

UNITED STATES OF AMERICA
U.S. NUCLEAR REGULATORY COMMISSION

PUBLIC WORKSHOP TO DISCUSS POTENTIAL
POLICY ISSUES RELATED TO GROUNDWATER
PROTECTION

October 4, 2010

9:00 A.M.

TRANSCRIPT OF PROCEEDINGS

Public Meeting

Held in Rockville, MD

Before the U.S. Nuclear Regulatory Commission:

Gregory B. Jaczko, Chairman

Kristine L. Svinicki, Commissioner

George Apostolakis, Commissioner

William D. Magwood, IV, Commissioner

William C. Ostendorff, Commissioner

APPEARANCES

Panel:

Stuart Walker
Environmental Protection Agency, Office of Solid Waste and
Emergency Response

Edward Regnier
Department of Energy, Office of Environmental Policy

Bill Buscher
State of Illinois, Environmental Protection Agency

Ralph Andersen
Nuclear Energy Institute

David Lochbaum
Union of Concerned Scientists

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David Scott
Radiation Safety and Control Services

Ernest Shaw
Southern Nuclear Company

Katie Sweeney
National Mining Association

Maria Korsnick
Constellation Energy

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Dr. John Till
Health Physics Society

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NRC Staff:

Charles Miller
Director, Office of Federal and State Materials and
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Mark Satorius
Regional Administrator, Region III

Michael Johnson
Director, Office of New Reactors

Eric Leeds
Director, Office of Nuclear Reactor Regulation

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P R O C E E D I N G S

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MARTIN VIRGILIO: The potential policy issues that we're going to

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be talking about today were published in the Federal Register and they can be

1 found in Section C, "Topics for Discussion: Potential Policy Issues," in that
2 Federal Register notice that was published on September 23, 2010. If you don't
3 have a copy of it, for those of you who are in the room, there are copies available
4 at the door -- at either of the two doors.

5 Today's meeting will take place between nine and five and consists of four
6 sessions with short breaks between each of the sessions. Each session will
7 correspond to one of the four themes identified in the Groundwater Task Force
8 Report. Each session will have a panel consisting of public and industry
9 stakeholders with the aim of representing an array of perspectives for you today.
10 Each panel will be moderated by one of the members of the Senior Management
11 Review Group. The moderator will provide detailed summaries of the issues and
12 introduce our distinguished panelists.

13 Each panelist will give approximately a 10-minute presentation,
14 summarizing their views on the policy issues covered by their session topic.
15 These presentations will be followed by a facilitated, open discussion with
16 meeting attendees and thereby providing an opportunity for any and hopefully all
17 of you in the audience to provide input.

18 Under the first theme, which is "Reassessing NRC's Regulatory
19 Framework for Groundwater Protection," we're going to examine whether NRC's
20 program should be modified to ensure harmonization of approaches that we've
21 taken to groundwater protection when applied to different categories of licensees.
22 Our moderator for that session will be Charlie Miller, director of our Office of
23 Federal and State Materials and Environmental Management Programs.

24 Under theme two, "Maintaining Barriers as Designed to Confine Licensed

1 Material,” we will examine whether NRC’s programs should be modified to
2 ensure that systems and components better contain radioactive liquids and
3 gases. Our moderator for that panel will be Mark Satorius, regional administrator
4 of Region III.

5 Under theme three, which is “Create a More Reliable NRC Response,”
6 we’ll examine whether NRC’s programs should be modified to ensure greater
7 consistency when addressing low risk, high public interest public confidence
8 issues. Our moderator for that panel will be Michael Johnson, director of our
9 Office of New Reactors.

10 And finally under theme four, which is “Strengthening Trust,” we’ll examine
11 how NRC can increase confidence in its actions and communications related to
12 groundwater protection. Our moderator for that session will be Eric Leeds, the
13 director of our Office of Nuclear Reactor Regulation.

14 Let me turn the meeting over to one of our two facilitators, Drew, who will
15 review the ground rules for today’s meeting. Thanks, Drew.

16 DREW STUYVENBERG: Thanks, Marty. Again, welcome to NRC’s
17 public workshop to discuss potential policy issues related to groundwater
18 protection. My name is Drew Stuyvenberg. I’m a project manager at the NRC
19 and it’s my pleasure to facilitate this workshop along with my colleague, Lance
20 Rakovan. Thanks, Lance.

21 The purpose of this meeting is to obtain input from external stakeholders
22 on a variety of policy issues related to groundwater contamination at nuclear
23 facilities. Your comments are very important to us. In addition, we are
24 webcasting this meeting and are also taking participation from a teleconference

1 phone line.

2 Before we start today's sessions, I'd like to go through some basic ground
3 rules and logistics. To start with, and this goes for all participants, please be sure
4 to speak one at a time. And again, please speak into a microphone. This helps
5 us to get a clear transcript and to make sure all offsite participants can hear
6 clearly. Side conversations may make it more difficult for other participants to
7 focus on the primary discussions and may interfere with the transcript. You can
8 also help to cut down on background noise by turning off or silencing your cell
9 phones or other electronic devices throughout the duration of the workshop.
10 Those of you participating by bridge line can help to keep the background noise
11 level down by keeping your phone on mute when you're not participating in the
12 discussions.

13 You'll notice that we have a number of individuals who have graciously
14 agreed to serve as panelists for today's four sessions. These panelists, who
15 represent an array of interests affected by each issue, will rotate for each
16 session. They'll start each discussion with presentations up to 10 minutes each
17 that will be followed by an opportunity for audience members, including those on
18 the teleconference line, to provide their own comments on each particular issue.

19 We recognize that the issues we will discuss today are important to all of
20 us, so we ask that all are respectful of speakers while they are talking and also
21 respectful of others who wish to speak by staying within some basic time limits.
22 Panelists will have about 10 minutes for presentations and audience participants
23 will have about five minutes for their comments. Lance and I will be helping to
24 keep everybody on time as we go through the day.

1 Please keep in mind also that there is a good chance that you're not going
2 to agree 100 percent with everyone else's opinions. When someone has the
3 floor, please give them the respect that you would like yourself. When you do
4 make a comment, please give us your name and the name of any organization
5 that you represent. Also, if you find that you have comments after today's
6 meeting or if you find that you have comments that are too lengthy to share in full
7 during today's meetings, you may provide written comments as part of the record
8 via e-mail through October 15. Directions on how to provide written comments
9 are available at the tables next to each door.

10 If you want to contribute to a discussion, please get my or Lance's
11 discussion attention during the discussion sessions. When we get to the
12 discussion sessions, just raise your hand and we'll do our best to get to you in
13 order. I'm hoping to use the microphones that you see down in front of each
14 pillar as much as possible so we can capture that clearly for the transcripts and
15 teleconference participants. So if you raise your hand, as I said, Lance and I will
16 get to you in order.

17 For those of you on the telephone bridge line, we will be opening up the
18 lines to get your comments at certain points during each discussion. When we
19 open those lines, just let us know that you're interested in speaking and, as with
20 those here, we will take you in turn.

21 One item I'm hoping you picked up on your way in is our public meeting
22 feedback form. You can fill this out here today and give it to any NRC staff
23 member or drop it in the mail sometime in the future; postage is free. Your
24 opinion on how this meeting went will help us to improve future meetings, so

1 please take a moment to let us know what you think. For those of you not in
2 attendance here at NRC headquarters, you can contact any of the NRC staff
3 involved in this meeting and we will be happy to provide you with one. Also, if
4 you haven't done so yet, please be sure to sign in. The sign-in sheets are near
5 each entrance to this room.

6 Thank you very much to all of you who are here to participate. The NRC
7 is very interested in hearing your perspectives on groundwater issues during the
8 course of today's four sessions. This is a forward-looking process and your
9 comments will help the NRC staff to develop policy recommendations for the
10 commission on the issues that we'll be discussing today.

11 Finally, before we get started, just a quick note on restrooms. As most of
12 you probably know, they are out the door around the corner here. Walk through
13 the doors, turn left. Women's restroom are on the left in the hallway and men's
14 are on the right down the hallway.

15 Also, just a note to our panelists: You'll note each of your microphones
16 has a button on it. When it's your turn to speak, press the button so it lights up
17 orange. That's your cue that your mic is live. Again, thanks in advance for your
18 presence and perspectives and we look forward to prepare productive day. I'll
19 now turn the meeting over to Charlie Miller and he'll introduce our first panel.
20 Thank you.

21 CHARLES MILLER: Thank you and good morning, everyone. As Marty
22 mentioned, my name is Charlie Miller. I'm the director of FSME here at the NRC
23 and I will be having a panel here today to focus on the first theme. As part of
24 that, we hope to get the following questions addressed by the panel and by your

1 participation in the audience and let me just briefly go through that.

2 First question: Should NRC's programs be modified to ensure
3 harmonization of the approaches we have taken to groundwater protection that
4 are applied to different licensees under NRC regulations?

5 Secondly, how should NRC's programs accommodate or encourage
6 industry initiatives that go beyond NRC requirements? For example, for reactors,
7 is the industry's voluntary initiative on groundwater protection sufficiently
8 comprehensive? Should it be taken into account in NRC's regulatory
9 framework?

10 Third, how should NRC's programs address protection of the
11 environment? Should requirements be promulgated to require prompt
12 remediation of unintended releases of radioactive liquids? Should NRC consider
13 modifying 10 CFR Part 20 to address the portions of the International
14 Commission on Radiological Protection, the ICRP, report 103 related to
15 environmental protection?

16 Fourth, should changes be made to the radiological effluent performance
17 indicator and the reactor oversight process to make it more reflective of
18 performance in the area of plant releases, both planned and unplanned? Should
19 a performance indicator take into account public confidence in addition to the
20 current risk-informed approach to radiation protection that verifies the effluent
21 release program performance?

22 Fifth, should a policy statement be developed upon NRC's existing
23 regulations and guidance to address: first, protection of the environment within
24 NRC's regulatory framework; second, NRC's expectations of licensees; third, the

1 relationship to other regulatory schemes; and fourth, NRC's desire to work
2 cooperatively with other federal agencies and states in protecting the
3 environment?

4 Sixth, should NRC's regulatory framework be informed by experience or
5 guidance developed or applied by the International Atomic Energy Agency,
6 international community, or by other U.S. agencies', such as the Department of
7 Energy, directives and activities?

8 After the panelists provide their remarks on these questions, we'll have an
9 opportunity for those of you in the audience to weigh in, and those on the phone
10 as well.

11 I'd like to take a moment to introduce our panelists today. At the far end of
12 the table is Stuart Walker from the Environmental Protection Agency, Office of
13 Solid Waste and Emergency Response. He's been employed at EPA since 1990
14 in either a Superfund program or the Office of Radiation and Indoor Air working
15 on issues regarding the cleanup of contaminated sites. His areas of
16 responsibilities include serving as a Superfund programs' national lead on issues
17 regarding radioactively contaminated CERCLA sites. In this latter role, Stuart
18 develops national policy for characterization, cleanup, and management of
19 radioactive contamination of CERCLA sites.

20 Next to him is Edward Regnier from the Department of Energy and the
21 Office of Environmental Policy. He has worked as the chief of Radiation
22 Protection section of the Office of Environmental Policy at DOE and the
23 Supervisory Physical Scientist. He manages the Radiation Protection section
24 and participates in the Interagency Steering Committee on Radiation Standards

1 and chairs the Risk Harmonization for Radiation Protection subcommittee, and is
2 the IAEA radiation protection liaison.

3 Third will be Bill Buscher and Bill is going to be supporting the meeting
4 today through video conference, so that's why you see the empty chair when it's
5 his turn to speak. He is currently the manager of the Hydrogeology and
6 Compliance Unit at the Illinois Environmental Protection Agency's Bureau of
7 Water. Primary responsibilities include administration and Illinois Environmental
8 Protection Act and Illinois Pollution Control Board's rules pertaining to
9 groundwater protection and remediation. He's worked on groundwater issues
10 with the Bureau of Water for over 21 years.

11 Ralph Andersen, at the table here, is from the Nuclear Energy Institute.
12 Ralph is the senior director of Radiation, Safety, and Environmental Protection at
13 NEI in Washington D.C. He represents the nuclear energy industry to the
14 Congress, the administration, federal agencies, and other national and
15 international organizations on generic nuclear energy policy matters related to
16 radiological protection, low-level radioactive waste management, and
17 environmental protection. Mr. Andersen is certified as a health physicist by the
18 American Board of Health Physics and is a U.S. delegate to the International
19 Radiation Protection Association.

20 On my immediate right is David Lochbaum from the Union of Concerned
21 Scientists. David is the director of the Nuclear Safety Project for the UCS. In
22 May of 2000 he petitioned the NRC, seeking better aging management of buried
23 piping in the gaseous and liquid radioactive systems. In January of 2006, he
24 petitioned the NRC on behalf of the dozens of public interest organizations

1 seeking better protection against leaks and spills.

2 I just, again, want to remind all my panelists if you could take about 10
3 minutes and limit your remarks to that. So with that brief introduction, we'll start
4 with you, Stuart.

5 STUART WALKER: Okay, thank you. Thank you, Charlie, for that nice
6 introduction. I'm going to briefly cover the -- I can go to the next slide -- a quick
7 overview of EPA Superfund approach to how we deal with groundwater
8 protection and an overview of our MOU with the NRC and also focusing on the
9 role of groundwater protection in that MOU. This deals with decontamination
10 decommissioning, though.

11 Next slide. And we'll go through -- next slide.

12 The law that Superfund operates under is called the Comprehensive
13 Environmental Response, Compensation, and Liability Act, or CERCLA. The
14 national contingency plan is our implementing regulation and the National
15 Priorities list is the site -- is the list that guides further long-term remediation. I
16 can go to the next slide.

17 Okay, for groundwater expectation we use -- the statute basically is where
18 we first get our emphasis on protecting groundwater to MCLs, which are the
19 maximum contaminant levels under the Safe Drinking Water Act. The statute
20 actually specifies that we should use the goals of the Safe Drinking Water Act but
21 since for carcinogens those are all zero, we use -- basically refer to MCLs or
22 non-zero MCLGs. Next slide?

23 Expectation that we will return groundwater to beneficial use is in our
24 regulation, the -- when restoration is not practicable, we're supposed to prevent

1 further migration of the plume and also prevent exposure to the contamination
2 using institutional controls. Go to the next slide.

3 Our principles of groundwater restoration memo, which reaffirmed most of
4 our policy statements, came out in 2009. This is basically restating a lot of our
5 existing policies that had been issued in various documents through the years.
6 We generally like to restore groundwater to MCLs. We also have to determine
7 whether action is warranted, whether we're above the MCLs. It talks about the
8 role of institutional controls, how we do groundwater classification, cleanup
9 levels, and point of compliance. Okay, next slide.

10 Action is generally warranted if we're above the MCLs, or above -- if there
11 are no MCLs, if we're above risk-base numbers; that's 10 to minus four. And if
12 we -- also, if we're above protective levels of other routes of exposure, say, vapor
13 intrusion or if we were using the water for agricultural purposes, then we have to
14 look at farm uses. Okay, next slide.

15 Groundwater classification guidance first came out in 1986. This talks
16 about if we basically use all groundwaters as potential or current sources of
17 drinking water except for those where they don't have sufficient yield or you have
18 a high number of total dissolved solids. We do try and use EPA-endorsed state
19 comprehensive groundwater protection systems, or CSGWPPs. Very few of the
20 states have actually issued these. It's more, like, about 12 of them. And one
21 thing to remember when dealing with groundwater, the land use on the surface is
22 not a basis for the classification for the groundwater itself. Okay, next slide.

23 For cleanup levels, we use in Superfund often either applicable
24 environmental requirements or those that are relevant, appropriate requirements.

1 Those are -- relevant, appropriate requirements are basically those that are
2 sufficiently similar to the situation you're addressing that you must meet the
3 subsequent parts of the requirement. The classic example for EPA is using the
4 MTLs where you have potential or current sources of drinking water. So you use
5 the drinking water standards in the groundwater. If there are no ARARs then you
6 use risk-based levels. Generally for radionuclides, that would mean using the tap
7 water scenario and the preliminary remediation goal calculator, which is our
8 Superfund model for risk assessment, and that would give you concentrations
9 you would need for groundwater. Okay, next slide.

10 These are just some of the MCLs that we use for groundwater protection:
11 the five picocuries for radium, 30 micrograms per liter for uranium, 15 picocuries
12 for gross alpha. For the four millirem standard for beta and photon emitters but
13 there's actually concentrations listed for that; you're not supposed to actually do
14 a dose assessment to determine those concentrations. And for -- we also use
15 the UMTRCA groundwater standards of ARARs, so 30 picocuries per liter for
16 uranium 234 and 238. And we use state standards if they're more stringent than
17 federal standards. Next slide.

18 Our cleanup levels are to be achieved throughout the plume except under
19 waste management units. And go to the next slide. Institutional controls are
20 basically not our preferred option. So you generally would like to have -- we
21 generally would like to have active remediation or other types of controls.
22 Institutional controls are basically used to avoid having someone actually drink
23 the water if it's not down to the MCL level yet. Okay, next slide.

24 We do have an issue -- guidance that was issued in 2000 and -- there's

1 one -- that deals with how we deal with groundwater protection for radionuclides
2 and this refers back to the MCLs that I was talking about and also the UMTRCA
3 groundwater standards, basically saying pretty much what I just covered in the
4 first part of this presentation. So I'd move on to the next slide.

5 Just a quick -- just a little picture of how we do source control measures.
6 Basically, we emphasize trying to clean up the source first so that the
7 groundwater is not continually being recharged with contamination. And next
8 slide?

9 When dealing a restoration remedy for groundwater, we want to use the
10 cleanup goals for the appropriate, beneficial use, so that will generally be the
11 drinking water standards for aquifers that are potential or current sources of
12 drinking water, restore all or part of the aquifers to the standards, and you have
13 to have a restoration with an endpoint with a reasonable timeframe. So if you
14 think you might need the groundwater soon, you might want to have a more
15 aggressive remedy. If you have a longer time period before you're going to use
16 the groundwater, you might be able to use something more passive, like
17 monitored natural attenuation. And the remedy should show a decrease in the
18 extent of the plume and also the contaminant concentrations within the plume.
19 Okay, next slide. I'll just skip over that to the restoration picture. I can go to the
20 next slide.

21 So basically, if you're going to try and keep the plume from moving, that's
22 not really restoration remedy, that's more of a contaminant remedy, which we
23 also use at our sites too, although it's not what we would generally would prefer
24 to do. Okay, next slide: Just another picture of restoration remedies. You could

1 probably skip over that. And the next slide.

2 Just -- I wanted to add this picture on basically because it shows that we
3 do have sites where we have both restoration remedies for part of the plume
4 going on, and where we think that's not practical, we're also are using
5 containment remedies at the same site, so we may have a combination of
6 multiple goals going on at one site. And, next slide.

7 Basically when we're dealing with surface water, the same principles are
8 going to apply that we have for groundwater. We're still going to use the drinking
9 water standards and surface water that are going to be used as potential sources
10 of drinking water. There are physical differences between groundwater and
11 surface water. Basically, the flow rate for surface water is usually going to be a
12 lot higher. And if you're starting to keep the plume on the groundwater from
13 reaching surface water, that's really contaminant remedy, not a restoration
14 remedy. And go to the next slide.

