continue with that. Do you know when your database will be available?

BILL VON TILL: Not yet. There's been a little bit of slow down with the work with the continuing resolution and so forth. We're working that database through and we can get back to you on that.

CHAIRMAN MACFARLANE: Okay. And I would encourage you to make it publically available.

BILL VON TILL: Certainly.

MIKE WEBER: Pending any impact by sequestration.

[laughter]

CHAIRMAN MACFARLANE: Moreover, so, I'm wondering if you know of any trends or if you are working with hydrogeologists to understand if there are particular hydrogeologic conditions that are more vulnerable based on the supposedly existing data so that would help you understand looking at future sites whether there may be issues. Do you do that kind of thing?

BILL VON TILL: Yes, as a matter of fact, we were in an EPA workshop and Dr. Susan Hall was there as well, and we had a lot of discussions about geochemical conditions and how different sites can be totally different as far as the complexing of uranium, whether uranium will migrate further or it'll stop in its place. So, I think understanding the characteristics of the hydrogeology of the site is extremely important towards later on determining the solute transport in a situation how far over time and distance the degradation of that continues. So it's really highly variable to each site, but we do see trends as far as, you know, some iron mineralogy and so forth that might cause, you know, more attenuation.

MIKE WEBER: And as you might well imagine, this is going to be a principal issue in the anticipated EPA rulemaking because it's the scientific basis for the standards development then ultimately if there is an EPA standard which we implement it will continue to be an issue that we'll have to address in our oversight implementation of those standards.

CHAIRMAN MACFARLANE: And I imagine, you know, for each species you're going to have a different situation depending on the specific

geochemistry and geohydrology at each site.

BILL VON TILL: Absolutely.

CHAIRMAN MACFARLANE: So, then, let me jump to another question that I have. So, then help me understand this generic environmental impact statement given the apparent uniqueness of each site. And so, are there, you know, sort of from a 30,000 foot view, are there other situations where there are technologies that interact intimately with the natural environment for which a generic environmental impact statement is done.

KEVIN HSUEH: I'll start it. The generic environmental impact statement basically is done based on our 30 years of past experience operating the ISR facility, and we use that and then we also look at the four geographic regions where the ore is, Wyoming East, Wyoming West, South Dakota, Wyoming area and then also New Mexico area. So we identify those areas that are generic because ISR facility whether it is in Wyoming or in New Mexico, and they are area that may be same for ore -- environmental impact may be the same for -- for example, noise impact. It doesn't matter whether you operate in Wyoming or whether you operate in New Mexico, the noise from operation during ISR operation may be the same.

So we look at those areas that are generic to all ISR facility, and so that's kind of generic environment impact statement so we kind of have that framework there. But then for site specific, for example, that the -- South Dakota we have to report our project. There are some specific that Dennis mentioned. So there are some site specific issues that -- cultural resources issues that need to be addressed. So for -- so, we kind of use the generic impact statement to cover what those are, and all problematic impact statement covered -- those are

more general, but then we also -- so they can help us focus on -- when we receive a site specific application we can focus on those site specific area. So, that's kind of the framework.

LARRY CAMPER: Chairman, Larry Camper, Division of Waste Management and Environmental Protection. Let me add to what Kevin has said. If we go back to about 2006, 2007, 2008, that timeframe, we were facing a huge number of possible in-situ recovery applications. In fact, we knew that the potential number in those days, which was something greater than 40, in fact, I can recall being in conversations at the NMA meeting when uranium was at its peak price, that Mark pointed out on his slide, when there was talk of 60 to 70 to 80 applications coming in. Well, the regulations in Part 40 for in-situ uranium recovery require that we do an environmental impact statement. We knew it was simply going to be impossible to get the resource to do an individual EIS for every one of these in-situ recovery. So, we took advantage of the tool that exists in NEPA space, a programmatic environmental impact statement, in our vernacular, a generic environmental impact statement. And what made the GEIS work for in-situ was -- using the four region approach was -- the technology is essentially the same wherever you do it. The type of aquifer and formations in which it can be done are essentially the same. That lent itself to then a generic approach. Then we knew that we were going to have to tier doing a supplemental environmental impact statement capturing site specific conditions of the very nature that you cited a while ago, specific hydrogeological considerations for each given site. But that's why we chose to do it, and that's why it worked in terms of the generic approach.

CHAIRMAN MACFARLANE: Okay. I still think there's a little

contradiction here.