15 That's just a picture of -- I would go through that slide real quick in the
16 interest of time. And I'll talk a little bit about the MOU between EPA and NRC.
17 You can go to the next slide. The MOU focuses on coordination between the two
18 agencies: EPA under its CERCLA authority, NRC when they're decommissioning
19 their sites. Go to the next slide.

20 The MOU provides consultation procedures for EPA and NRC. It reaffirms
21 a 1983 deferral policy but it's expanded now to cover previously licensed or, in
22 addition, currently licensed sites.

23 And, next slide.

24 These are the consultation triggers for when NRC will contact the EPA.

1 There are four of them. The first two on this slide are the ones that have actually
2 been used for when we've had consultations; the other two have not been used.
3 The primary one of interest here is that when MCLs are going to be exceeded in
4 groundwater when NRC is decommissioning the site, they'll actually consult with
5 the EPA on further course of action at the site. The other consultation level is
6 just [unintelligible] levels above the 10 to minus four cancer risk range. Okay,
7 next slide. Also, if NRC is looking at restricted land use or if they are going to be
8 above 25 millirem, but neither one of these ever get used, so go to the next slide.
9 And going to the table one that's the concentration that are above 10 to minus
10 four for residential and partial land use. And, next slide.

11 Why did we pick these numbers for consultation triggers? Basically
12 because the table one and MCLs were included since these are levels used by
13 EPA for determining when they're going to take action at Superfund sites. So
14 this is kind of to avoid having any -- hopefully not having any EPA Superfund
15 action at previously licensed NRC sites.

16 Okay, let's skip to the next one.

17 DREW STUYVENBERG: Mr. Walker?

18 STUART WALKER: Yeah, I'm almost done.

19 DREW STUYVENBERG: I apologize. Yeah, if you could bring it to a
20 close. Thank you.

21 STUART WALKER: And let's skip through that one. Yeah, that one.
22 Okay, basically there's just a list of the consultations. I was just highlighting in
23 yellow [unintelligible] just because that's a nuclear power plant. You can go
24 through -- they also did the consultation in Connecticut Yankee was

1 decommissioning. And, go on to the next one. And next one. And next one.

2 Basically, part of the consultation advice we've been giving is that NRC
3 should consider a flexible approach concerning groundwater potential use and
4 determinations and the timing of remediation as well as trying to reach the MCLs.

5 And I think we're almost done. Yeah, let's skip through that. Yeah, okay,
6 I'm done. Just go to the next one. I'm done.

7 CHARLES MILLER: Thank you. Our next speaker will be Ed Regnier.

8 EDWARD REGNIER: Good morning. Note that DOE's approach to
9 regulation of radiation protection and groundwater is generally quite similar to
10 NRC's but there are some significant differences. In particular, I know in the
11 material you've noted that NRC does not have direct authority to protect the
12 environment separate from protection of people.

13 Under the DOE Organization Act, we do have that authority. I also -- we
14 are generally responsible for assuring the protection of the public and the
15 environment from radiation at our own facilities. We are also overseeing and
16 have many external regulatory drivers and statutes, such as the CERCLA
17 requirements which Mr. Walker was referring to in his discussions. That results
18 in the fact that, along with our desire to be good stewards of the environment, we
19 also have an additional incentive because we can be liable for damages to the
20 environment which we create, such as -- these might be determined under a
21 natural resources damage assessment under the CERCLA process. So that
22 does provide us a little extra incentive there.

23 The primary order which we use to protect the public and environment
24 from radiation is DOE order 5400.5 which provides a function very similar to DOE

1 -- or rather NRC's 10 CFR Part 20 in providing the overall framework for radiation
2 protection. It has, of course, the basic dose limits and the law requirements, but
3 we also have requirements in the order that are particularly designed to protect
4 natural resources, such as requirements for -- on drinking water, requirements
5 related to airborne and liquid discharges. And particularly, we require an
6 extensive effluent monitoring and environmental surveillance program. Our sites
7 generally have extensive groundwater protection plans with a great deal of
8 monitoring as part of our effort.

9 And in response to one of the particular issues that was raised in the
10 material to be discussed today, there was a mention of a DOE technical standard
11 for protection of biota. Indeed, in our 5400.5 order, we have a requirement
12 related to protection of aquatic animals and in this technical standard which
13 provides what we say is a "graded approach" to evaluating radiation doses to
14 aquatics and terrestrial biota, this requirement is extended to -- well, it's not a
15 requirement -- but this addresses terrestrial biota also. And this was developed
16 with extensive participation from interagency and national experts and we
17 consulted in the international community on this.

18 While it's not a requirement, virtually all of our sites are currently
19 demonstrating compliance with it. We find it works very well. It doesn't seem to
20 be an extreme burden. It provides a phased process for compliance, starting off
21 with screening values for concentrations in the environment. If you're below
22 those, you need go no further and then with increasing amounts of analysis
23 required. We believe it hits a very good balance of resource expenditures versus
24 benefits.

1 In answer to another part of NRC's question on that, we -- yes, indeed, we
2 believe that the NRC should -- efforts in this area should be informed by the IAEA
3 and other international efforts but not necessarily adopt them pro forma. We
4 note that while more complex science is interesting, the old paradigm often
5 works, that if people protected, the environment is protected. While that is
6 certainly not always the case and that is why we are looking at further protection,
7 you need to look at the value added by requirements.

8 I'll address the question that was asked on harmonization of regulations
9 briefly. I note that as NRC does, we also regulate based on different modes. We
10 -- sometimes we regulate based on dose limits, other times we regulate based on
11 concentrations. In most cases, we model and forecast future doses. Those
12 aren't necessarily contradictory approaches, particularly since the concentration
13 limits that we use are generally derived by modeling from the dose limits. And if
14 you can use them, then that simplifies compliance somewhat because the
15 measurements of environmental or liquid effluent concentrations are more readily
16 measurable than doses to the public. But, if you're projecting into the future, for
17 example, in you doses, then the concentration limits aren't as effective as
18 modeling in dose limits.

19 Then of course there's also statutory and regulatory drivers that require
20 different approaches in different circumstances, which would be a sufficient
21 effort; you'd have to get legislation, I believe, to change some of those. Bottom
22 line, if there's really no basis for the difference between different approaches,
23 and certainly they should be harmonized, but if it isn't broke, don't fix it.

24 The question was asked on whether you should have prompted

1 remediation of leaks into the soil or into the groundwater. This probably really
2 isn't a yes or no issue. It -- I think it depends on how effective monitoring natural
3 attenuation would be. If there is a significant chance however that you'll
4 eventually need remediation, I think it only make sense to do it quickly. There's
5 no advantage at all to waiting and certainly the contamination may spread
6 further. And of course, one really needs to weigh heavily in this circumstance,
7 alleviating public concerns. That certainly in response to those public concerns,
8 the DOE often remediates material immediately even though the analysis might
9 not indicate the need to do so.

10 There was also, then, a question asked on whether a policy statement
11 should be developed which, basically, as I understand it, describes the interfaces
12 and all the different existing regulations and processes that the NRC is using.
13 That seemed to be an obvious yes answer on that, although if the question is
14 asked because -- in light of the notion that that would be the only approach, then
15 that would certainly deserve much more consideration. If that is an effort, it
16 would require so much resources that it would foreclose other activities, you
17 might want to address that other activities. But this seems to be an obvious need
18 right now to develop a policy paper to address that.

19 We also have requirements at DOE or control for reporting. We have
20 what we call our Annual Site Environmental Reports that are required and we
21 have what we call our OORP system, which is an operational occurrence
22 reporting system such that if unintended releases are found that they are
23 reported immediately.

24 That would be the end of my remarks. Thank you.

1 CHARLES MILLER: Thank you, Ed. Thank you for your remarks. Our
2 next speaker will be Bill Buscher, who will be participating by videoconference,
3 hopefully. Let's see if we can get him up on the screen. There he is. Good
4 morning, Bill.

5 BILL BUSCHER: Good morning. I appreciate the opportunity to
6 participate this morning. I'm the Illinois EPA project manager for the
7 Groundwater Remediation Program at the Exelon nuclear site, the Braidwood
8 station. This is an especially important topic as the U.S. begins to construct what
9 would be described as its second generation of nuclear power plants. My
10 comments have been prepared to address the groundwater policy issues, which
11 are extremely important, I believe, to the vitality of the nuclear power industry.

12 First, I'm going to provide a quick overview of the main remedial action
13 taking place at Braidwood station. Second, I'm going to provide some short
14 comments on the June 2010 Groundwater Task Force Final Report and on the
15 2006 Liquid Radioactive Release Lessons Learned Task Force.

16 At Braidwood, there were several unplanned releases. There were two of
17 note that were very large; they happened in 1998 and in 2000. Each event
18 released approximately 300 million gallons of water containing tritium. If I could
19 go ahead and have my first slide, please.

20 This is an aerial view of the site. The cursor right now is on the actual
21 plant itself. I'm going to get into some better views of this, but what I want to
22 point out on this slide is that if you go to the left of the plant area where there are
23 a number of blue dots, a little further left, that area is a mobile home park where
24 everyone utilizes a shallow, hand driven well not to exceed 25 to 35 or 40 feet.

1 That's a very important point to make in this slide in that that's a very vulnerable
2 area. If you go to the right of the plant, there's a little -- there are some red dots
3 a little further right, a little further right -- right there. That's the center of the
4 plume; that's vacuum breaker three and four area. Just to the north of that is a
5 large pond which is the main remediation part of this site. That pond is drawn
6 down seven to eight feet and acts as a natural collection system for the
7 remediation process. Could I go on to the next slide, please?

8 In this slide, the plant is on the far left. This is a plan view of the plume.
9 The -- just to the right of where the cursor is is a smaller plume that is being
10 actively remediated, but the large plume to the far right is where the two
11 incidences with 300 million gallons of water was lost.

12 You may want to note there, just to the left of the plume, right there, is a
13 private home using a private well. I want to make that point; that well is
14 approximately 800 feet from the center of the plume. Now fortunately, it was side
15 grading it. The plume as you can see went to the north. And another fortunate
16 point is that that home was utilizing a lower aquifer.

17 To give you a quick 101 geology review of the site, it's windblown sand to
18 about 50 feet, so you've got a big sandbox here. This site lends itself to be
19 remediated. It's, in that respect,

20 fortunate. We can go on to the next slide, please.

21 There are two cross sections here on this slide: one running east-west and
22 the one running north-south. That north-south cross section that I'll show you is
23 in the center of the plume.

24 Go on to the next slide, please. This is a side view. You can see the

1 center of the plume. The maximum concentration is 200,000 to 250,000
2 picocuries per liter. The private well that was affected was north of this site. My
3 recollection is that well was actually just utilized for stock watering. But the
4 reason I put these slides up here is each of these events at these facilities are
5 real. And I spoke to the previous conference and I felt it was important to get you
6 the picture of how involved these instances can be, and we'll go on to the next
7 slide.

8 This is a side view. You can see in the right-hand top of the color there is
9 the vacuum breaker vault. That was the source of the contamination. It was very
10 close to the road. The center of this plume is offsite, by the way. We'll go on to
11 the next slide. Okay, that's all of them. I'm done with my slides. Thank you.

12 The NRC made a white paper finding with regard to these releases
13 because the licensee did not report the releases nor did it complete the required
14 dose calculations to assess the threat to health and safety of the public. I've
15 gone over the extent of the plume. I want to raise an issue with respect to the
16 first slide. Had this plume moved in a different direction, and I know I'm going
17 into hypotheticals here, but all those private wells that were west of the plant,
18 those could have been affected and those people could have been drinking that
19 water for quite awhile. This was not addressed in a timely manner. I think,
20 really, what it amounts to is we're very fortunate that the geometry worked the
21 way it did at the site. And that's the point I'd like for you to take away from this.
22 It's -- we've been fortunate.

23 Every time that I read in a Task Force report that they did not identify any
24 instances where the health of the public was impacted, I ask myself if that is a

1 success by design or by coincidence. In the Braidwood case, it was not because
2 the safeguards put in place by the NRC were working as designed. Those
3 safeguards were not followed. Had the geometry of the site been different, a
4 large number of shallow, private wells could have been impacted.

5 I've got a couple of comments on the Task Force final report. The Task
6 Force final report identifies something called the "Backfit Rule" which --
7 apparently, my understanding is -- addresses issues that at an existing reactor,
8 that it's a means by which new regulations would be back fitted. I think it's
9 important to realize at this point in time the real, I feel, important part is that new
10 reactors are being in the process of being licensed and will be licensed in the
11 future and that an appropriate environmental program needs to be incorporated
12 into those licenses. We'll deal with the past issues, but from here forward, there
13 needs to be a concerted effort to deal with the environment. You need to start
14 with the end in mind.

15 The GTF report indicates that the statutory authority in the Atomic Energy
16 Act of 1954 as amended is limited to the regulation based on health and safety of
17 the public and common defense. It goes on further to say the regulatory or
18 regulation based solely on the environmental protection is generally not within
19 the NRC statutory authority with limited exceptions such as with respect to
20 uranium mill tailings. So, if the NRC has limited authority with respect to the
21 environment and environmental protection, I think that's something that needs to
22 be addressed in the license or somewhere along the line. I want to make a --
23 yes, sir?

24 DREW STUYVENBERG: Mr. Buscher? If I could jump in for just a

1 second. Your time is about up. If you could bring it to a close. Thank you.

2 BILL BUSCHER: Okay. I think I had some comments with regard to a
3 speech given that was entitled "Culture, Transparency, and Communication".
4 Some of you may recognize this. This was given March 9, 2005 at a regulatory
5 information conference.

6 "One can generally find evidence of a deteriorating safety and security
7 culture at facilities that have experienced problems. Chairman Diaz discussed in
8 his address to you last year one of the biggest challenges in this area is
9 complacency. And unfortunately, complacency is most likely to be recognized
10 only after it seeps in and contributes to a degraded safety and security
11 environment. We must do more to develop the performance measures that
12 identify weaknesses in the safety and security culture and promotes strengths in
13 culture before problems emerge." The author of this was Mr. Jaczko. It was
14 dated March 9, 2005.

15 The only other point I want to make is that the Lessons Learned Task
16 Force on liquid waste: That task force had 26 recommendations and it is noted in
17 the GTF report that none of those recommendations had an impact on the
18 reactors. In effect, nothing became substantially to the program from that first
19 study. And I certainly hope that that is not the case with the Groundwater Task
20 Force.

21 Thank you for your time.

22 CHARLES MILLER: Thank you very much, Bill. Our next speaker is
23 Ralph Andersen from NEI.

24 RALPH ANDERSEN: Good morning. I appreciate the opportunity to be

1 here today to offer some perspectives on behalf of the Nuclear Energy Industry in
2 regard to some of the issues that are outlined by the NRC in the report and for
3 this meeting. We do look forward to providing written comments and follow up to
4 the meeting, but I'd just like to hit a few highlights.

5 First of all, our belief is that the NRC regulations and oversight process in
6 fact do assure public radiation safety for both routine and unintended releases
7 from nuclear power plants. The NRC requirements include public radiation
8 safety limits as well as quantitative criteria for maintaining exposures as low as
9 reasonably achievable, i.e. keeping releases at a very small fraction of the actual
10 radiation safety limits, and these limits and criteria do apply to all releases,
11 routine and unintended releases.

12 During licensing of each nuclear power plant, the NRC evaluates the
13 potential for unintended releases and sets requirements in the license as
14 proposed by the licensee and accepted by the NRC for both monitoring and
15 controlling the amount of radioactivity in systems that might be prone to
16 unintended releases. Additionally, the NRC regulatory process is specifically
17 focused on licensee programs to monitor and control routine and unintended
18 releases and contains a structured approach for the NRC to take actions in
19 response to violations and non-compliances. The previous speaker, for instance,
20 highlighted that NRC issued a white finding in the case of Braidwood.

21 A fact that is apparent from the reports that are provided under NRC
22 requirements is that any radiation exposure to a member of the public for routine
23 or unintended releases has been at a small fraction of the radiation safety limits
24 that are set by the NRC.

1 Second point is that the nuclear industry programs for increased
2 inspection of underground pipes and environmental monitoring go above and
3 beyond NRC requirements to minimize the potential for unintended liquid
4 releases and to provide for rapid detection and response when such releases do
5 occur. All companies operating nuclear power plants have publicly committed to
6 the programs, and in fact, NRC inspectors have been observing and
7 documenting implementation of these programs at each site. That is a matter of
8 public record.

9 These programs reflect best practices gained from operational expenses
10 and lessons learned and these expanded programs complement NRC
11 requirements. The requirements themselves are intended to assure public
12 radiation safety. These programs are intended to go above and beyond that.

13 These programs include detailed commitments for open and transparent
14 communication with the public, local officials, and the NRC about unintended
15 releases and the actions being taken in response to such releases. In the next
16 session, you will hear a lot more detail about the two programs that are in place.

17 The nuclear industry is supportive of NRC developing a policy statement
18 that explicitly addresses protection of the environment within the agency's
19 statutory mandate, and most importantly, coordination with other federal and
20 state regulatory agencies in regard to the subject of environmental protection. A
21 starting basis for such a policy statement might be derived from the Staff
22 Requirements Memorandum 2008-0197 in which the commission concluded that
23 the current NRC regulatory framework continues to provide adequate protection
24 of the health and safety of workers, the public, and the environment from a safety

1 regulation perspective.

2 ICRP Publication 103 proposes measures that go beyond what is needed
3 to provide for adequate protection. The commission's conclusion is consistent
4 with the recommendations of the ICRP itself that for routine, non-accident
5 operations -- and that includes unplanned releases from facilities in other than
6 accident conditions -- the standards of environmental control needed to protect
7 the general public would ensure that other species are not put at risk.

8 Finally, I believe that the Memorandum of Understanding between the
9 NRC and the U.S. EPA could serve as a model for developing either an
10 expanded MOU or a new MOU that specifically addresses coordination with
11 other federal and state agencies on environmental protection matters. Thank
12 you very much.

13 CHARLES MILLER: Thank you very much, Ralph. Our final panelist for
14 this session is David Lochbaum from the Union of Concerned Scientists. David?

15 DAVID LOCHBAUM: Good morning and thank you. The NRC -- I was
16 going to start with our bottom line and then answer the individual questions. The
17 NRC does not need a new policy statement, revised regulations, new or revised
18 inspection procedures, a revamped ROP, new slogans, new banners, or more
19 acronyms to protect the public and the environment from inadvertent releases of
20 radioactively contaminated water. The NRC needs only to consistently enforce
21 all existing regulations.

22 We very intentionally said "consistently enforce." There are numerous
23 examples of the past where the NRC has identified violations and applied
24 Goldilocks sanctions, sanctions that are not too severe, nor too lenient, but just

1 right. We believe the NRC can best address the workshop issues by consistently
2 emulating that past behavior. Next slide, please.

3 We re-arranged the order of the questions to do the easy ones first and
4 hopefully run out time before I get to the hard questions.

5 [laughter]

6 Question B.3.1 was: Should changes be made to the radiological effluent
7 performance indicator? We agree with the paper that the current radiological
8 effluent PI results in meaningless data. It is not the only useless PI in the ROP
9 family. But we're concerned that a PI tracking the number of voluntary reports
10 would replace a meaningless indicator with a misleading one. Given that choice,
11 we'd prefer the meaningless indicator. Next slide.

12 Part of the reason for saying that or believing that is we believe the current
13 ROP framework is appropriate means to address future leaks and spills. We cite
14 a 2000 Comanche Peak inspection finding as evidence that the means are
15 available. The Comanche Peak sanction was for releases of radioactive gas well
16 below the federal limits. The violations involved failures to properly monitor the
17 releases that went out.

18 A future leak will be evaluated by NRC inspectors. On a case-by-case
19 basis, dependent on case-specific factors, the leak will be assessed, categorized,
20 and communicated to licensees and stakeholders. If it's not broke, don't break it.
21 The ROP is adequately structured now to properly handle leaks and spills.
22 Unfortunately, over the past four years, the NRC has not been abiding by the
23 tenets of the ROP. Those deviances need to be fixed, not the ROP itself. Next
24 slide.

1 One of the aspects of the question was should the radiological effluent
2 performance indicator take into account public confidence? Our answer, short
3 answer is no. The long answer is also no. When people don't trust you because
4 you're doing a bad job, the proper resolution is to do a good job. Doing a good
5 job will achieve public confidence. UCS doesn't endorse the equivalent of an
6 operator workaround in this area. Next slide, please.

7 One of the questions, B.3.4, was how should NRC's programs
8 accommodate or encourage industry initiatives that go beyond NRC
9 requirements? We believe the tenet for that is the current one, induced by INPO.
10 Again, we believe the existing NRC framework has the proper means to both
11 accommodate and encourage industry initiatives that exceed NRC's minimum
12 requirements. The existing NRC enforcement policy enables the NRC to
13 increase or decrease the severity levels of sanctions depending on case-specific
14 factors. A licensee who aggressively looks for and finds a leak from underground
15 piping has identified a violation of NRC requirements that prohibit unmonitored,
16 uncontrolled releases. But the self identification of a leak very likely coupled with
17 expeditious remediation would be considered by the NRC as reasons for
18 reducing the associated sanctions to the minimum level.

19 Conversely, a licensee who learns about a comparable leak from a
20 neighbor-reported a flooded field or basement should expect no mitigation by the
21 NRC and perhaps escalation of that violation's severity. Licensees should not be
22 penalized for aggressively looking for and finding potential problems, but in the
23 NRC -- existing NRC oversight process has the means to appropriately lessen or
24 eliminate those penalties. Next slide.

1 Question C.3.2 addressed whether the NRC program should be modified
2 to ensure harmonization and so on. We believe the programs are already in
3 harmony. The lack of harmony that exists is not between the various program
4 offices; the lack of harmony is between what the NRC does or doesn't do and
5 what the NRC's regulations, procedures, and policies says it does. That's the
6 area where harmony needs to be achieved: between what the agency says it
7 does and what actually does. To achieve the proper harmony, the NRC needs to
8 consistently do what its procedures and policies say it does. Next slide.

9 C.3.3 addressed whether requirements should be promulgated to require
10 prompt remediation of unintended leaks and spills. We don't think that's
11 necessary because the existing requirements already require that to be done.
12 Since the problem is that the NRC cannot or will not enforce regulations on the
13 books, revising the books seems unlikely to resolve that problem. All that
14 achieves is a rewording of the requirement that the NRC cannot or will not
15 enforce. UCS cannot enforce stupid, pointless stall tactics. Next slide.

16 Regarding whether a policy statement should be developed, we assume
17 that current NRC policy allows the NRC to enforce existing regulations. Hence,
18 the NRC does not need yet another policy statement. I don't know what the
19 quota is but let's just say that you met it and move on. The problem is not that
20 the NRC will not or cannot enforce existing regulations. When that's the
21 problem, a policy statement doesn't address it. If you won't enforce the
22 regulations, how can you enforce a policy statement? So let's move on and do
23 something useful.

24 I'm going to skip the next slide and go to the picture slide with the picture

1 of River Bend or -- yeah, River Bend. September of 2008, Hurricane Gustav's
2 high winds blew three of the four sides off the turbine building, relocated it. Next
3 slide.

4 The plant's owner planned to restart the reactor and repair the walls at a
5 later date after the plant was restarted. But the NRC arrived onsite and pointed
6 out the requirements for monitoring and controlling releases of radioactive
7 materials. If a component inside the turbine building had developed a leak of
8 radioactive gas in the future, the missing walls would have resulted in
9 unmonitored and uncontrolled releases. The owner did not restart River Bend
10 until the walls were repaired and compliance with these regulations assured.
11 Next slide.

12 We don't understand the NRC's Dr. Jekyll, Mr. Hyde act. Entergy owned
13 both River Bend and the Vermont Yankee plant. September 2008, the NRC
14 steps in and prevents Entergy from operating River Bend until it's in full
15 compliance with the regulations on unmonitored and uncontrolled releases.
16 Earlier this year, Entergy tells the NRC that there's an ongoing leak from some
17 place of unknown duration, unknown amount, ongoing violation of the
18 requirements. There's no sanction whatsoever. The NRC needs to figure out
19 why its schizophrenic behavior allows it to do exactly opposite actions for the
20 same regulations.

21 Comanche Peak is another example of this. The regulation wasn't that
22 the release exceeded federal limits; the regulation was because they fail to
23 properly monitor. When you have radioactive liquid going out from an
24 underground pipe somewhere for who knows how long, then you're also failing to

1 properly monitor that release, yet the NRC walked in and found absolutely no
2 violation of federal requirements. That's incomprehensible and it's wrong.

3 The bottom line is it's not the NRC's framework that's at fault here; it's the
4 NRC's ability to consistently abide by the framework. Tweaking the framework
5 won't fix that problem. The inconsistent behavior patterns of the NRC is what
6 needs to be fixed. Thank you.

7 CHARLES MILLER: Thank you. I appreciate that. We're going to move
8 to the portion of the session now where it's an opportunity for those of you in the
9 audience to make any comments. I ask that if you are going to make comments
10 to please come to the microphone over here so it can be transcribed and we can
11 make sure that we capture them accurately.

12 I'd also ask that with regard to any comments that you may wish to make,
13 please focus them on the theme of this session, which is "Reassessing NRC's
14 Regulatory Framework for Groundwater Protection." Other opportunities during
15 the day from the other themes will allow you to raise issues with regard to that,
16 so with that, the floor is open.

17 DREW STUYVENBERG: Great. And I'm just going to jump in here for a
18 minute. First of all, thanks, Charlie, and thanks, panelists. We appreciate a good
19 start to the day. I just wanted to say we're going to have about 35 minutes here
20 until about quarter to 11 in order to have a bit of a facilitated discussion. Some of
21 you may have some questions for the panelists. Primarily, the goal of this is to
22 collect some more comments, other perspectives. But, time permitting and if
23 there's some interest, we can do some questions, too, for the panelists if there's
24 something that was unclear in the presentation.

1 So with that, I'd like to turn it over to the facilitated portion. I just also
2 wanted to let you know those questions that everyone's been talking about,
3 they're in the Federal Register notice that's by both doorways. There's a little
4 alcove over here that has copies of it and there should be a table by the opposite
5 entrance that also has copies of those Federal Register notices.

6 So without further ado, we'll go to the facilitated portion. Remember, raise
7 your hand. Lance or I will keep track of potential speakers and we'll have you
8 come down to the microphone to speak. So, again, thank you. And we can start
9 the next portion.

10 Go ahead. Come to the microphone, please?

11 CHARLES MILLER: And if you could please identify yourself for the
12 transcriber. Thank you.

13 DREW STUYVENBERG: Thank you.

14 BRIAN LITTLETON: My name is Brian Littleton. I'm with the EPA's
15 Radiation Protection Division, which is under the Office of Radiation and Indoor
16 Air. I just wanted to add to some of the comments that Stuart had and one thing
17 specific to our office is that the Office of Radiation and Indoor Air developed and
18 is the steward of a requirement under 40 CFR Part 190, which is the radiation
19 protection requirements for nuclear power operations. It applies to several
20 facilities, several nuclear uranium facilities, including milling, enrichment, fuel
21 fabrication, as well as nuclear power plants.

22 We are currently reviewing this standard and the basis of 40 CFR 190 to
23 determine if it should be revised. And if we revise it, we're going to be looking at
24 the issue of groundwater protection at several of these facilities. The current

1 standard does not have a separate requirement for groundwater protection, but
2 as many of those know who have followed the EPA requirements, groundwater
3 protection and, as Stuart stated, is one of our goals at the agency.

4 If we -- when we, I guess, or if we do review and look to revise this
5 standard, we're going to be taking input from stakeholders and the public on,
6 first, if a separate groundwater protection standard should be included in this
7 revised standard and, secondly, if so, what aspects of the groundwater protection
8 are important to be included? And so that's my comment.

9 CHARLES MILLER: Thank you.

10 DREW STUYVENBERG: Any others? Comments or questions?

11 PAUL GUNTER: Yes, my name is Paul Gunter. I'm with Beyond Nuclear
12 in Takoma Park, Maryland. I'd like if a member of the NRC could provide a
13 response for the record to the panelist -- Dave Lochbaum's comment that the
14 public perceives inconsistent response from NRC on enforcement. So, could we
15 get a representative from NRC to respond to that?

16 Charlie Miller: Paul, I respectfully request that the forum today is for us to
17 receive input, not to have a public debate on the issues. We're trying to receive
18 as much input as we can, so any comments that you may want to make with
19 regard to anything that you've heard, we very much would like to hear.

20 PAUL GUNTER: You know, in the instance of where an agency is trying
21 to build public trust, input is a two-way process. It's a two-way street at this point.
22 What we've seen and what has been identified for the agency is that there are
23 clear inconsistencies with regard to general design criteria. And I thought it was
24 eloquent that we didn't even have to mention the GDC at this meeting. I mean,

1 we're -- we've arrived at a sophisticated level of this conversation and dialog that
2 we expect to be treated with respect.

3 And so I think that in light of how long this has been going on, it would
4 behoove the agency to respond to the charge that it inconsistently applies its
5 oversight and enforcement to its own general design criteria. I don't think that's
6 unreasonable. And again, in an instance where you are rapidly losing public
7 trust, input at this point is a two-way street.

8 CHARLES MILLER: Thank you for your input.

9 DREW STUYVENBERG: All right. Next speaker, commenter? In that
10 case, do we have anyone on the phone line who are interested in participating?
11 All right, we have another over here. Please come to the microphone.

12 PHILLIP MUSEGAAS: Thank you. My name is Phillip Musegaas. I'm
13 here representing Riverkeeper and I'll be on a panel as well this afternoon, so.

14 In terms of my comments for this panel, I'm focusing on what we think the
15 regulatory -- what we think should be regulatory changes to the NRC's regulatory
16 framework. And I have three basic recommendations. The first two,
17 Riverkeeper has reiterated on several occasions. First, after the 2006 Tritium
18 Task Force Report and also at the April 19 -- I think, April 20, actually, meeting of
19 this year in which we participated and so we'll reiterate these yet again.

20 First, we think that the NRC should amend its regulations to require onsite
21 groundwater monitoring, sampling, and reporting to the public of any
22 groundwater contamination onsite. So that means not just at the boundaries
23 under the REMP program but also they should do a risk-informed assessment at
24 all operating nuclear power plants, figure out what systems at the plants are most

1 likely to leak, and orient the groundwater wells so that they catch the leakage and
2 -- excuse me -- detect it before it reaches the boundary, at which point we
3 believe it's too late to really solve the problem.

4 Second, 10 CFR 50.75(g). We think that requirements for the licensees to
5 keep records of leaks and spills at their operating facilities should be actually --
6 those records should be submitted to the Nuclear Regulatory Commission and
7 made public with certain limitations, depending on whether there are confidential
8 business information in those notifications. But we think that's a necessity, given
9 the history now of over a third of the operating nuclear plants having tritium
10 contamination onsite.

11 Third, we think the decommissioning regulations should be amended to
12 actually the 60 years safe store rule should be reexamined. We think that rule
13 does not make sense in all situations, especially when you have a number of
14 plants, like Indian Point in New York, where you have long-term contamination of
15 the groundwater.

16 And all three of these recommendations we think have immediate benefits
17 of course to the public because this would increase transparency, give the public
18 a better idea of what the actual environmental condition of these plant sites is. It
19 would also benefit the NRC because in terms of predicting what will be required
20 for decommissioning, the fact that the NRC right now doesn't necessarily have
21 these records under 50.75(g), it makes it more difficult for them to know whether
22 the decommissioning funding predictions and the funding that's currently in place
23 at these plants is adequate.

24 It would also benefit the shareholders. Many of these nuclear power plant

1 operators are merchant plants. There are, of course, many plants that are
2 utilities, but particularly in the Northeast U.S., Entergy Corporation and other
3 corporations: these are deregulated plants operating in a deregulated market and
4 they're beholden to their shareholders. And so we think it would benefit the
5 shareholders to know what the actual condition of these plants is while their
6 operating and what the condition will be in the cost will be when these plants
7 have to be decommissioned. So thank you.

8 CHARLES MILLER: Thank you. Other questions? Panelists, any other
9 remarks that you would choose to make, given the dialog?

10 DREW STUYVENBERG: Let me do one more check on the phone line,
11 too, if we have any others who are on the line who have any other questions or
12 comments they'd like to make. One down here?

13 CHARLES MILLER: Final comment, that, you know, to remind everyone,
14 we are trying to stick to the themes and we recognize in making comments that
15 sometimes they jump between themes because the themes are related to each
16 other. I just want to assure everyone that any comments that are made will get
17 binned into the current theme so that we make sure we have captured all the
18 inputs in the right areas.

19 DREW STUYVENBERG: It's a good comment.

20 CHARLES MILLER: With that, Marty?

21 DREW STUYVENBERG: Sorry, do we have one more here?

22 MARTIN VIRGILIO: Charlie, you must be reading my mind because I am
23 going to jump ahead to theme three but both Ralph and Stuart, I think, gave us
24 the opening. Ralph -- well, first, Stuart, you talked a little bit about the MOU we

1 had with the NRC surrounding decommissioning. And then Ralph talked about,
2 well, maybe this could be a model for an MOU that we could have in the future
3 that would deal with operations. And I wonder, Ralph, if you could talk a little bit
4 more about what you envision in that model?

5 RALPH ANDERSEN: Thanks for the opportunity. The thought is that
6 prior to the MOU being developed between EPA and NRC, I think there was
7 uncertainty and confusion on the part of all parties -- local, public, the licensees,
8 and the various regulatory agencies, both federal and state -- as to who was
9 responsible for what and how that would be done. There certainly was a lot of
10 back-and-forth between the agencies on that subject.

11 And to me, what the MOU brought forward was the stability and a higher
12 degree of predictability about how things would proceed. And I think actually it
13 even had a beneficial effect on performance during decommissioning with the
14 anticipation of which criteria would need to be met when, and so forth. So I saw
15 it as a positive in that regard of improving the openness and transparency and
16 stabilizing the regulatory situation.

17 So in this regard, it seems to me we're back in a similar situation where
18 we have different sets of requirements with different goals and different statutory
19 missions for the respective federal and state agencies. I think clarifying that to
20 both help the public understand how these programs and responsibilities fit
21 together as well as to help the licensees be able to make better decisions in
22 regards to the various agencies that it's ultimately responsible to would be very
23 helpful.

24 The instances that we have before us where there has been involvement,

1 particularly by the states either under their own authority or EPA authority
2 persuades me that we may be making it up too much as we go along. I think
3 bringing forward some predictability on the front end would be more desirable to
4 virtually all parties.

5 STUART WALKER: Yeah, the reason I mentioned the MOU is because,
6 as Ralph was saying, the agencies have long had disagreements about how to
7 protect the public and the environment, and as I read through the NRC Task
8 Force report, I could see that that was probably going to continue here. And the
9 MOU seemed to be a mutually beneficial way of resolving and then working
10 through on a site-specific basis any of those differences so that -- to make sure
11 that people were all on the same page in what we're actually talking about and
12 what's important as far as that particular site.

13 And helping also to inform the public, since our MOU discussions back
14 and forth between the two agencies are actually posted on the internet, actually
15 on both the NRC and the EPA websites: what EPA is recommending back to
16 NRC, what NRC is responding on how they might take action. So that way, also
17 the states and licensees and the public at the sites can see what the agencies
18 are actually recommending for that particular site.

19 RALPH ANDERSEN: If I may, I wonder if you could invite Bill Buscher to
20 weigh in on that. I'd be interested in his perspective from the state.

21 CHARLES MILLER: Bill, you still on the line?

22 DREW STUYVENBERG: Bill, you still with us?

23 BILL BUSCHER: I'm still with you. I've never been involved, actually, with
24 discussions on the regulations with regard to which U.S. EPA or the NRC. We

1 moved based upon the regulations we have in the state and my take is that with
2 regard to unplanned releases that there needs to be an immediate assessment.
3 Whether that requires immediate remediation, that could be determined. I just
4 think that you need to immediately determine whether or not the release you've
5 had has been a problem.

6 And in contrast, in 2009 in Illinois, our emergency response people
7 responded to 288 instances where there was a diesel unintended release, and
8 these are basically truck accidents. In each one of those incidences, there was
9 an environmental company that had to come out, clean up, and do an
10 assessment. If it impacted the soil, they needed to do something about it. If it
11 impacted groundwater, they needed to do something about it. Now, I'm not
12 advocating that that is done with an outside source but my feeling is that
13 environmentally, each one of these releases needs to be assessed and reported.

14 CHARLES MILLER: Thank you.

15 DREW STUYVENBERG: All right. Any further comments? Panelists?
16 Please.

17 LOUISE LUND: I just had a question. This is Louise Lund from the NRC.
18 Actually, in Stuart Walker's presentation, you know, when you were going over
19 the last slides, there was one that talked about flexibility and approach for the
20 NRC [unintelligible]. Can you expand on that a little bit, what was intended by
21 that?

22 STUART WALKER: Yeah. Just a little bit of a, sort of history lesson. In
23 the early part of the Superfund program when we were cleaning up groundwater,
24 we traditionally cleaned up everything; very aggressive remediation, pump and

1 treat almost every site. We thought we were actually going to clean up
2 everything within a few years.

3 As we began to do more remediation at our sites, we found out that that
4 really was not the most practical or approach that was going to work, so we
5 started to look at more of a variety of different alternatives, some of it being
6 containment remedies, some of it monitored natural attenuation. We started to
7 look more at, like, when the groundwater was going to be used as a point of
8 what's the reasonable timeframe that we need to actually clean it up for people to
9 use it.

10 We're still trying to restore plumes, groundwater throughout the plumes.
11 But we're now using different techniques and sometimes we're also realizing it
12 won't go throughout the plume but we want to stop the plume from moving further
13 and we will have part of the site being restoration remedy and part being
14 containment.

15 So this is more like part of the administrative reforms that EPA went
16 through in the 1990s to try and move away from always going with pump and
17 treat or almost always going with pump and treat to using a variety of different
18 cleanup methods. So, that's basically what our advice back to NRC is often
19 referring back to those guidance documents that we use to try and maintain more
20 flexibility on how we're actually going to achieve groundwater protection.

21 DREW STUYVENBERG: Thank you. Other comments or questions from
22 the audience? Anybody else on the phone line?

23 With that, why don't we take about a 15 minute break --

24 CHARLES MILLER: Oh, before we break, I'd like to ask everyone to

1 please thank our panelists who volunteered their time today to participate.