MIKE WEBER: The way I would explain it is we deal in the generic environmental impact statement --

CHAIRMAN MACFARLANE: But see, the noise is the same, maybe.

MIKE WEBER: On the generic aspects, and where we find we can't deal with it generically we deal with it in the supplemental environmental impact statement, and that's a practice used across the federal government. It's well -- construction under NEPA.

CHAIRMAN MACFARLANE: I just want to make sure that I understand properly that it's, you know, from my point of view the geology varies.

MIKE WEBER: Absolutely.

LARRY CAMPER: I must add one thing. Given what you just said, I must share with you something from having been out there in many public meetings when we were developing the generic environmental impact statement. You have no idea how much I came to loathe the use of that term, generic environment impact statement. I mean, it is a programmatic environmental impact statement.

CHAIRMAN MACFARLANE: Like exemption, huh?

MARK SATORIUS: Right. You know, because the very point you're raising is the very criticism that we heard. This is only so generic.

CHAIRMAN MACFARLANE: Okay. Good, I'm glad we're clarifying that anyway. Okay. What else do I want to ask here? So what are the most technically challenging areas in the safety review for in-situ recovery?

BILL VON TILL: I think groundwater is because the rest of it's

really straight engineering. The biggest risk of these facilities really is the yellow cake dryer and the yellow cake itself, just to be clear. But when it comes to the groundwater, as you know as a geologist, I'm a geologist; you base your data on wells that you drill. Luckily at these sites there's lots of wells that are drilled. And so getting the characterization of the site and trying to set up the situation to monitor these facilities properly and to restore back as low as reasonably achievable, you know, 60 percent or so forth, that's the biggest challenge, and that's where we've spent a lot of time with hydrogeologists doing a thorough review of the characterization and the application as far as that, and just to be clear about the generic and so forth, that part is very site specific based upon the actual data and characteristics of the site itself. How the monitoring programs are set up, how this formation at this site will perform under restoration. So, that's the biggest challenge.

CHAIRMAN MACFARLANE: And there's a time component to the monitoring because obviously some of these species move very slowly.

BILL VON TILL: Absolutely. And generally speaking, in Wyoming the water in these formations moves much slower than in Texas. Selenium may be an issue in Texas; it's not as much of an issue in Wyoming. So we do know some general data like that, but really it comes down to the specific well fields in a specific area. One might be across a fault and one might be in the other side of a fault. You might have unconfined aquifers. Lots of different variety, and that's the challenge.

CHAIRMAN MACFARLANE: Perched aquifers, et cetera.

BILL VON TILL: Perched aquifers, exactly.

CHAIRMAN MACFARLANE: All right. I will turn it over to

Commissioner Svinicki. Thank you.

COMMISSIONER SVINICKI: Well thank you all for your presentations, and I do want to begin by acknowledging I might've sounded a bit pessimistic previously about all the Commission's meetings on this. There has been a lot of progress made, but I'm going to stop there and say that what you've presented I think there are definitely challenges going forward and far from Mike saying, you know, it sounded like complaining. I think it sounded like the kind of transparency that we need to have about what we're facing. And some of it is just very logical and straightforward, but I think it bears repeating on our part is that we've issued some licenses now so now we have oversight activities for those licenses. In a best case scenario for the applicants, uranium prices will rise. Perhaps that would be our worst case scenario because then we will get a fulfillment of the letters of intent. There's been a lot of discussion of letters of intent as if they were something exotic and unique to ISL. In licensing space we are a reactive agency as are many permanent granting and licensing agencies. We would not be able to have any level of confidence in the budgets we ask for and construct two years out if we didn't routinely solicit for letters of intent.

And to the extent that there's been any implication that because you don't have to pay a fee like a college application that costs $300 to apply, that there is some sort of motivation for the regulated community to come in willy-nilly with a lot of letters of intent. I can see a number of very natural disincentives for them to do that. First of all we base our fee structure that we -- and we recover these costs from them. So if we construct fees based on surge capacity for 60 ISL applications, then the regulated community is not well served by our having done that if they're only going to send in eight. So there's lots of checks

and balances in this system and, you know, I think that the regulated community has a lot of motivation to be as accurate as they can be, but I think the other aspect here is that we're acting like there's not a feedback loop, and that's the other thing is that I'm sure that we send staff, as I know for a matter of fact we do, to Mine Expo and other annual gatherings like that. We talk about the fact that yes, we get letters of intent, but oh by the way, our budget next year will likely only support eight new applications. And so to act as if that doesn't have some sort of then effect on somebody who 18 months ago sent you a letter of intent realizing that we're really not going to be able to resource to support these. So this -- there's no purity in this process, it's a continual feedback, and we get letters of intent, you know, that's industry making a best effort. I don't think that I am disillusioning anybody if I were to say that NRC doesn't get to ask necessarily for infinite amounts of money every year from Congress so, that I don't think is any secret to anybody that there's upper bound limits on what we can ask for.