2 [applause]

3 DREW STUYVENBERG: Thank you very much. And let's reconvene at
4 quarter to 11. Thank you very much.

5 [break]

6 DREW STUYVENBERG: If people could start finding your seats, we're
7 going to get started in the next few minutes. If people could please start finding
8 your seats.

9 All right, welcome back everybody. Again, by name is Drew Stuyvenberg
10 and I've been helping with facilitation for this meeting. We're going to start our
11 next session called "Maintain Barriers as Designed to Confine Licensed
12 Material." And with that, I'm going to turn it over to Mark Satorius who is our
13 regional administrator from Region III and he's going to introduce our panelists.
14 Thank you.

15 MARK SATORIUS: Thank you, Drew. And I am Mark Satorius and the
16 administrator of NRC's Region III, located in the Chicago suburbs. I'm the
17 moderator for the second session today. As in the first session, we have five
18 panelists that have agreed to give of their time today to help us discuss, as was
19 indicated, the "Maintaining Barriers as Designed to Confine Licensed Material."

20 Basically, we're looking at answering some specific questions and have
21 their comments directed toward some specific issues associated with should
22 NRC programs be modified to ensure that systems and components better
23 contain radioactive liquids and gasses? And subsets of that basic question is:
24 Are additional requirements appropriate for the design, operation, and

1 maintenance of systems and components that contain radioactive liquids and
2 gasses? And that specific issue comes from the Groundwater Task Force,
3 appendix C, theme number 3.1.

4 Secondly, should a more quantitative definition of “as low as reasonably
5 achievable” or ALARA concept be adopted with respect to leakage of radioactive
6 liquids and gasses?

7 Third, is it feasible to apply the ALARA concepts in 10 CFR 50.36 alpha to
8 unmonitored releases and to restricted areas as well as unrestricted areas?

9 Fourth, how do the principles in 10 CFR 20.1406 be applied to operating
10 reactors?

11 And fifth, do the existing general design criteria in 10 CFR Part 50,
12 appendix A provide a basis to require new license programs with respect to
13 leakage of radioactive liquids and gasses?

14 As in the previous panel, after our panelists make their presentations and
15 provide their remarks on these questions, we’ll have an opportunity for those in
16 the audience as well as those folks on the telephone to provide input to these
17 questions as well.

18 Before I begin the session, I’d like to introduce the panelists. My far right,
19 Kathy Yhip from the Nuclear Energy Institute. Kathy is an NEI senior project
20 manager in the Radiation Safety and Environmental Protection Group on loan
21 from Southern California Edison. With the primary responsibility for the industry
22 Groundwater Protection Initiative, she has 26 years of experience in the nuclear
23 power industry, primarily in radioactive effluence and environmental protection.

24 Next is David Scott. David is a licensed environmental professional in

1 Connecticut, a professional geologist in Pennsylvania, and a certified
2 professional geologist by the American Institute of Professional Geologists. He
3 has been a consulting hydrogeologist in numerous industrial sites including
4 operating and decommissioning nuclear power plants where soil and water have
5 been impacted by various radio nuclides, organic, and heavy metal
6 contaminants. Dave was the principal author of EPRI guidance documents
7 published in 2005 and in 2007 for implementing groundwater monitoring and
8 protection programs at nuclear power plants and is a member of the working
9 group that is revising ANSI [spelled phonetically] standards on the evaluation of
10 sub-service radionuclide transport at commercial nuclear power plant production
11 facilities.

12 Next, from Southern Nuclear Company, Ernest Shaw. Ernest is the
13 corporate materials program supervisor for Southern Nuclear Operating
14 Company and is responsible for the implementation of materials-based
15 engineering programs. Ernest's presentation will be on groundwater protection
16 and buried pipe initiative implementation at new and existing units.

17 Next, from the National Mining Association is Katie Sweeney. She was
18 named general counsel of the National Mining Association in 2008 and is
19 responsible for managing the association's legal services and litigation program.
20 Katie formally served as the National Mining Association's deputy general
21 counsel and has responsibility for public lands and mineral policy.

22 And our fifth member, to my right, is Maria Korsnick from Constellation
23 Energy. She's the chief nuclear officer of Constellation Energy Nuclear Group.
24 She has 24 years of experience in the nuclear industry.

1 But with that, I'd like to go ahead and begin this panel session with our
2 panelists focusing on the specific questions we had laid out. As our facilitator
3 had mentioned, if you could keep your presentation to 10 minutes because if you
4 don't, he's going to buzz in on you. So with that, I'll turn it over to Kathy.

5 KATHLEEN YHIP: Good morning. I'm going to focus primarily on NEI's
6 Groundwater Protection Initiative.

7 As a starting point, I'd like to reiterate former comments. NRC's
8 regulations ensure that the control of licensed material is such that the public is
9 protected as is the environment. Those regulations include explicit limits to keep
10 public exposure at a fraction of the background doses. And licensees existing
11 today have developed and currently implement programs to minimize the loss of
12 licensed material.

13 Of note also, in terms of the success of NRC regulations, all of the
14 unintentional releases identified to date have been well below regulatory limits
15 and have not represented a risk to public health and safety.

16 In terms of industry actions, there have been a variety of industry
17 initiatives, two of which are primarily adopted to enhance the management of
18 systems and the components that contain licensed material: the Groundwater
19 Protection Initiative documented in NEI 07-07 and the Buried Piping Integrity
20 Initiative documented under NEI 09-14 that has been recently extended to the
21 Underground Piping and Tanks Integrity Initiative.

22 Specifically on the Industry Groundwater Protection Initiative, as
23 previously identified in the Federal Register notice, was adopted in 2006 by the
24 NEI Nuclear Strategic Issues Advisory Committee. The objectives of the Industry

1 Groundwater Protection Initiative were to improve management of situations
2 involving inadvertent releases into groundwater and to improve communication
3 with our external stakeholders to enhance public trust and confidence. The
4 Industry Groundwater Protection Initiative builds upon the NRC's requirements
5 for the control of radioactive materials, for environmental monitoring, and for
6 reporting. For those who may not be familiar with the details of the Industry
7 Groundwater Protection Initiative, groundwater as used in NEI 07-07 refers to all
8 of the water below the surface of the ground.

9 When we look specifically at the implementation of the Groundwater
10 Protection Initiative, first and foremost is to keep in mind that it's applicable to all
11 nuclear power plants. For existing plants, it helps us with our routine monitoring
12 and maintenance as well as our communication to stakeholders. For
13 decommissioning plants, it helps to improve our planning for decommissioning as
14 well as our record keeping. And for new plants, it's incorporated into the design
15 and the controls for the facility.

16 The first action of the Groundwater Protection Initiative involves improving
17 the management of situations involving the inadvertent radiological releases that
18 could get into groundwater. In order to implement that particular action,
19 licensees review their site hydrology and geology to understand how
20 groundwater flows. They evaluate systems, structures, components, and work
21 practices to identify the potential for unintentional releases. And they also
22 implement early detection and monitoring programs to identify if an unintentional
23 release occurs. Licensees also, as part of that action, establish a remediation
24 decision making protocol and they augment the record keeping requirements

1 under 10 CFR 50.75golf [spelled phonetically] for decommissioning planning.

2 The second action under the Industry Groundwater Protection Initiative
3 involves improving communication with stakeholders. This will include, for
4 example, initial notification if a spill or leak occurs that exceeds reporting
5 thresholds established in NEI 07-07 or if onsite groundwater exceeds certain
6 limits. There are also 30-day reports and annual reports of all of the onsite
7 groundwater sample data that are available to the NRC and also to the public.

8 And then the third action under the Groundwater Protection Initiative
9 involves program oversight, both internal and by external bodies under NEI's
10 sponsorship.

11 Since the industry initiative was adopted, over the last four years the
12 industry has certainly updated it's characterization of the site hydrology. We
13 have improved our understanding of the potential for leakage from SSCs and
14 work practices and implemented measures to prevent those leakages. And we
15 have at every site established early detection methods for onsite contamination.

16 Groundwater protection programs are ongoing. They are part of our
17 routine programs and industry will continue to incorporate lessons learned from
18 operating experience. Those conclude my remarks.

19 MARK SATORIUS: Thank you, Kathy, for those remarks. Next, we'll
20 move to Mr. David Scott.

21 DAVID SCOTT: As Kathy has just explained, the current framework for
22 groundwater protection at commercial nuclear power plants is established by the
23 Voluntary Industry Groundwater Protection Initiative, NEI 07-07. And the NRC
24 assesses each licensee's voluntary implementation of NEI 07-07 at each

1 operating plant in accordance with NRC Inspection Manual, Temporary
2 Instruction 2515/173.

3 Again, the action one under NEI 07-07 is to establish a Ground Water
4 Protection Program. And to do that, NEI 07-07 refers to EPRI's Groundwater
5 Protection Guidelines for Nuclear Power Plants to assist utilities in implementing
6 a Ground Water Protection Program. And one of the features of this guideline is
7 to lay out a framework for evaluating SSCs as to their potential for leakage and to
8 prioritize which of those SSCs need further evaluation.

9 The industry experience at sites with identified groundwater
10 contamination: Those incidents have been aggressively investigated and
11 effectively resolved using various techniques. Those include most prominently
12 drilling of monitoring wells but also deploying data logging transducers and
13 temperature probes in those wells to map hydraulic head and temperature
14 gradients using robotics to inspect drains, pipelines, and tanks, completing down
15 hole and surface level physical surveys to identify plumes, sampling soil vapor
16 and analyzing that for tritium, determining the age of tritium in groundwater,
17 analyzing soil and groundwater for various radionuclides, conducting
18 groundwater pumping tests and tracer tests has been a valuable tool, and finally,
19 simulating aquifer response by constructing numerical groundwater flow models.

20 Effective remediation methods that have been employed include: source
21 removal, construction of impermeable liners, hydraulic control by pump and
22 discharge, monitored natural attenuation, and other engineering controls.

23 Action two under NEI 07-07 is voluntary communication, and under that,
24 communication to external stakeholders of inadvertent leaks or spills is required

1 regardless of the risk. Groundwater investigations are inherently slow and
2 cannot yield answers quickly regardless of the public pressure to provide prompt
3 solutions. And so a Ground Water Protection Program, which includes proactive
4 characterization of site hydrogeology and routine monitoring of groundwater
5 quality, provides the rational data needed for a technical basis to respond to
6 leaks and spills. And of course, it's most useful if this work is done before the
7 leaks or spills occur.

8 Regarding some of the questions posed to the panel for this morning's
9 session: Are additional requirements for design, operation, and maintenance
10 appropriate? I would offer that in new plants particularly, minimization of buried
11 pipes or provision of secondary containment is of the utmost importance as well
12 as provision of liners for all sumps.

13 In existing plants as well as new plants, of course, providing for isolation,
14 inspection, and testing of individual sections of buried or inaccessible pipelines
15 would be very useful and that would allow easier location of leaks in those
16 conduits by pressure testing, by sampling and analysis of discrete sections of
17 potentially leaking pipelines by allowing tracer testing and by allowing access for
18 NDE methods.

19 Is applying the ALARA concept to unmonitored releases and to restricted
20 areas feasible? I would urge that use of the available resources to monitor
21 groundwater near SSCs that are potential sources of groundwater contamination
22 rather than at the plant boundary. If detection monitoring is conducted only at the
23 outer boundary of the restricted area, ALARA may not be provided. Detection
24 monitoring only near the plant boundary allows groundwater contaminants

1 potentially to flow over a larger area before they're detected, provides a shorter
2 reaction time before flow offsite, and may not be successful in identifying specific
3 leaking SSCs.

4 That concludes my remarks.

5 MARK SATORIUS: Thank you, David. I think rather than -- I've had a
6 request that we're going to skip the order here now and we'll come back to you,
7 Ernest. But first, I think we're going to hear from Maria.

8 MARIA KORSNICK: Thank you very much. Yeah, I'm going to have
9 some broad comments around the industry initiatives and then Ernie's going to
10 go into some additional detail on the Buried Piping Initiative. That's why we
11 requested to change the order.

12 I'd like to start my comments again to just address the industry initiatives
13 relative to the matters we're speaking to today. And there's three of them. As
14 Kathy mentioned in her comments that the NSIAC, which is a Nuclear Strategic
15 Issues Advisory Committee -- it's a standing committee within the Nuclear
16 Energy Institute and it represents all of the chief nuclear officers for nuclear
17 operators across the country. A formal commitment when we talk about initiative,
18 it's a formal commitment of at least 80 percent of the chief nuclear officers in
19 order to pass an initiative.

20 The one initiative that we're discussing today relative to the Groundwater
21 Initiative actually Kathy already spoke to in her comments. So rather than
22 reinforce that, just to say that one was passed in May of 2006 and that is the first
23 initiative relative to our topic today. There's really a combination of not only
24 groundwater but buried piping. And if you go to the next slide please, we'll talk

1 about the Buried Piping Integrity Initiative that was more recently approved.

2 It was approved in November of 2009. And the goal of that initiative was
3 to provide reasonable assurance of structural and leakage integrity of all buried
4 piping with a special emphasis on piping that contains radioactive materials. This
5 applies to all buried piping onsite that has direct contact with the soil. And you
6 can see in some follow-up actions that addresses both the assessment, the
7 inspection, as well as long-term asset management.

8 The next slide actually shows the specific milestones for this Buried Piping
9 Initiative. You can see that it involves procedures and oversight. This is to
10 ensure that we have clear roles and responsibilities at the site for the control of
11 the Buried Piping Program. It's to develop a Buried Piping Integrity Program
12 document and implementing procedures. And these are essentially based on an
13 EPRI guideline which was the Recommendations for an Effective Program to
14 Control the Degradation of Buried Pipe, provides a lot of background information
15 and recommendation relative to actions in this initiative. The Nuclear Strategic
16 Issues Advisory Committee will in fact provide oversight of this initiative.

17 You can then see that risk ranking is the next milestone for this initiative.
18 And that basically allows us to ensure that we're focusing on the most important
19 things first and so you're looking at the likelihood of piping segments to not meet
20 specific criteria as well as the consequences of failure. You're looking at what
21 the pipe is made out of, for example, what type of soil that it's buried in, as well
22 as the consequence should a leak develop. So it's a very specific analysis of all
23 the buried piping and the nuclear site.

24 You can then see it's followed by an inspection plan. So once the risk

1 ranking is complete, you can identify the specific areas of piping to be inspected,
2 a potential inspection techniques schedule, and you're also looking at the health
3 of supporting systems. In this particular case, cathodic protection would be an
4 example of a system that you'd be interested understanding the health of. It also
5 leads then to a longer-term asset management plan and that's the final milestone
6 in this initiative.

7 If you -- go to the next slide, please -- you can see that the intention on the
8 industry's behalf is that the Buried Piping Integrity Initiative and the Groundwater
9 Protection Initiative really work hand and glove. The idea here was for
10 monitoring proactive assessment and management, to share operating
11 experience, and to drive inspection and improve analytical technologies to help
12 us inspect and monitor.

13 So we look at that operating experience and some of our speakers spoke
14 in our first session today. One of the things that we learned as an industry is that
15 the degradation of piping in vaults and tunnels can also occur. And this was
16 some of the operating experience that was actually spoken of earlier today. And
17 so as a team, we took that on. We said, "Well, in fact, our initiative, initially as
18 stated, talked about buried piping and direct contact with soil." We took on that
19 operating experience and looked to broaden our industry initiative and say that it
20 should also apply to piping that's in vaults and tunnels.

21 And so if you go to the next slide it talks about an expansion of the
22 initiative scope that was more recently approved by the Nuclear Strategic Issues
23 Advisory Committee, in fact, just in September of this year. And in fact, it covers
24 underground piping and tanks, whether or not they are in direct contact with soil,

1 if they are outside of buildings and contain licensed radioactive material or are
2 safety related.

3 Again, this is an opportunity for the industry as they learn more from the
4 operating experience to ensure that our initiative was comprehensive in
5 identifying the issues and being proactive. And you can see then that we titled
6 the revised initiative the Underground Piping and Tank Integrity Initiative.

7 This concludes my remarks and I'd like to then turn it to Ernie to talk in
8 more detail about implementing the Buried Piping Program.

9 MARK SATORIUS: Mr. Shaw?

10 ERNEST SHAW: Thank you. Again, my name is Ernie Shaw and I'm a
11 materials program supervisor in our corporate office with responsibilities for
12 implementing our materials programs with responsibility specifically for the
13 Buried Piping Program.

14 The overall points of my discussion on the second slide are to review
15 program objectives from Southern Nuclear, to discuss our implementation status
16 which is very similar across the industry to our peers, to discuss our program
17 management, and to provide minor comments towards public safety and
18 regulatory confidence.

19 Overall, on our next slide, slide number three, looking towards the
20 Southern Nuclear objectives for safe operation for new and existing stations.
21 Currently with Southern Nuclear, we are in the process of constructing a new unit
22 or two new units. However, the mitigation and the care that is taking place for
23 the units is the same as on the existing units.

24 Looking towards minimizing potential environmental impacts, industry-

1 leading monitoring programs, as well as ongoing and continuing improvements:
2 These are all policies that Southern Nuclear follows to the letter. And we
3 adopted the industry procedures as well as the industry initiatives looking
4 towards buried piping and groundwater and we take those initiatives to heart.

5 As Maria was saying, they were adopted by approximately 80 percent or
6 by 80 percent or more of the CNOs for all of the nuclear stations in the country.
7 And overall, our objective is not to pursue these policies as popularity, but rather
8 in placing emphasis on the important issues such as groundwater protection
9 because they're actually the right thing to do, not necessarily because they're of
10 popularity with the regulator. Next slide, please?

11 Looking towards the implementation of the Groundwater Protection
12 Initiative in NEI 07-07, we have established groundwater protection initiatives.
13 Programs have been established and it's being implemented at all SNC sites.
14 We are taking looks at further enhancing the program risks, looking towards
15 additional analysis that may be performed, looking towards additional study and
16 evaluation moving forward.

17 Looking towards communication, we've met all the regulatory
18 requirements in terms of establishing reporting and emergency communications
19 plans to include stakeholder, voluntary, 30-day, and annual reporting.

20 Looking towards program oversight, we have established open
21 communications and we support open communications and disclosure with the
22 Nuclear Regulatory Commission, NEI, and INPO, INPO being Institute of Nuclear
23 Power Operations, which is an industry-funded organization to help drive the
24 industry towards excellence on all matters.

1 Overall, our status is having been completed the implementation of NEI
2 07-07. However, we are an organization and an industry that pursues excellence
3 and we are constantly reexamining the work that has been performed. This
4 particular slide dovetails into quite well with Maria Korsnick's discussion as well
5 as Kathy Yhip's discussion looking towards NEI 07-07 and the industry's pursuit
6 of excellence ahead of legislation and regulatory basis. Next slide please.

7 Looking towards the implementation of the Buried Piping Program, with
8 the guidelines that were laid for the by NEI 09-14, the Buried Piping Integrity
9 Initiative, Southern Company as well as the other utilities are making great
10 strides towards completion. The procedures and oversight have been completed
11 as well as the system risk ranking, with the system risk ranking going through
12 and evaluating the components, the systems themselves, the fluids that are
13 being transported by those lines as well as the risk and safety significance of
14 those lines to stack them and arrange them in a proper order for appropriate
15 management and handling for program implementation.

16 Looking towards the inspection plan, the due date is 6/30 of 2011. And
17 those programs are in progress and for Southern Nuclear are approximately 70
18 percent completed. The implementation or plan implementation is due by
19 6/30/12; we're approximately 25 percent complete with that. And looking towards
20 condition assessment, there's actually an error on the slide that's being shown. It
21 shows the date of 6/30/12; should be 6/30/13. We're approximately 10 percent
22 complete with that as well as making strides towards asset management,
23 December of 2013.

24 All of these actions are taking place and are occurring very much so

1 uniformly throughout the industry moving forward and taking the initiative
2 extremely seriously, trying to get ahead and contain the issues that are going
3 forward and to address them in a very optimistic matter.

4 Regarding program management for both the Groundwater Protection and
5 Buried Pipe Initiatives, we have processes and programs that are in place and
6 established. Looking towards new units as well as existing units, there are
7 common processes that are established and that are in place. This allows us to
8 leverage our experience as well as be programs and establishments that are in
9 place. We also work towards continuous improvement via assessment and
10 lessons learned applied throughout the industry.

11 There's rigorous challenge and debate both within the industry and with
12 the NRC as their site residents at each of the operating statements, as well as
13 internally from our chief nuclear operators -- or, excuse me, nuclear officers as
14 well as our peers within the industry challenging and looking towards excellence.

15 And lastly, looking towards new and existing units as well as the
16 relicensing processes, the GLL or generic lessons learned and decommissioning
17 programs are in place and we are working towards meeting those respective
18 revisions to the programs based on the plant design and date of commissioning.

19 And similarly, with looking towards general design criteria and period of
20 extended operation for plants that are going to the licensing period, those are
21 being evaluated as well along with compliance to all federal regulations for new
22 plants.

23 Lastly, looking towards program management and new unit design
24 considerations, the new units are being evaluated with the lessons learned from

1 our existing units. Looking towards better material management through
2 preferred materials, being employed where feasible, upgrading materials from
3 carbon steel from stainless steel is an example; a general reduction in
4 underground piping by design looking to move piping into vaults rather than
5 being in direct contact with soil; engineered backfill with known material
6 properties, which feeds into the risk ranking for the piping itself; as well as
7 codings improvements which have come about as that industry has evolved as
8 well.

9 Looking towards program implementation, existing programs will be
10 modified and will be applied to new plants. Inspections, risk ranking, and
11 monitoring requirements will continue as well as significant NRC application and
12 improval processes. The processes themselves are robust, are rigorous, and are
13 exceedingly challenging. Next slide, please.

14 And the last slide is looking towards public safety and regulatory
15 confidence. Aggressive action is being taken by the industry initiatives that are
16 well ahead of the required regulatory guidelines. They do not circumvent or
17 supersede the guidelines. They are in addition to those guidelines. They are
18 industry imposed and move our programs forward. Significant investment is
19 being made to improve inspection technology, both privately as well as within the
20 facilities themselves. And the industry is ahead of a very aggressive
21 implementation schedule, making strides forward to implement the programs.
22 Again, the programs have unanimous chief nuclear officer vote and support and
23 require challenge if program deviations are taken.

24 And my last comment will be on regarding nuclear regulatory commission

1 oversight and effectiveness. The regulatory process is highly intrusive with
2 monitoring of the release and control of licensing material. Required inspections
3 for safety significant systems have been in place and are well established as well
4 as existing federal requirements are being enforced and rigorous licensing and
5 licensing renewal processes are in place.

6 Thank you.

7 MARK SATORIUS: Thank you, Mr. Shaw. And now we'll move to Katie
8 Sweeney.

9 KATIE SWEENEY: Thanks, Mark. Good morning. We'll have a slight
10 change of perspective here since I'm not coming at this from the reactor side of
11 the house, but the materials side of the house.

12 My members represent the substantial majority of the uranium recovery
13 companies with former, current, or proposed conventional and in situ uranium
14 recovery projects. And I do want to just take this opportunity to kind of skip back
15 to the last panel to that being the regulatory topic because I think the range of
16 licensees that NRC represents has under its jurisdiction is varied, and uranium
17 recovery is one example. And uranium recovery -- we're governed by the
18 Uranium Mill Tailings Radiation Control Act, most specifically. The reactors are
19 not. So there's a different statutory history, legislative history, regulatory history
20 that applies. So it is difficult, I think, for harmonization of all these issues under
21 one umbrella when you have those kind of constraints already in place.

22 But anyway, I wanted to thank NRC for inviting me here today to tackle
23 such a complex issue as building and retaining public confidence that
24 groundwater is being adequately protected at facilities licensed by NRC.

1 Groundwater and drinking water are obviously important resources and worthy of
2 protection. Potential impacts to those resources have come under increased
3 public scrutiny and licensed applicants and licenses undertaking amendments
4 face challenges similar to NRC in convincing the public that protection of
5 groundwater and uranium recovery activities can coexist. The better NRC's
6 relationship with the public, the easier for licensees to reassure the public. So
7 we consider this something that we'd like to work with NRC on.

8 For uranium recovery activities, I think there are a lot of misperceptions
9 about the impacts to groundwater as well as the level of NRC enforcement and
10 oversight. One of the questions for this panel today was: Should NRC's
11 programs be modified or additional requirements appropriate to better contain
12 liquids and gasses? And my answer for the uranium recovery industry is no.

13 I believe that NRC's concerns regarding public confidence would be better
14 addressed through communication about the vigorous protection NRC's
15 regulations provide. Society is best served by NRC's retention of its current risk-
16 informed, performance-based approach to regulation. That approach ensures
17 that those activities of higher risk should be the primary focus of the agency's
18 efforts and resources.

19 Take uranium recovery as an example. Uranium recovery, whether by
20 conventional milling or in situ recovery, deal with naturally occurring materials
21 and natural systems. The regulations governing such activities at 10 CFR Part
22 40, appendix A, were designed to be flexible and performance-oriented rather
23 than prescriptive since they address facilities that can be affected by and can
24 affect natural systems that vary on a site-specific basis. Regulations should be

1 guided by risk and the best available science.

2 NRC's regulations for uranium recover operations provide protection of
3 groundwater by requiring monitoring. If performance thresholds are exceeded,
4 corrective action is required. Monitoring is required during the preoperational,
5 operational, and post-operational phases. And these regulations are paired with
6 inspection protocols that provide additional focus on groundwater protection.

7 Furthermore, in situ recovery operations are also regulated under the
8 Federal Safe Drinking Water Act and the Environmental Protection Agency's
9 Underground Injection Control Program. That means such facilities cannot mine
10 in an aquifer that is a current or future source of drinking water. Mining can only
11 occur in an aquifer that is already degraded due to the presence of significantly
12 elevated concentrations of naturally occurring radionuclides and/or other
13 hazardous constituents.

14 But just because mining is taking place in what is referred to as an
15 "exempt aquifer," it doesn't mean that EPA, NRC, or the operator can ignore
16 groundwater impacts. In fact, EPA and NRC regulations are in place to ensure
17 adjacent aquifers are not rendered unfit for sources of drinking water now or in
18 the future.

19 NMA believes the existing regulations adequately protect groundwater.
20 They are guided by risk and by science. Better and early communication with the
21 public about risks, about how NRC's programs protect groundwater, as well as
22 consistent enforcement of existing regulations would be the best approach to
23 address public confidence.

24 Thank you.

1 MARK SATORIUS: Thank you. That concludes our panel members'
2 presentations. I believe now we should go ahead and proceed with any
3 questions.

4 I have one question that I'd like to ask. Could I kick it off? I guess since
5 I'm the moderator that's okay, right? Two of the questions specifically that we
6 had ask the panel members to address had to do with the ALARA concept and
7 the use of the ALARA concept and its possible use in monitoring and taking
8 action for certain groundwater leaks. And I didn't hear anything from either
9 Ernest or yourself. I wonder if you could maybe one at a time give me your
10 insights on whether you believe the ALARA process or concept has a play as we
11 move and try to resolve these issues.

12 Ernest, I might ask if you could maybe start, or Maria?

13 MARIA KORSNICK: I'll frame it out and give you a minute to think, Ernie.
14 Yeah, I guess when you talk about ALARA, as low as reasonably achievable,
15 right? And you look at -- in this specific case, we're talking about buried piping
16 as an example. You know, our approach really is sort of, you know, prevention,
17 right? We want to look and evaluate the health of our piping prior to there being
18 any leaks. And so you can see through our risk ranking process that anything
19 that contains licensed material is going to rank higher on our list. So it's things
20 we would look at first.

21 So I guess, yeah, the challenge is we also want it as low as reasonably
22 achievable. And I would say that our actions show that we're trying to push
23 things in that direction. Ernie?

24 ERNEST SHAW: I would tend to agree with Maria's comment. Looking

1 towards unintended releases as being clearly undesired by the industry as a
2 whole and as evidence by the industry initiative as looking towards NEI 07-07
3 and 08-08 and 09-14. When this type of release does occur, it should be subject
4 to the same risk-informed approach as planned releases and with respect to
5 human impact.

6 MARK SATORIUS: Thank you.

7 MARIA KORSNICK: If I might, I'll point out that the NRC has established
8 10 CFR 50, appendix I, the criteria for ALARA releases for liquids. And licensees
9 are controlling liquid releases, planned as well as unintentional, well below those
10 limits in appendix I.

11 MARK SATORIUS: Thank you. Mr. Facilitator?

12 DREW STUYVENBERG: All right, well in that case, we'll open this up
13 now to the room at large. Again, just like last time, if you have a comment or
14 something else you'd like to share, please raise your hand and we'll call you
15 down to the mic.

16 Please. Remember before speaking to give your name and any
17 organization that you're with.

18 EDWARD REGNIER: I'm Edward Regnier from the Department of
19 Energy. I'd like to offer a comment on the question of whether or not a more
20 quantitative definition of ALARA should be provided.

21 As I presume most of us know, the definition of ALARA used by ICRP and
22 NCRP and fairly widely understood is one of an optimization process, a
23 balancing of the benefits and detriments of taking actions or providing protection.
24 Then as part of the radiation protection scheme and concept, the primary

1 requirement is that doses by as low as reasonably achievable and then the
2 individual dose limits are placed on there as a cap in case the ALARA concept or
3 the ALARA analysis would actually end up with doses to individuals that are
4 higher than would be appropriate or safe for that individual.

5 From that perspective, one, you can certainly and should apply
6 quantitative analysis to an ALARA assessment and that you can certainly
7 quantify some of the imponderable or less ponderable social and policy benefits
8 that should be part of the analysis. The general -- the assigning of specific
9 numerical values is somewhat inconsistent with the general health physics
10 concept of "as low as reasonably achievable."

11 MARK SATORIUS: Thank you.

12 DREW STUYVENBERG: All right, other individuals? Please.

13 PAUL GUNTER: Hi, my name is Paul Gunter and I'm again with Beyond
14 Nuclear in Takoma Park, Maryland. This particular theme before us is about
15 maintaining barriers, and with regard to the question that's come up with regard
16 to unmonitored releases and ALARA, it seems that what dictates what's
17 reasonably achievable in this portion of the acronym has to do with whether or
18 not the industry and the regulator continue to go along with this accessible
19 versus inaccessible system.

20 Currently, I think, you know, the big problem is and what we're not really
21 addressing here is that we've got all these inaccessible systems that are not
22 being inspected. They're not being monitored. They're not being maintained.
23 And when they eventually break down, they're not contained. So, I don't think
24 that we can really move on this whole issue of ALARA without first of all

1 introducing some reason to this whole process.

2 So what is conspicuously missing from this dialog or this discussion is the
3 issue of making these systems accessible so that you can then follow through
4 with the necessary inspection, monitoring, maintenance, and containment. And
5 I'm wondering why we can't move off this mark. Why the intent is now, at least
6 on the industry's part, to take three more years without really getting at the
7 central issue.

8 And what makes it even more dubious is that we do have one licensee
9 that has stepped to the floor with -- at Oyster Creek and they have basically
10 committed to make -- as I assume -- all systems carrying water -- maybe you
11 could clarify, that's in a ranking -- more of a ranking system than it is an all
12 inclusive system -- but they've made the commitment to make these pipes
13 accessible.

14 So, why is it -- again, and you know, we raised this question at the last
15 public meeting and it was never really answered. But I think that, you know, as
16 we proceed through these in successive meetings, if we're not getting to the real
17 issue of making these systems accessible so that they can be responsibly and
18 reasonable maintained, all this other stuff is window dressing as far as I'm
19 concerned. And so, you know, when the agency asks for an ALARA principle to
20 be explored, you know, it's doing that in the absence of any kind of reasonable
21 approach.

22 And so I'm wondering, again, you know, where -- we do have a discussion
23 here, so I take note that it's not just all about input. So I think it's reasonable for
24 the public to ask for a response from not only the panelists, but from the agency

1 as to why we have another inconsistency of one licensee that's now at the point
2 of demonstrating precedent for making systems accessible and the rest of this,
3 you know -- there's really -- there's been no -- I note that Mr. Shaw raised the
4 term "inspection". And perhaps the question, more specifically, if I could get
5 some comment on what I've mentioned before, but more specifically, if you could
6 elaborate on the type of pipe wall inspections that you're currently undertaking
7 under your schedule for 6/30/2011. And so, you know, if you could elaborate on
8 the inspection. So what's different now -- what can we expect to see that's
9 different in terms of -- by 6/30/2011 than procedures that we have that are
10 verifiable today?

11 So again, if I could get some comment on, you know, why we don't hear
12 more about making systems accessible. Why aren't we moving along those lines
13 of discussion industry wide and with the agency leading that discussion?

14 DREW STUYVENBERG: Thank you. Is there anybody on the panel who
15 is interested --

16 PAUL GUNTER: I'll stay here just so if there are clarifying questions.

17 DREW STUYVENBERG: Actually, Mr. Gunter, we've got about five
18 minutes per person. I don't know if we're going to have a chance for follow ups
19 right away but we may have some time at the end of this discussion session at
20 which point you could bring it back up.

21 PAUL GUNTER: Okay. Sure. But if a question comes up, maybe I can
22 clarify.

23 DREW STUYVENBERG: Was there anybody who was interested in
24 responding?

1 ERNEST SHAW: Mr. Gunter, I appreciate your question and comment.
2 Looking towards the pipe wall inspection, currently pipe walls are being inspected
3 via the UT, ultrasonic testing methods that are addressed within the ASME code
4 as well as guided wave, which is a longitudinal wave that can inspect sub-surface
5 piping for flaws looking towards a minor amount of volumetric inspection. That
6 technology is currently new and is being further developed by the Electric Power
7 Research Institute, as well as several vendors and contractors across the
8 country. Section 11 inspections are being performed for those piping sections
9 that are applicable and fall under that part of the ASME code.

10 And then for the other piping addressing the accessibility issues, there's
11 some amount of technology gaps that are currently in existence. For example,
12 looking at piping that is incased in concrete. So there are some technical issues
13 that have to be succumbed and thus the dates that are set forth.

14 PAUL GUNTER: In follow up, can you identify for me if those technical
15 issues are present at Oyster Creek and if they're being overcome at Oyster
16 Creek? Are you -- is NEI familiar with the program?

17 ERNEST SHAW: I cannot comment directly for [unintelligible] --

18 PAUL GUNTER: Is NEI familiar with the program going on at Oyster
19 Creek right now and the technical challenges that it faces and if in fact
20 overcoming those technical challenges on a schedule by December 2010 is
21 something that is unreasonable to be expected for the rest of the industry?

22 MARK SATORIUS: Mr. Gunter, I know from an agency perspective, I
23 don't have those insights. I think I owe you an answer. I don't know.

24 PAUL GUNTER: Isn't that remarkable? I mean, you're the inspector.

1 You have a precedent.

2 MARK SATORIUS: That's true [unintelligible] --

3 PAUL GUNTER: We talk about this, you know, that we have this
4 aggressive pursuit underway.

5 DREW STUYVENBERG: Excuse me, Mr. Gunter [unintelligible] --

6 PAUL GUNTER: I'm sorry, but I don't see the aggression here except for,
7 you know, a public that's concerned that the agency allows itself to be led around
8 by the industry.

9 DREW STUYVENBERG: Thank you.

10 MARK SATORIUS: I feel somewhat compelled just to state for the record
11 that in my statements, I was trying to be clear that I don't know the exact details
12 of this plant that's in Region I. Had it been in Region III, I would have known and
13 it would have been expected of me. Thank you.

14 PAUL GUNTER: There are other -- there are probably Region I
15 [inaudible] --

16 DREW STUYVENBERG: I actually don't know of any that are in the room
17 right now, but if we have someone who's accessible who can get back to
18 you, we will.

19 PAUL GUNTER: I'd appreciate that.

20 DREW STUYVENBERG: Thank you. All right, other comments?

21 MARK SATORIUS: Do we want to try the phones?

22 DREW STUYVENBERG: I think we should. Anybody on the phone line
23 with any questions or comments? I'm sorry; we have one person in the back of
24 the room here.

1 JAMES NOGGLE: I'm Jim Noggle. I'm from NRC Region I and I
2 appreciate very much all the voluntary initiative work that's there. And with the
3 response to some of the leaking plants that we have, I was wondering besides
4 the efforts to prevent pipes from leaking, if there is anything in the works that
5 EPRI or NEI has for remediation or mitigation for leaks that occur? Thank you.

6 KATHLEEN YHIP: Right now, EPRI and NEI are working on developing a
7 remediation decision making protocol. That's underway and is expected to
8 complete this year.

9 DREW STUYVENBERG: Thank you for that question and response. Are
10 there other questions? Another one from the back.

11 THOMAS NICHOLSON: I'm Tom Nicholson of the U.S. Nuclear
12 Regulatory Commission Office of Research. David Scott, could you please
13 comment on the development of ANS 2.17 and how it incorporates the industry
14 experiences, especially with regard to risk ranking and with regard to monitoring?

15 DAVID SCOTT: Yeah, ANS 2.17 is a performance-based standard and
16 relies on performance indicators to determine when corrective actions may be
17 required and also lays out a hierarchy for evaluating SSCs as to which are most
18 likely to be sources of contamination. The amount of monitoring that is
19 prescribed is not prescribed at any plan. It's based on the risks that are
20 determined from this risk-based evaluation.

21 DREW STUYVENBERG: Thank you. Any further questions?

22 MARK SATORIUS: Do one more check on the phone line.

23 DREW STUYVENBERG: On the phone? All right, well, if we have no
24 further questions, then I think at this point, I think we'll take a break for lunch. I'd

1 like to thank, again, all of our panelists --

2 MARK SATORIUS: Yes, I'd like to thank this panel and all five members
3 for their efforts. Thank you.

4 [applause]

5 DREW STUYVENBERG: And then we'll reconvene promptly at 1:30. We
6 have some people participating in the next panel who won't be available until
7 1:30, so.

8 [break]

9 DREW STUYVENBERG: Is this on? Hey, now it's on. All right, thank you.
10 I hope everybody has enjoyed their lunch. Just wanted to say first of all,
11 appreciate you all coming back to this afternoon's sessions. We're going to have
12 two more important sessions this afternoon. I wanted to give another thank you
13 to our panelists and also to those who are participating in the audience, and on
14 the phone bridge lines. I did want to give one reminder before we get started. A
15 big purpose of this meeting is to have some, or to receive input and comments
16 from people in the public about what's going on, what kind of things NRC should
17 be looking at as we address these groundwater issues, so we definitely want to
18 encourage people to participate, either by phone line or those here in the room to
19 directly get up and share your thoughts with us, as we go along this afternoon
20 and into the early part of the evening.