When I came to this agency, nuclear reactor regulation was we were asking for and budgeting for about 1,500 licensing actions a year. I think we now most recently have budgeted for about 800. And you can have your agreement or disagreement with that. I think that NRC staff has said power reactors are a mature industry and therefore we just are going to budget for fewer licensing actions, but this -- we don't just sit and kind of construct this, we have to get this from the outside. But when I take some of your bar charts about, you know, and it is based on successful completion of some of the reviews we have in house, which it should be so, then again all these parameters are linked so the number of facilities for which we are doing oversight goes up, and we're simply not going to be able to support a surge capacity in this area. So I think

you've been very candid about that. I think that the Commission is well served by that as is all those in the regulated community who are hearing that now, you know, we have to keep looking at what the demand is for applications, and this is both renewals and expansions and new applications, and we're going to have to, as the Commission always does in looking at budgets, we'll keep adjusting that and working with the staff, but I don't think that hiding some of these challenges from anybody serves anyone well.

They also, you know, as the financing community looks at the NRC's review durations and whether or not we can support the reviews then that affects the access to capital and then you don't get the application. This is a multivariable equation that all of these things are linked to each other. So I just wanted to kind of lay that out there a little bit, but I for one don't hear it as complaining, I hear it as a necessary, I think, very open discussion of some of what we face.

I might direct a couple of questions about some of the things we heard from the other panel. We heard that the GEIS was underutilized for the first three applications and it's being utilized more fully for applications we're looking at now and that its application to renewals was kind of a mixed bag. Would you like to react to that?

KEVIN HSUEH: Yes. I think that for the past three SEISs -- the first three SEISs, as you may know, we had comments from EPA Region 8 on the first three on the draft SEISs, and so it took us quite some time to interact with EPA and address their comments. And so, I think we learned from the process and so now we have more experience working on those draft SEISs and then finalize the SEISs going through the process. So now we came from the

process, now we listened to the issue of draft SEIS for three further projects. So, I think that came from the process.

And the other thing is about the EA, environmental assessments. I think there was some EAs that were started when the GEIS was finalized and so there was kind of -- we haven't had a chance to really use the GEIS, but now more recent EAs then we can start to use GEIS as a starting point because those EAs started after the GEIS was finalized.

COMMISSIONER SVINICKI: And that -- I'm not as close to it or an expert on it, but it struck me when I heard that it would be somewhat of a learning curve issue. So, I appreciate that you verified that it's somewhat certainly in the first instances we're probably not going to have as much experience and where we've come up that learning curve, and I'm sure much as we use the GEIS for license renewal, you know, now that's a very, very mature process, but we'll continue to learn as we did on the reactor side.

What is a status of an update to the standard review plan for ISL applications?

BILL VON TILL: I can answer that. We worked to revise that document, and a lot of work we had -- we had a contractor do some work for us. We went down the road with it and then a combination of the priorities from the other licensing actions we have and the oversight and then in addition to that with the EPA going forward with its rulemaking we felt that -- we knew that the rule would come out first and then go ahead and do our guidance and rulemaking otherwise we might get up ahead of that and then totally have to change it in a couple of years. So a couple of those factors is why that hasn't materialized yet. Part of it's a lack of resources from the hydrogeology standpoint, too. We got

pretty far along and then we saw the EPA rulemaking, we interacted with the EPA rulemaking, and we were doing our own rulemaking and now we wanted to wait until the EPA rulemaking comes out at least in the draft -- final rule -- that we would have to do our own conforming regulation and guidance at that point in time. So, that was kind of the thinking on that.

COMMISSIONER SVINICKI: I wanted to ask a question about how pervasive our agency reliance is on contractors for licensing actions. Is it -- are we singularly dependent on contractors for environmental reviews and licensing actions and if contracts were cut in that area would we come to a full stop on certain reviews of licensing matters?