21 So with that, again, the purpose of this meeting is to be forward looking or
22 trying to get input that staff then can use as they develop policy
23 recommendations for the Commission, so again we look forward to your
24 comments, to your input as we go on with the rest of this afternoon's session.

1 Next up is going to be a panel facilitated by Michael Johnson of our Office
2 of New Reactors and this is going to be addressing creating a more reliable NRC
3 response and without any further ado, I'm going to turn that over to Michael, to
4 introduce our Panelists, for this afternoon's first session. Thank you, again.

5 MICHAEL JOHNSON: Thanks, Drew. As Drew indicated, I am the
6 moderator for the third session today. The third theme -- for the third theme, I
7 discussed by Marty create a reliable, a more reliable NRC response in the
8 Groundwater Task Force report, various issues were identified with regards to
9 the NRC's programs, whether the NRC's programs should be modified to be
10 more predictable, where there are low risk, high public interest confidence
11 issues. We've invited five panelists here today to address the following
12 questions as appropriate to their background that are listed in the Federal
13 Registry Notice.

14 The questions include should the NRC's programs be modified to ensure
15 greater consistency when addressing low risk, high public interests, confidence
16 issues, that is to say should the NRC's oversight programs be modified to include
17 more specific guidance on responding to reported incidents where risk is low, but
18 there is high stake holder interest. Should this guidance address the follow-up
19 and disposition of a licensee's immediate actions, extent of condition, root cause,
20 corrective actions, and communication with the stakeholders. Also, how can the
21 NRC improve communications and support to other regulatory agencies such as
22 the U.S. Environmental Protection Agency and the states in understanding and
23 exercising respective roles and responsibilities related to Ground Water
24 Protection?

1 After the panelists provide their remarks on these questions, we'll have the
2 opportunity for those in the audience and on the phones to provide input on the
3 questions as well. To begin, I'd like to introduce the first panelist. In fact, I'll
4 introduce all the panelists, first starting to my far right, Mr. Patrick Mulligan.
5 Patrick is from the Conference of Radiation Control Program Directors for the
6 State of New Jersey. Patrick Mulligan is the Chief of the Bureau of Nuclear
7 Engineering at the State of New Jersey, Department of Environmental Protection.
8 The Bureau of Nuclear Engineering provides radiation protection for individuals in
9 New Jersey through establishing, implementing, and enforcing radiation
10 protection measures and standards as applicable to the nuclear power industry.

11 Seated next to him is Mr. Phil Musegaas. Did I mess that up totally, Phil?
12 Thank you very much. Phillip joined the river-- I'm not going to use your last
13 name again.

14 [laughter]

15 Phillip joined the Riverkeeper in August of 2005, as the Indian Point Policy
16 Analyst, responsible for analyzing and developing, and promoting positions on
17 legislation and policies dealing with nuclear power plant safety and security. He
18 earned a Juris Doctorate with the certificate in environmental law from Pace
19 University School of Law.

20 Next to him is Mr. Scott Morie. Scott is the Decommissioning
21 Environmental Unit Manager with the Nuclear Fuel Services and is an ASBOG
22 certified registered professional geologist, a certified groundwater professional,
23 through the National Groundwater Association, and a certified hazardous waste
24 manager. Mr. Morie has over 23 years of experience assisting the industry with

1 hydro geologic categorizations and groundwater remediation strategy
2 development.

3 Next to him is Mr. Michael Rinker from the Canadian Nuclear Safety
4 Commission and Environmental Risk Assessment Division. Mike Rinker is the
5 director of the Environmental Risk Assessment division of the Canadian Nuclear
6 Safety Commission, and last but not least, seated next to me is Mr. John
7 Williams of the U.S. Geological Survey. John Williams has been a hydro-
8 geologist with the U.S. Geological Survey for 30 years. Currently, he serves as
9 the groundwater specialist for the New York Water Science Center and directs a
10 survey-wide technology transfer program in bore hole geophysics. Man, that's
11 really tough.

12 [laughter]

13 John has provided technical assistance to the U.S. EPA, the Army Corp of
14 Engineers, and most recently the NRC, concerning groundwater contamination
15 issues and a number of fractured rock sites.

16 So, I've introduced the panelists. Without further ado, we begin the panel
17 presentations.

18 PATRICK MULLIGAN: Good afternoon and I want to thank you for this
19 opportunity to come and speak before this group. I do represent the Conference
20 of Radiation Control Program Directors. Today they asked me to come and
21 speak on behalf of the States. Conference of Radiation Control Program
22 Directors is an organization that gathers all of the radiation control programs
23 across the country and tries to implement and discuss better practices for
24 radiation control and protection. As a member of the State of New Jersey EPA, I

1 do have some experience with tritium going back to 2003, is when we first started
2 dealing with tritium leaks at one of the power plants there and we've been
3 working for the last seven years with plants on both sides of our states, to deal
4 with those issues and it's interesting that we talk about this in the context of
5 where we're at, because you know the public's stake holder interest seems to be
6 the difference between those two sites. Going back to 2003 we had a fairly
7 significant leak at one of those power plants and there was very relatively low
8 public interest at that one, yet there was another one in 2009 that had high public
9 interest, and I think the key is when you're addressing these issues, regardless of
10 whether or not it's a public health risk, they need to be taken seriously and they
11 need to be addressed consistently, no matter what the plant is or what the public
12 interest is. It needs to be taken seriously from the beginning and it needs to be
13 done through a process that engages stake holders immediately, through a
14 reporting process. We are fortunate in the state of New Jersey that regardless of
15 whether or not it's a voluntary issue for the industry and based on the NEI
16 document, that it's a, you know, radiological material, is a hazardous substance,
17 it needs to be reported within 15 minutes to the state of New Jersey as part of
18 our Spill Act.

19 So, regardless of what you know, the regulations say, that's part of the
20 Act. We get notified immediately at the DEP and then we follow up with that, and
21 we would expect that the NRC be involved with that process from the beginning.
22 Now, the interesting thing that I find, that I think -- and I think there's a public
23 confidence issue with the NRC, and I think that stems from we all in the health
24 physics industry understand the relative risk of what tritium presents and there's

1 an immediate jump from the NRC to say it's not a public health risk, prior to
2 investigation. That's bad. All right, that's where the public confidence issue I
3 think comes from, that there's a willingness to go out there and say this is not a
4 problem, before you go and investigate the problem. For example, one of the
5 sites that we have, the initial discovery of the tritium showed a few hundred
6 thousand picocuries per liter in some area. When they traced that back to the
7 source, it ended up being an upwards of six million picocuries per liter in the
8 ground.

9 Now, if you go out and say this is not a public health risk based on your
10 initial and don't follow it back, and find out what the extent is, then you've lost
11 your confidence already, and you're only a day or two into the game, so I think
12 that the process needs to be a cooperative effort between the site, the NRC, and
13 the state that's involved, because the state does have a role to play. I mean we
14 carry a [unintelligible] permits for these nuclear power plants, air permits,
15 discharge permits, you know, coastal zone management issues, and other issues
16 so, we're involved with the nuclear power plants on a number of regulatory
17 issues, on a daily basis, all the time.

18 Groundwater's no exception. We do get involved and we will continue to
19 get involved from the state level, regardless of what regulatory authority we're
20 told that other people have. We will get involved and we will investigate, and that
21 you know, that goes for any state that's out there and I think that's what we're
22 starting to see.

23 Seeing that there's a gap between the EPA and the states, and the NRC,
24 and where that regulatory authority falls, and I think we need to close that gap

1 and come to an understanding of how we're going to investigate these tritium
2 leaks, because there's going to be more. There's no question. As plants age,
3 there's going to be more. You know, Oyster Creek has taken the steps to go
4 ahead and be proactive, and make sure that doesn't happen in the future, by
5 taking all of their buried pipe and making sure that it's either above ground or in
6 vaults, so they can monitor it. They don't want to leave it to wells to monitor. I
7 think that's a bad practice. I think prevention is the way to go, but once we get
8 into a position where we need to address what's in the groundwater, then we
9 need to go ahead and work together on an investigation plan. When the
10 investigation's complete, then we come out with a transparent policy to relay that
11 to the public and then I think that that'll instill a little bit more public confidence,
12 and then over time that'll help with the process.

13 So, I would suggest that there is, not guidance I mean, you're not going to
14 fix this with policy, but what you can fix with is a consistent approach, you know,
15 a prompt and timely you know, reporting, a prompt and timely investigation, a
16 prompt and timely follow-up report, you know that comes out, and you know, just
17 sharing what the information you have with the public and with everybody that's
18 out there, because that's what's going to build the confidence back from the
19 stake holder and from the state perspective, and I know I only have one minute
20 left, but if I were going to say anything you know, from the state perspective, I do
21 believe that the NRC needs to recognize the role of the stake holders, particularly
22 at the state and local level, because they're going to take a keen interest in
23 anything that goes on at the power plants, and t they're going to take a keen
24 interest in the follow-up to that. You know, once the regulatory agency is

1 satisfied that the regulatory conditions are met and it's not a problem, they walk
2 away, but there's still tritium in the groundwater, but it's not a problem and that is
3 not conveyed to the people that are living in that area. It's not conveyed and they
4 come to the state and say, "What does this mean?" and then we've got to work
5 with the local citizens and the local governments, and the local politicians to let
6 them know that in fact, yes, the NRC, what they've told you is correct, that it is
7 not a public health issue and here's why," and I think that's the key, is the follow-
8 up and the closure, and that only comes through good communication with the
9 public and with the states, and the local governments that are out there. Thank
10 you.

11 MICHAEL JOHNSON: Thank you, Patrick. Phil, you're next.

12 PHILLIP MUSEGAAS: Thank you. I just want to start by thanking the
13 NRC for inviting us to this conference. We appreciate the opportunity to give our
14 input on this issue and give some of our perspective on our experience with
15 Indian Point Nuclear Power Plant and the lease that we've had there. I want to
16 start out just by whole heartedly supporting many of the things that Pat said. I
17 think, I agree that the key to public confidence is not more policies and more
18 performance indicators. It's better actions and more follow through on the
19 regulations that you already have in many instances and it's especially important,
20 I think this is spelled out in a task force report, and Pat just said, that the increase
21 in the coordination and the communication between the EPA, the states, state
22 environmental agencies in particular, and the NRC is critical, because there's
23 clearly a regulatory gap here that the NRC never predicted, and that the NRC is
24 wrestling with to varying degrees of success and that needs to be closed, and

1 whether it's closed by the states taking over more authority, whether it's closed
2 by NRC moving you know, everyone moving a little bit to the middle and closing
3 the gap.

4 That gap has to be closed, because whether or not this has you know,
5 these leak incidents have kind of immediate public health impacts is not really the
6 issue. The issue is restoring and then maintaining public confidence across the
7 board, from the NRC, from the EPA, from the states, and you know, people want
8 information and they want it accurately, and people, I mean the public. They
9 want it accurately. They want it in a timely manner and they would like it you
10 know, they would rather I think be told that you don't know what the situation is,
11 rather than automatically saying that there's no public health and safety risk, and
12 so just, sorry those are kind of off the cuff remarks, but just a couple of general
13 comments I want to make, and then I'll try to address the questions that were
14 posed to us for this panel.

15 Just to start off, you know I'm here representing Riverkeeper, and I think
16 we -- I'd like to start out by saying that we disagree with the categorization of this
17 particular panel and what I mean by that is the question refers to -- should NRC's
18 oversight programs being modified to include more specific guidance on
19 responding to reported incidents where risk is low, but there is high stake holder
20 interest? I think that is an inaccurate categorization of what's happened so far,
21 you know and it should be more about unknown risk, figuring out what the overall
22 risks are, and then addressing them properly.

23 You know, the public is aware of by now, of the people that know about
24 these leaks, they're well aware that over a third of the operating, I think, around a

1 third of the operating nuclear power plants in the country have had tritium leaks
2 or other types of groundwater -- leaks to groundwater that have caused some
3 contamination. And so, you know, the groundwater task force report talks about
4 the fact that the public is concerned that these leaks represent a larger -- they're
5 an indicator of a larger issue of a lack of maintenance, or a larger issue of aging
6 power plants. Whether or not that's true, you know, I don't think the NRC has
7 done enough to really look at this issue fleet wide for all the nuclear power plants
8 and explain to the public why that concern is unfounded.

9 It's one thing to say that the immediate public health impacts are low for
10 an tritium leak or that the you know, the leak is being contained and the leak is
11 going into a water body that is not used for drinking water, but to my knowledge
12 there hasn't been a really a kind of a holistic explanation or an attempt by the
13 NRC to go and explain to the public why, in simple terms, we have these plants
14 leaking tritium, here's why it's not a safety issue or here's why it's not a
15 maintenance and a public health issue. It's a very simple argument and I think
16 people would appreciate that. I think the public would appreciate that and they
17 deserve that kind of explanation, and but by treating this automatically as kind of
18 a low risk, by assuming this is a low risk issue, you do a disservice to the public,
19 because you approach his as if it's a public relations concern that has to be
20 solved, rather than an genuine issue that has to be addressed.

21 Also just to comment about, you know, I know the ground water task force
22 report and the earlier, 2006 report deal mainly with tritium contamination, and
23 they focused on that. I just want to, you know, want to make it clear that at
24 Indian Point we had leaks that also contained other, far more toxic radio nuclides

1 -- strontium 90, cesium 137, nickel 63, and cobalt 60. All of these were found
2 above safe drinking water act limits and some of them, many orders of
3 magnitude above those limits, and so this is not just the tritium issue. This is a
4 plant wide operational issue and when you're dealing with spent fuel pools, this is
5 an issue that has more serious ramifications.

6 Also, just to comment, and I'm almost done here, regarding the task force
7 decision to kind of look at -- only look at leaks and groundwater contamination
8 issues, since 2006 I realized that they were probably referring back to the 2006
9 report for earlier instances, but I think it's important to look at the -- as much as
10 possible at the entire history of this leak problem. Indian Point is a good
11 example. We have a reactor that's no longer in operation, called Indian Point
12 One, that is in safe store mode at this point and it's been decommissioned since I
13 think 1979. It's been partially decommissioned. At some point, and I think in
14 2005, 2006, the NRC in investigation the leaks at Indian Point, discovered that
15 the leak collection system that was built for Indian Point One spent fuel pool from
16 the early 1990s was not collecting the leakage from the pool, from the reactor
17 spent fuel pool, and in fact strontium 90 and these other elements were leaking
18 into the groundwater for over ten years, without being detected and those leaks
19 would have been detected if there had been onsite groundwater monitoring at the
20 plant. That would have stopped this long before it got to that point, and so we
21 had almost 15 years of undetected leakage going on at that plant.

22 Just very quickly, in terms of the questions that were posed to this
23 particular panel, I think in terms of the first question regarding improving
24 guidance, you know it's never a bad idea to improve guidance, but I think that's

1 not the real issue here. I think that you know, it's only going to be useful to
2 improve performance indicators and other you know, ROP related approaches if
3 you have an agency-wide and an industry-wide attempt to really figure out how
4 big a problem this is, to figure out whether there are you know, down the road in
5 five or ten, or 15 years, we are going to have safety related issues with this
6 leakage. And then just very briefly, on the second question regarding helping the
7 NRC improve communications and support other regulatory agencies, you know,
8 I think I've covered that already. That goes to what Pat said also. I think it's very
9 important that we, you know the NRC engages with EPA and engages with the
10 states to figure out where their authority ends and where the states' begins,
11 because that's -- this problem is not going to go away. It's probably going to
12 increase and you know, it's better to work it out cooperatively than it is to work it
13 out in state court or federal court, and so thank you very much.

14 MICHAEL JOHNSON: Thank you, Phil. Next, we hear from Scott.

15 SCOTT MORIE: Yes, I believe I have a presentation that needs loading.
16 Next slide. I'm just going to respond to that first question on the theme three, go
17 ahead. Next slide, please, yes. I believe the NRC should respond proactively
18 and consistently to groundwater issues, despite any kind of risk levels. I think it's
19 a public perception issue. Nuclear is a different industry, you know, compared to
20 the norm and we're held to a higher standard and that kind of feeds into the
21 ALARA principal.

22 Next slide. I want to shift gears a little bit. I'm not on the reactor side, but
23 I wanted to talk about a project we have going that's kind of low risk, but high
24 public interest, with respect to groundwater remediation. We had been

1 performing some investigations in the 1990s and discovered we had a dissolved
2 uranium plume onsite mixed with a dissolved tetrachloroethylene or organic PCE,
3 plume onsite, that had migrated offsite, due to the much lower distribution
4 coefficient or “KD”, as opposed to uranium, which is to remain onsite. Risk
5 assessment was performed, showed no risk for both those constituents.

6 Next slide. We performed, remedial alternatives analysis in the late 90s to
7 control the source of that flux of uranium and PCE to groundwater, and selected
8 the in-situ reactive zone technology or IRZ, which remediates groundwater
9 uranium and contaminated groundwater, by reductive precipitation and
10 stabilization with ferrous sulfate, and reductively dechlorinates PCE in situ.

11 Next slide. This is just a picture depicting what we’re doing injecting of a
12 carbon source or electron donor to the aquifers subsurface where contamination
13 is residing, to enhance an anaerobic microbes are indigenous to the aquifer
14 create a reducing zone, to precipitate out uranium as uraninite, and reductively
15 dechlorinate PCE to harmless end products. We then follow up with ferrous
16 sulfate injections to get iron sulfide precipitant for co-precipitation and capsulation
17 of uraninite for a long term stability.

18 Next slide. After the remedial alternative analysis was performed, we did
19 a pilot test to see if that would work onsite. It had been pretty well documented
20 for PCE, but not for uranium. This is the first time it had been performed. Had
21 positive results, as you can see on the pilot test and documented those. Shared
22 them with the regulators, the scientific community published them and took that
23 full scale, and still continue to see good results from that.

24 Next slide, please. You’re looking at the dissolved uranium plume on our

1 site, pretty much stained where the source areas were, because of its KD
2 distribution coefficient groundwater flow is toward the northwest. This is baseline
3 conditions and the next slide shows where we are currently. Most of that area
4 you see is kind of ghost out. It's below drinking water MCLs. There's two areas I
5 guess in the source areas of that plume, solid waste management unit and their
6 area of concern, that you see kind of still remaining, that we are still addressing,
7 but you know significant reduction there.

8 Next slide. Then into the organic side of this, probably isn't as much
9 interest to you all, but pretty interesting. The PCE process for reductive
10 dechlorination goes to harmless end products by sequential replacement of
11 chloride ions with hydrogen ions, hopefully harmless end products in situ.

12 Next slide. Show PCE at baseline conditions. It's within the same source
13 area as uranium, but you know, it didn't make it migrate with respect to
14 groundwater offsite, because of this lower KD. This is baseline conditions and
15 the next slide shows where we are currently with respect to PCE. Most of that
16 area onsite's below drinking water MCLs, still area remaining on-site we're
17 addressing with enhancements that is a tiger formation area, so we're trying to
18 overcome that, and then also the offsite portion, we are also addressing.

19 Next slide. Getting back into the questions, I guess. Question two, on
20 that theme three and I guess the next slide shows my response, but might be
21 worth evaluating shifting primacy of the oversight of groundwater to EPA and as
22 far as communication issues, just having each other attend each other's
23 meetings, both NRC and state, and that's all I had.

24 MICHAEL JOHNSON: Thank you, Scott. Michael.

1 MICHAEL RINKER: First of all I'd like to thank the NRC for inviting the
2 CNSC to this meeting. We appreciate the opportunity to be included, because
3 we're faced with very similar issues up in Canada. Regarding the issue for
4 today's session, I must confess, I'm not an expert in NRC programs and so I
5 probably won't provide a reasonable review of those, but what I would like to
6 contribute is the CNSC's perspectives on these similar issues and perhaps
7 based on our experience up in Canada, maybe provide some issues of -- some
8 experiences that we've had, to contribute towards the discussion.

9 Next Slide. I'd like to begin with a few slides of introduction, if I could,
10 because there are some similarities between the CNSC and the NRC, but there's
11 also several differences with our mandate. First of all, the CNSC has modern
12 legislation. That's the Nuclear and Safety Control Act, established in 2000, and
13 we went through a transformation, if I could to the next slide, please, where
14 environmental protection was not, the next slide please, I'm sorry, with the dog.
15 Yeah, with the dog, yeah.

16 [laughter]

17 MICHAEL RINKER: Yes, and the sunglasses, yes. Yeah. Yes, we're
18 Canada's nuclear watchdog. Our mandate does include protection of the
19 environment and that was the transition that we went through about ten years
20 ago, and much like turning a ship, it took some time to get some traction, but I
21 think we have some pretty sound policies and procedures in this regard.

22 One of the objects of the Nuclear and Safety Control Act is to ensure that
23 there are no unreasonable risks to the environment. That's a risk based idea,
24 and in making decisions, the Commission must consider whether the licensee

1 would impose adequate measures for the protection of the environment, so that's
2 a requirement to our condition that the CNSC must determine unlicensed
3 application. How do we do that? We've evolved over time, but for a new project,
4 an environmental assessment must be completed and if we considered this a
5 application for up at Darlington, for a license to prepare the site, we are required
6 by law, the CNSC is required to do an environmental assessment on the
7 complete project, so we have a requirement for prediction from site preparation
8 all the way to decommissioning of that facility. That is undergoing now.

9 In addition, CSA standards, Canadian Standards Association, are in the
10 process of developing standards. One has been already released that relate to
11 environmental monitoring, effluent monitoring, and risk assessment, and these
12 three go together. Where risk assessment is required for every facility and in fact
13 we do have a valid risk assessment for every facility at this time, that risk
14 assessment would inform monitoring programs for both effluent and the
15 monitoring, and after five years, the cycle begins again, where the results of that
16 monitoring go back into redoing the risk assessment and continuing on within the
17 five year cycle.

18 CSA standards are developed by industry, however the CNSC participates
19 as a subject matter expert and we are a voting member so we had a vote on its
20 adoption.

21 Our commission is independent, meaning they are -- they do not work full
22 time at the CNSC. They -- some are professors across the country, have various
23 roles throughout society and we come together once a month for public hearings.
24 We are independent of each other. They're independent of industry and they're

1 independent of government. They are supported by staff like myself and our role
2 is to provide recommendations and to enact decisions that commission may
3 have. Next please.

4 Our mandate is fairly broad. We start at mining. As soon as excavation to
5 go after uranium for the purpose of bringing it into the energy cycle is
6 established, that's part of our mandate, so we go for mining, milling, fuel
7 fabrication, power reactors, waste facilities, et cetera. In addition, we regulate
8 several ancillary facilities that for example, utilize tritium as a resource for the
9 production of exit signs; you can see them in this room. These are powered by
10 tritium light source and that particular industry triggered our interest in tritium
11 several years ago, which I'll talk about later.

12 CNSC takes communication with the public very important, whether it's a
13 risk significant issue or not. It's part of our mandate, the Dissemination of
14 Scientific and Technical Information. We achieve this in several ways. Our
15 hearings are webcasted and transcribed [sic], as I believe this meeting is. We
16 hold public consultations on issues of concern, not necessarily related to
17 licensing, and we develop research programs that may support knowledge we
18 need for industry, or they may support what one would call a perceived concern
19 that the public may have.

20 We recognize that there remains room for improvement and, but finally I
21 guess one difference that I should highlight is typically our licenses for power
22 reactors and mines, et cetera shoot for a five year period. It's not legislated. I
23 can go as long as ten. If there's a problematic licensee, it may be a one year or
24 two year, so there's a public hearing through licensing every five years and that

1 fits with the cycle of having a valid risk assessment around that time of licensing.

2 I'm used to switching slides, so sorry if I turn my mic off.

3 Public engagement is a legal requirement and it applies both to the CNSC
4 and to our licensees, so there are legislative requirement that's stated on the
5 CNSC, on this -- for this CNSC on the slide, but also our general nuclear and
6 safety, and control rates place similar requirements on our licensees. I'm going
7 to talk a bit about more of those in the later slides. We use our website a lot for
8 communication and it's undergoing a revitalization at the moment, where we're
9 trying to be a bit more proactive and clear in the information that we provide to
10 the public, but there are portals that obtain information such as on CNSC
11 records, transcripts, environmental assessments, which are important.

12 Environmental assessments are conducted under the Canadian Environmental
13 Assessment Act. They are conducted by us and they talk about, you know, the
14 scope of the project, where Darlington has applied for a site prep license, but we
15 assessed the entire project under this legislation and then when we go to
16 licensing and look for that [unintelligible] more narrow licensing aspect, and
17 environmental assessment and the Canadian Environmental Assessment Act
18 has been very clear and mandatory public engagement requirements.

19 We provide CNSC publications that are often issued based upon tritium,
20 uranium mining, radon exposures, and so on, and we often do open house
21 events, sometimes in Ottawa, if it's of a national importance, we go to local areas
22 to talk about issues that are more specific to those communities of concern.

23 Licensees, public information programs, this is -- well, they talk about
24 class one facilities and uranium mines and mills, class one facilities in Canada

1 means power reactors and those larger, more significant facilities, such as those
2 that are used for fuel fabrication and etcetera. So, they are required to engage
3 the public. The adequacy of their programs are monitored and reported to the
4 commission every licensing hearing, in a public forum and the public has an
5 opportunity to provide their views on how well their licensee has been
6 communicating with them.

7 This slide I think is more relevant to the topic we're addressing today in
8 this session. In my view, there are two different types of what we call low risk,
9 high public interest events, or those that are systemic to the Canadian Nuclear
10 Industry, as many of you are aware with the can do reactor, they are the
11 moderators deuterium and so they're -- the amount of tritium associated with the
12 Canadian reactors is much higher than the amount in other types of technology,
13 so this is something that we could say is a predictable low risk, high public
14 interest event. We don't know when it's going to happen, but because there is a
15 lot of tritium in our facilities, it's quite possible that that would be the thing that's
16 leaking, so after several years ago, the commission directed staff to do research
17 program on tritium and what we looked at was how do Canadian facilities
18 compare to facilities internationally for controls on tritium? How do the models
19 work for predicting tritium releases to groundwater and more particularly, to air
20 emissions, and we looked at what we call the dose consequences, where we
21 took, in 2006, every tritium value that we could find across the country and say,
22 "What does that mean in terms of the public dose to tritium?" So, a snapshot and
23 what is the public dose from tritium, and we looked at how tritium cycles in the
24 environment and people's vegetation, and I'm getting close, am I? I'd better

1 hurry, and then finally, to the health impacts.

2 The next slide, to both public information and disclosure, this is really
3 about low risk events, where we require the licensees to engage the public.
4 They must have a communication protocol that gets approved by us and that is
5 informed by what the public is actually concerned about from their facilities, and
6 these are routine, non-routine releases or unplanned events, or environmental
7 incidences that are not causing what we would call a safety significance.

8 The other type of reporting we have are early notification reports and
9 these are for the more -- the events that may have a more higher significance in
10 terms of safety, such as an unauthorized release of a nuclear hazardous
11 substance at a certain level, and they're required, based on these criteria, to
12 come to the Commission and report in a public hearing. These reports would get
13 into the issues that are mentioned in the groundwater task force, such as root
14 cause, what were the impacts, what are the plans of action, what were the
15 responses by the CNSC and licensees. What we've learned is that we need to
16 be proactive with these sort of issues, but we also have to make sure the public
17 has to their avail, factual information, and so there is a need to rebuke non-
18 scientific statements that are often made out in the public. We need to tailor our
19 communications to the host group and we need to, especially when we move into
20 new jurisdictions, we need make sure that communication is a two way street
21 and we engage early, even before the industry may move into that locale.

22 This is my last slide. I want to talk about the Canadian approach to
23 coordination, because CNSC is responsible for the Canadian Environmental
24 Assessment Act, there's federal coordination regulations, where we are required

1 to engage with the other federal departments to -- and they're required to offer
2 their technical expertise, should we require it. That becomes fairly smooth.
3 There's also harmonization agreements with the provinces, when feds do NEA
4 and the provinces do NEA, we do one environmental assessment, so the public
5 sees really one assessment for one project. Under our new Ground Safety and
6 Control Act, through regulation and compliance monitoring, we've established as
7 an example at MOU with the province, who also have certain regulatory and
8 compliance activities. We do these in harmonization. We don't give up part of
9 our mandates. We don't share it. We both have the same mandate, but we do it
10 in one process, and we walk away and make our decisions collectively.

11 MICHAEL JOHNSON: Thank you, Michael, and last but not least, we'll
12 hear from John.

13 JOHN WILLIAMS: Thank you. The U.S.G.S. appreciates the invitation to
14 participate in this workshop today. U.S.G.S. is a non-regulatory federal agency
15 that provides scientific data and unbiased interpretation of that data. We have
16 offices throughout the U.S., with technical expertise in hydro-geology of local and
17 regional aquifer in all states. My personal experience with groundwater
18 contamination has been focused at super fund sites, providing technical
19 assistance to EPA, typically at their more difficult sites, which are volt or organic
20 contamination in fractured rock.

21 I've had the opportunity more recently to provide technical assistance to
22 the NRC at Indian Point. It was a very positive experience. We do have a MOU
23 with the U.S.G.S. and the NRC provides such technical assistance, and I'm
24 pleased to see that this type of assistance is now continuing at another site, at

1 the Vermont Yankee Plant.

2 In response to tritium contamination at Indian Point, the NRC put together
3 a team that included regional and research -- their own regional research staff
4 and also members of the New York State Department of Environmental
5 Conservation. I got to participate in this team. This team worked closely
6 together on the issues at the site, reviewing the ongoing characterization of the
7 groundwater plume by the site operator, and ultimately development of a
8 groundwater monitoring program for the nuclear power plant site.

9 As was previous mentioned, not only the outcome was a good monitoring
10 groundwater monitoring program, based on the 3-D understanding of flow and
11 this complex fractured rock, but also they were studying tritium, but they also
12 discovered strontium and cesium issues as well, as part of this investigation. In
13 this investigation, in the eighteen months of intense investigation, probably -- I
14 worked on a number of sites and some of the super fund sites don't make that
15 much progress in ten years.

16 Many of the ideas put forth by the GTS, such as real time posting, via
17 website of the response to spills and leaks are great ideas, but these ideas --
18 these issue of information cannot be done in a vacuum. They must be made in
19 the context of the hydro-geologic setting of the site. The implications of the spill
20 on a low permeability glacial till is vastly different than the same spill on a coastal
21 plain sand and gravel aquifer. What it all goes back to is having this detailed
22 three dimensional understanding of the local groundwater flow system and how it
23 fits into the more regional flow systems, and also conveying that science to other
24 stake holders, including the public's, and then finally, ideally, to have an effective

1 groundwater monitoring program that's based on this understanding that can be
2 used to track if there's any significant impact from a particular spill or response
3 on groundwater, and as mentioned before, it's fantastic of this monitoring system
4 is already in place and doesn't have to be -- you don't have to play catch up in
5 developing a monitoring system and trying to track a plume, and then finally there
6 should be the follow up in which the extent of the condition, the characterization,
7 what the root causes of the spill were, and what directive actions and monitoring
8 are taking place. Thank you.

9 MICHAEL JOHNSON:

10 Thank you, John. Thank you all the panelists, for interesting
11 presentations. Now, we'll turn to Drew.

12 DREW STUYVENBERG: Great, thank you very much, everybody. What
13 we wanted to do next is just like this morning. We wanted to provide an
14 opportunity for individuals, here in the audience to participate, to offer their
15 perspectives, and then we'll also have an opportunity to as we go through this
16 discussion, for any folks on the phone line to participate as well, so what we'd
17 like do first is see if there's anyone in the room who has any comments or insight
18 they would like to share. Okay? Come on down.

19 JOHN WHITE: My name is, excuse me, John White. I'm Branch Chief in
20 NRC at region one, and I was responsible for the oversight of the tritium issues
21 that a number of region one facilities including Indian Point, Vermont Yankee,
22 Oyster Creek and some others that have been mentioned here today. I'd like to
23 bring to the table a couple of lessons learned that we picked up in region one,
24 and one is -- that we find very useful, is to engage this state, DEC, or DEP

1 immediately and in both the cases that we're talking about, Oyster Creek and
2 Indian Point, in both cases state representatives from the DEC or DEP, we
3 engaged, in fact did participate or observe all of our special activities , so having
4 their insight and their ability to be onsite also gave them an opportunity to provide
5 I think, to their public stake holders their own insights independent of the NRC's
6 insights, and we found that to be very useful, also an indication of New York,
7 DEC., they engaged with us throughout the entire length of the investigation.

8 The other thing we found useful in region one was to engage hydro-
9 geologist specialists. We did that with -- at first within Indian Point, by getting
10 that experience from our office of research here, Mr. Tom Nicolson, who
11 engaged with us at Indian Point. Typically when we -- on these types of issues,
12 they are dealt with as health/physics issues. As we learn from our experience at
13 Indian Point, in order to do a full investigation and to understand the nature of the
14 contaminant is not just health/physics and radiation exposure that's at stake
15 here. It's also understanding the hydrology of the mass of the groundwater, how
16 it behaves, and how it characterizes, so we have found it very useful to not only
17 engage the resources that we have here at the region one in the NRC, but it's
18 one of the reasons why we also engaged U.S.G.S., both in the case of Vermont
19 Yankee and Indian Point. Found that their insights and their regional expertise of
20 the groundwater behavior in their regions, where they practice, where their
21 offices are was extremely useful to our effort and our investigation effort,
22 independent review, and oversight of the licensee's effort to verify and validate
23 the site, conceptual models are being developed relative to groundwater
24 characterization and behavior. Thank you.

1 MICHAEL JOHNSON: Thank you. Anybody else who has a perspective
2 they'd like to share? Please.

3 [clear]

4 PAUL GUNTER: Paul Gunter, Beyond Nuclear Tacoma Park, Maryland. I
5 think that I wanted to start out my remarks first of all by addressing this concept
6 of low risk, high interest. I think it's important to communicate that this whole
7 idea, this whole notion of risk is transitory. A good example is where the
8 agencies in interpreting risk to public health and safety, for tritium exposures,
9 that's changing, so what might be perceived as low risk today, as more clinical
10 data for example, comes in, as more scientific study comes in, that risk can --
11 appears the trend is, that the risk increases. I cite the particular example of the
12 Ontario Drinking Water Commission, who now have established the safe practice
13 of preventing tritium levels above 540 picocurie per liter. I believe it's 20
14 Becquerel per liter, so that's a dramatic drop from the current standard, and we
15 we're seeing that in -- and I'd love to have a response, a reply to that, because
16 we're also seeing similarly with the EPA, where it's at 28 thousand picocurie per
17 liter, we now have the state of California down to 400 picocurie, and Colorado
18 500 picocurie per liter So you know, this whole idea of low risk can change fairly
19 quickly, particularly if regulation is now still trying to catch up on it, but in closing,
20 what -- I think that what we're more concerned -- if you want to communicate a
21 more reliable response from this agency, it's not that the public is looking to you
22 to be a more effective monitor of these leaks. I mean that's clearly, you know,
23 the groundwater that moves under Oyster Creek or Indian Point, that's the per-
24 view of the state. What the public looks to this agency for is to actually prevent

1 these leaks from occurring and your success or your perceived failures really
2 stems on whether or not this agency takes on the responsibility, which by the
3 way as early as October of 1979, in IE circular 7829 note 21, which was entitled
4 Prevention of Unplanned Releases of Radioactivity, the NRC at least identified in
5 that circular, that it's goal was to prevent these leaks.

6 Now, where the discussions that I'm hearing here, they seem to be
7 dominating more and more the direction that the agency's going is to back away
8 from prevention. I mean we constantly go round and round on the general
9 design criteria, which is your purview, but nobody seems to be able to pin down
10 how to enforce it, and that is a purview to control radioactive releases and to
11 monitor radioactive releases at those systems, you know not at the site
12 boundary, but to contain within these system structures and components, and
13 again just in closing, if you want the public to assess how reliable the agency is in
14 fulfilling its responsibility, it is your mandate to prevent these leaks and to
15 become more of a enforcer in terms of preventing the degradation of these
16 systems, to get as far as they leak.

17 MICHAEL JOHNSON: Thank you. Yes.

18 [crosstalk]

19 DREW STUYVENBERG: Would you like -- you don't have to, but if
20 there's anything you'd like to offer, you certainly can.

21 MICHAEL RINKER: Yes, I'd like to make sure that the Canadian example
22 provided is an appropriate context. There was a technical advisory group that
23 has recommended 20 Becquerels per liter to the province, but the province
24 hasn't adopted that yet. They're considering it, but it's certainly not a provincial

1 standard. The Canadian guideline is 7000 Becquerels per liter, which I believe is
2 somewhere around 200 thousand picocuries per liter. Through the research that
3 the CNSC has done, we've established that those levels are safe, what is
4 provided in the Canadian guidelines, nevertheless, we have implemented or
5 made recommendations to our Commission, which were adopted, which was
6 new facilities should be designed in a way that groundwater would be maintained
7 at 100 Becquerels per liter at their perimeter, which is quite a low level. It's
8 based on how health Canada guidelines were first of all find out the number that
9 is -- would be essentially negligible risk, which is what the technical advisory
10 group did, a one in a million lifetime risk, which is about 20 Becquerels per liter,
11 but then you consider the practicality of that. Can the nuclear industry
12 practicably achieve that? And when we did the survey and considered new
13 license applications, 100 Becquerels per liter can be achieved by the Canadian
14 Nuclear Industry, and that's how we came up with that number.

15 DREW STUYVENBERG: Thank you. Next person.

16 STEVE GARRY: Hi, I'm Steve Garry. I'm the NRR, Senior Health
17 Physicist and I just wanted to put into context also, Paul mentioned the 400 and
18 500 picocurie per limit, picocurie per liter, value for Colorado and California.
19 Those are stated goals of Colorado and California. They use the EPA 20
20 thousand picocurie per limit as their drinking water standard and also I just
21 wanted to clarify that the drinking water standard is water that's you know,
22 suitable and ready to drink. It's tap water, coming out of the tap. It's not the
23 maximum possible concentration measured at the point of leakage. The
24 standard for safe drinking water is water that you drink and that standard for safe

1 drinking water is the 20 thousand picocurie per liter.