MARK SATORIUS: They would be significantly reduced. We do rely on contractors fairly extensively. It doesn't mean that we are not capable of doing our own work within our shop, but we have gotten to that point where we have found that that's been useful.

COMMISSIONER SVINICKI: But you're indicating that if we did need to further reduce contractor support we could re-energize or re-invigorate some in house work or would that be --

MARK SATORIUS: I think we're just going to run out of bodies. I think Drew probably has a better tie to the exact numbers, but I think it would impact our output.

ANDREW PERSINKO: It would definitely impact our output, especially in the environmental area.

COMMISSIONER SVINICKI: So, you can do the safety but as long as you can't --

ANDREW PERSINKO: Even then, we have staff that could do it in

house, but even then I think that there are some specialty areas that we don't have on our staff that we'd have to borrow from elsewhere in other environmental review groups within the agency like NRO or NRR, perhaps, so we could cobble together the necessary technical expertise, but we are --

COMMISSIONER SVINICKI: If there were a sustained reduction in that area we would have to look at those kinds of measures.

How do you resource for the granting of hearings. I would without really any hard data say that there's more hearing being granted on your licensing actions. Does that -- I know there's some OGC resourcing there. Does that come out of -- do you budget for that and then does that affect -- is that in addition to oversight and licensing the bar graph. Should there be almost a bar for support to hearings or is it the same reviewers generally?

ANDREW PERSINKO: It's the same reviewers. It's just the reviewer -- the technical reviewers, either the environmental or the safety would also support the hearings. It's not budgeted, per se, in that -- in those bar charts. It's just the bar charts show capacity thus far and -- but it's not -- we didn't budget it per se, but we know it's coming, and we know it's going to be a demand on our resources as we go forward.

COMMISSIONER SVINICKI: So just some percentage of them will have hearing support so you just make your best estimate on that?

ANDREW PERSINKO: We would -- right. We would have to increase our capacity if we wanted to handle more of the hearing and keep up the 8 to 10 capacity in new licensing.

COMMISSIONER SVINICKI: And I just had one last question. I'm hoping it's quick, but I raised with the previous panel that the final rule that it was

said it was not clear on pre-licensing site construction. What I heard from the panelist was we now discourage but we don't prohibit, but it may be grounds for denial. Can you help me understand that?

MARGARET DOANE: I think they're going to refer that question to me. Since this started initially with the NSF decision where we first -- where the Commission first made this determination, and I think this is -- it's really just, sort of, a logical conclusion of what might happen. It's really not us coming up with a prohibition and then a warning, and a discouragement. It really is thinking about if you do activities at this early stage that in a later stage involve some kind of an environmental issue or a taking or an unresolved issue that we hadn't seen before when you first started this there might have to be some kind of mitigation. If you couldn't mitigate it then that's how it could have implications for denial of a license. So it's really just sort of a logical, sort of, understanding of what could happen.

So, for example, there was a case that I understand where some cable was laid. And it turned out that some inspections couldn't -- later on when they did get into the licensing that they couldn't inspect those cables so they had to be torn up and there had to be mitigation. But let's say that couldn't happen because it's a taking -- an environmental taking or something like that, and there was no way of remedying it later in the proceeding. That's when it could be a denial. And there are issues like this, it doesn't just affect NRC licensing but this actually -- this was an outgrowth of -- there was a NRC -- I'm sorry, an EPA, NRDC case -- where NFS relied on that holding to say it was a permitting case where EPA was going to permit later and had the same situation.

COMMISSIONER SVINICKI: I think I speculated with the earlier

panel. I think I called it maybe boilerplate meaning that we need to have the ultimate backstop at the end. So, I think that you're telling me it's really no different than that. We have to have that ultimate ability to deny. Okay. Thank you.

MARGARET DOANE: And I would add to that, that I would encourage just further discussion. You're talking about a review plan and things like that to better identify where these lines are and what things might trigger later review or concerns.

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

CHAIRMAN MACFARLANE: Thank you. Commissioner Apostolakis. No questions. Okay. Anybody else have further questions? No. No. Okay.

Then I will thank the staff for their presentations again and remind everybody this was a very worthwhile session this afternoon, a variety of topics covered. I appreciate all our external panelists for traveling here and making presentations, and I look forward to ongoing engagement with the staff with the affected public, with the states, with the Tribal governments as well. As of now we are adjourned.

[whereupon, the proceedings were concluded]