2 DREW STUYVENBERG: Thank you. Please.

3 TOM NICHOLSON: My name is Tom Nicholson and I'm with the U.S.

4 Nuclear Regulatory Commission office of Nuclear Regulatory Research. Michael

5 Rinker, I have a quick question for you. You mentioned that in Canada, you have

6 a five year cycle, rather than 40 years. You license for five years and then at the

7 end of the five years you go through a [sic] environmental risk and safety

8 assessment. The question I have for you is to what extent do you, do you expect

9 licensing to do both modeling and monitoring, and rely upon the information

10 that's been collected over those five years, to determine whether you fully

11 understand the conceptual model and whether appropriate actions have been

12 taken by the licensee.

13 DREW STUYVENBERG: Mr. Rinker again, if you'd like to respond again.

14 MICHAEL RINKER: In general, the licensing cycle is correct. It's five

15 years, but that's not legislated. It can change. Some facilities are as long as ten

16 years, but some as short as two, but typically a power reactor is every five years.

17 It is up for a renewal. Each renewal, the commission must make a decision that

18 would include either adequate measures for the protection of the environment, so

19 they must have information in order to say that, and that concludes protection of

20 environmental components as a resource, it's not just protecting them, the fish

21 and organisms within it.

22 We require from the outset, a description of the base line hydro-geology,

23 including water levels, flow gradients, et cetera, and those would be monitored

24 through site preparation and through construction phases, and then into

1 operation. By the time a facility is up and operating, which may take a ten year
2 period, there's a very clear understanding of the flow regimes of those facilities,
3 but as you're aware, depending on the nature of the facility and the nature of the
4 geology, the number of wells are not prescribed, because it needs -- those are
5 site specific considerations, but we need to know what are the releases and
6 where they would go, regardless of whether we think there's a risk or not.

7 DREW STUYVENBERG: Thank you. I'd like to take just a moment to see
8 if there's anyone on the phone line who has any questions or has a comment
9 they'd like to make. Okay, we'll go back to the room now.

10 BILL BUSCHER: Um --

11 DREW STUYVENBERG: I'm sorry. We have one --

12 BILL BUSCHER: This is Bill Buscher.

13 DREW STUYVENBERG: Yes.

14 BILL BUSCHER: Hello?

15 DREW STUYVENBERG: The floor is yours.

16 BILL BUSCHER: I just wondered, this is Bill Buscher of course, with the
17 state of Illinois. I wanted to point something out. In Illinois, we're in an
18 environment where we are constantly having to make sure the public realizes
19 whether or not they are consuming a low level contaminant. I work in the
20 Division of Public Water Supplies and presently if we have an MCL in water that's
21 being -- water that's going to the public and it is not above an MCL, but it is
22 above 50 percent of the MCL, the water purveyor is required to notify each and
23 every one of the customers that they have, and let them know, you know, what is
24 in the water. No, we are not you know, exceeding a drinking water federal MCL,

1 however, there are contaminants in your water and you know, I think it's
2 important to keep -- and I know I'm switching gears from you.

3 Yes, that is a drinking water program, but I just wanted to point out the
4 whole reason that Illinois got into the groundwater protection aspects at both
5 Dresden and Braidwood, was that we had a previous right to know legislation
6 and since there were low level contaminants in one of the REMP (sp) wells at the
7 Dresden site, we were faced with a dilemma and we discussed it with Exelon,
8 and the bottom line was, yes, there is an impact, and this was to a private well,
9 you know albeit it was not high, but the bottom line was you know, either we're
10 going to tell them or you're going to tell them, and that's really kind of what got
11 the ball rolling in Illinois, was the right-to-know legislation that's in place, and you
12 know when I hear comments about tritium being you know, not an issue, well, I
13 don't disagree that it's properly handled it cannot be an issue, but the bottom line
14 is if someone is drinking an elevated level of water that has radioactivity in it, they
15 should know it, whether it's near 20 thousand, which is the MCL, or not, and it
16 should be handled appropriately. I think everyone needs to remember that the
17 companies are in our, you know in business to make a profit, and I don't believe
18 that that should come at the cost of someone else having an elevated level, and I
19 think this points to the question at hand here, communication. Agreed, it may not
20 be a health risk, but they didn't choose to take on that additional risk, and that's
21 why you know, offsite contamination at these sites is at any level, is something
22 that has to be taken seriously and I just -- I sense that that has not been fully,
23 what's the word I'm looking for? That realization hasn't been arrived at by the
24 regulatory agency, thank you.

1 DREW STUYVENBERG: Thank you. Are there any others on the phone
2 line who wanted to share anything, while we're switched over?

3 [clear]

4 Okay, we'll go back to the room. I want to see if there were any other
5 comments, perspectives anybody wanted to share. Uh, yes.

6 JIM NOGGLE: Jim Noggle with NRC Region one. I work for John White,
7 who is responsible for the Indian Point and Vermont Yankee team inspections
8 that were up there and two other things I wanted to pass along, lessons learned
9 that we had from that was first, as far as a simple base lining of NRC response or
10 trying to maintain a similar response at different facilities, I'll add to what John
11 Williams had said, is different site situations are different, and point in case is
12 people talked about Braidwood being a sandy type environment. It was very
13 easy to determine which way the groundwater might flow and therefore if
14 there's a leak, there's a requirement that licensees calculate that leak, that
15 effluent release and dose to the public. It would take very little hydro-geology to
16 support that. Indian Point was fractured bedrock and most recently we have a
17 drinking water aquifer at Vermont Yankee site, that requires some additional
18 hydro- geology expertise, so I'd say that based on an individual site, there
19 certainly is a marked difference, hydro-geology effort required to be able to
20 support a licensee's effluent release calculations, so that's one thing, and then
21 the other remark I'd like to leave is although tritium is found at all these sites, and
22 if a licensee does stop that leak, then that's the end of it, but tritium is the
23 beginning of the rest of the byproduct materials. Tritium is the tracer that's the
24 precursor to what we found in Indian Point, which was later the cesium and

1 strontium 90s come, so if the leak goes on for some period of time, unmonitored,
2 there will be more than just tritium. Thank you.

3 DREW STUYVENBERG: Thank you. Yeah, there's -- all right, we'll do
4 one more check on the phone line. Yes, got one more in the room, here.

5 LOUISE LUND: This is Louise Lund of the NRC staff. I wanted to ask
6 Mike Rinker maybe to talk a little bit about the tritium research that CNSC has
7 done. I think it's the University of Ottawa, and then some of the reports that your
8 agency has put out.

9 MICHAEL RINKER: I had to hurry through this slide, because someone
10 was telling me to hurry up during my presentation.

11 [laughter]

12 DREW STUYVENBERG: My sincere apologies. I told you I played
13 bulldog. I wasn't kidding.

14 MICHAEL RINKER: This is my second chance to please get the slides
15 right. So, we had an incident -- we had a facility that was releasing tritium that
16 the levels were -- and this is a small facility, not a power reactor. It's the ones
17 that make the exit signs, exit light signs and other important apparatus that are
18 used for the military for example, when they need to go somewhere where they
19 can't carry batteries, but they need lights and they need a power source, so it's
20 important industry, but it was releasing a lot of tritium, we found through
21 compliance monitoring and so we shut them down, and told them that they have
22 to alter their processes in order to stop releasing tritium.

23 We didn't shut them down because we thought they were health
24 implications. We thought the levels of tritium in the environment still provided a

1 measure of safety. The dose was in the microsieverts, not approaching one
2 millisievert per year, however we felt that they were not making adequate
3 precautions for the protection of the environment, particularly groundwater as a
4 resource, and at the same time the commission directed us to do research on
5 tritium, in general because of the nature of our industry, the public receives a
6 dose from the nuclear industry, but it's very small, and nevertheless, 85 percent
7 of that dose is from tritium. The tritium is pretty important to Canada. We did the
8 research, those in -- half a dozen themes. The first one was the models to
9 estimate tritium releases.

10 How we monitored tritium in the air, because some of these releases are
11 to air, not to groundwater, and the state of our facilities, and the research that
12 Louise was referring to is how tritium cycles in the environment, because these
13 facilities release tritium to air, they can be entrained by precipitation and land in
14 people's vegetation, and in their gardens, and so on. Very important, even
15 though the levels are low, that we understand what happens. Usually you think
16 tritium, tritiated water would just flow like any other water and end up in
17 groundwater. There's another fraction called organically bound tritium, and
18 organically bound tritium has a different cycle. It has a different dose and
19 consequence as well, because organically bound tritium resides in your body for
20 much longer than tritiated water would, so we need to know what is that people
21 are eating and what are the dose estimations, so we contracted the University of
22 Ottawa to look at this. They picked a few sites across Canada and gave us
23 some more insight, but also some more questions regarding organically bound
24 tritium. There's models and standards out there that suggest the ratio of

1 organically bound tritium to tritiated water should be about one, so the -- and
2 based on activity, and that's what people use to model, to understand the dose.

3 We found higher values of organically bound tritium, up to as high as ten
4 times, so the models weren't quite right. What did that mean? It meant that
5 instead of four microsieverts or maybe it was six, or eight, so from very, very low
6 dose to still a very, very low dose, however we thought it would be -- it's
7 important that we further that research to make sure that we have a good
8 understanding.

9 The other half of that research program was what are the dose
10 consequences and health effects, so the bio-kinetic models of how you estimate
11 dose and how tritium travels through the body, epidemiological evidence around
12 the world, and so put that all together as a package, we either thought it was
13 important, even though the risk was low, the public was concerned, we thought
14 that we need to be the -- not only the regulatory authority, but the technical
15 authority related to tritium releases, and now we're more informed when we go
16 out to talk to people who are concerned with posters for results of research, and
17 we can say, yes the risk is low and this is why we know it, and that provides for
18 [unintelligible] credibility. We still have opposition, but nevertheless I think we're
19 more informed and able to communicate.

20 DREW STUYVENBERG: Thank you. Any others? Please.

21 PAUL GUNTER: Paul Gunter, Beyond Nuclear. Just a quick follow-up
22 question to Mr. Rinker. Is that -- are those Canadian studies public now and are
23 they posted to a website?

24 MICHAEL RINKER: Yes, they are. There's a series of I think seven

1 reports, if I -- I may have it wrong. Six of them are published and available for
2 download off our website. The seventh one, we had the raw report from the
3 University of Ottawa, which we were still reviewing. We took all of that -- we had
4 that information in hand, plus the remainder and we went to the commission with
5 a recommendation on our regulatory approach for facilities that handled tritium.
6 All of that is available on our website, but the seventh report will probably be
7 made available, maybe by the end of this calendar year.

8 DREW STUYVENBERG: Thank you. All right, one last check. Anybody
9 on the phone lines who'd like to participate or anybody in the room? Now, we
10 have a couple of folks in back. Go ahead?

11 STEVE GARRY: Steve Garry, NRR. I just wanted to add on to Mike's
12 discussion about organically bound tritium. Organically bound tritium has been
13 known for quite a while. It's in the ICR P two reports, which was issued back in I
14 think 1963 or '67 and it's -- there's a standard assumption of about 20 percent
15 added to the dose factor for organically bound tritium, so it's not like it's a new
16 phenomenon, but I do credit the Canadians for looking into this further and
17 getting more research on it.

18 [clear]

19 MICHAEL JOHNSON: Thank you. Did we have one more hand in the
20 back, that I saw?

21 TOM NICHOLSON: Tom Nicholson, U.S. NRC. John Williams, I wonder
22 if you could just tell us for just a few minutes here about the availability of
23 information from the U.S.G.S. of the information you have on groundwater,
24 groundwater/surface water interaction and the models you have available that

1 can be used by the state and other federal agencies.

2 DREW STUYVENBERG: Williams, same for you, if you'd like to respond,
3 please.

4 JOHN WILLIAMS: The U.S.G.S. maintains a database. It's called NWIS,
5 National Water Information System, that contains, and I don't have the numbers,
6 but thousands and thousands of data points, including wells, springs, surface
7 water monitoring sites across the nation, and that information is all available
8 through a web based system and so for example, be involved in the
9 groundwater, a typical -- we would have information, well inventory, on well
10 construction, yields, what aquifers they're testing, what aquifer might be yielding
11 water, and then also any water quality information that's collected and additional
12 water levels, so we then also have very active monitoring sites in which we're
13 collecting surface water flow data, groundwater levels, and water quality, and
14 again a network across the U.S., and that network varies from state to state with
15 largely much of our data collection is in cooperation with local and state
16 agencies, so it's variable across the state, so that's that on the data end. From
17 the analysis end, we've been in the forefront of developing groundwater models,
18 both for understanding flow and also solu-transport, and all of those models are
19 publically available to be used and they're maintained by the U.S., and again
20 available on our websites.

21 DREW STUYVENBERG: Thank you. All right, any other questions or
22 comments for this panel or for this particular discussion topic? All right, seeing
23 none, then let's take about a 15 minute break.

24 MICHAEL JOHNSON: Please join me before we leave and thank the

1 panelists about a very great job, good job.

2 DREW STUYVENBERG: Thank you.

3 [applause]

4 MICHAEL JOHNSON: Thank you also for the participants in this session,
5 thank you.

6 DREW STUYVENBERG: If I could ask everybody to please start to take
7 their seats and we'll get ready for our final panel of the day.

8 I just want to take a moment to call our fourth and final session for the
9 afternoon to order. As most of you know, this is topic four, Strengthening Trust.
10 What I'm going to do in just a moment here is turn it over to Eric Leeds, the
11 director of the Office of Nuclear Reactor Regulator who's going to introduce our
12 panelists for today's final panel. Thank you.

13 ERIC LEEDS: Thank you Drew. Good afternoon, congratulations
14 everybody. You've survived three sessions. You only have one more to go. But
15 I have to tell you, I've been in the audience for all these sessions and I've found
16 the feedback and the points that folks are making very, very helpful to us. So I'm
17 finding this very worthwhile and I hope you all can hang on for one more session
18 and keep up the good work. As Drew mentioned, I'm the moderator for the fourth
19 session today and the theme for my session is Strengthen Trust. In the
20 groundwater task force report, various policy issues were identified with regards
21 to modifying NRC's programs to increase confidence in NRC's words and our
22 actions. We've invited the five panelists here to address the following questions
23 as appropriate to their background listed in our federal register notice on this
24 theme.

1 The first question: how can the NRC increase confidence in its actions
2 and communications related to groundwater protection? The next question:
3 what role could a third party verification or assessment play in responding to
4 groundwater protection? The next question: what would be the benefit of using
5 the International Nuclear Event Scale for communicating the safety significance
6 of events at level zero or one that attract high domestic or international public
7 interest? Would this approach lead to confusion on the significance of the issue?
8 And the last question is how can greater clarity be given to the interplay between
9 NRC regulations and existing state and other federal regulations with respect to
10 the objectives and level of protection provided by adherence to the regulations?
11 After the panelists provide their remarks on these questions, we'll have an
12 opportunity for those in the audience and those on the phone to provide input on
13 these questions as well.

14 But to begin this session I'd like introduce our panelists. Our first panelist
15 will be Dr. John Till. Dr. Till is the president of Risk Assessment Corporation.
16 John is a graduate of the U.S. Naval Academy and he served in the U.S. Navy
17 Nuclear Submarine Program and retired a Rear Admiral in the U.S. Naval
18 Reserve. Dr. Till received his PhD degree from the Georgia Institute of
19 Technology. His work focuses on estimating and communicating human health
20 risks to people from radioactive materials and chemicals released to the
21 environment. His research currently focuses on making measurement data for
22 radio-nuclides and chemicals in the environment consistent, transparent, and
23 accessible and converting these data into human health risks to aid decision
24 makers and to enhance public understanding.

1 Then we'll have Linda Modica. Linda is a long-time clean water, clean
2 energy activist from Jonesborough, Tennessee, and she's representing the Erwin
3 Citizen's Awareness Network. This network is a community group that focuses
4 on nuclear companies such as the Nuclear Fuel Services Company, Studsvik,
5 which are both located in Erwin. And Aerojet Ordnance Tennessee, which is a
6 depleted uranium weapons manufacturer in Jonesborough, Tennessee.

7 Then we'll have Dr. John Abraham. Dr. Abraham earned his PhD in
8 environmental health from the University of Iowa. Dr. Abraham is a former
9 executive for the United States Public Health Service. He has served in the
10 Centers for Disease Control and Prevention, the Agency for Toxic Substances
11 and Disease Registry, and also served as a captain in the U.S. Army. He's
12 currently president of the president of John E. Abraham and Associates, a
13 speaking, training, and management consultant group.

14 Next will be Heather Westra. Heather is the director, the interim Land and
15 Environment director for the Prairie Iowan Indian Community. Heather has been
16 working for the Prairie Island Indian Community for 16 years. She works
17 primarily on environmental and nuclear power plant related issues for the tribal
18 council.

19 And then finally we get to Dr. Ann Bisconti. Dr. Bisconti is president of
20 Bisconti Research, Incorporated. She has conducted public opinion research on
21 nuclear energy topics for 27 years for the Nuclear Energy Institute and other
22 companies and organizations. She will provide some perspective from focus
23 group research she has conducted just last month on groundwater. And with
24 those introductions, I'd like to turn it over to Dr. John Till to get us started.

1 DR. JOHN TILL: All right, thank you, and I am honored to be back. I
2 appreciate the commission inviting me back again. I was here in April, and it was
3 a real privilege. I'm also very appreciative of the Health Physics Society who
4 supported me to come here today. When I talk about trust, I also talk about
5 credibility; to me they're two separate terms, trust, credibility. We want people to
6 trust us to do the right thing. We want people to believe us when we do the right
7 thing, so all of my remarks are focused on trust and credibility. And I'm going to
8 answer the questions first just so I get that out of the way. And my remarks that
9 are going to follow really respond to your first question and that is how I believe
10 the NRC can increase confidence in its actions and communications related to
11 the groundwater protection issue.

12 The other three questions that are asked in my opinion are really
13 subcategories of this and they sort of fit into the four points that I'm going to
14 make. So I'll answer those indirectly. The first thing everyone has to realize with
15 regard to trust and credibility is that there is no formula. There's no special
16 equation. I'm not even sure -- I'm quite sure it can't be regulated. I don't think
17 you can make it policy, okay. So what it is? Well, it's really an attitude; it's a
18 commitment; it's the character of this commission or the character of a utility.
19 That's what trust and credibility is. I don't think if we started today, we could
20 measure it. And maybe we can, and I'm not an expert in that area. But I do
21 know as a scientist, I've been in positions where I've started studies, and these
22 are big studies, atomic veterans, stakeholders at Hanford, stakeholders at
23 Fernald, those kinds of things where I knew I had no trust and credibility to begin
24 with, but by the end of that work, I knew that I had gained that trust and

1 credibility. And so what I'm going to tell you is based on my own personal
2 experiences and what I'm going to do is suggest four steps that can be taken or
3 considered if you're interested in building trust and credibility.

4 My first point is that it has to be earned. It has to be earned. No title gives
5 us trust or credibility, no degree, no particular organization, even you the NRC,
6 which should be among the elite of organizations. None of that entitles us to
7 trust and credibility. It has to be earned. It has to be earned, and it takes time to
8 earn it. And I mentioned these studies just a moment ago. Some of those
9 studies lasted four, five, six, seven years. And it was over that period time, it
10 took every bit of that time to earn that trust and credibility. So it has to be
11 earned. Second point is that it has to be based on science and fact. It has to be
12 based on science and fact. The truth is, and of course this is my science, where
13 radioactive materials and chemicals go in the environment, how they're
14 transported through pathways, and how they expose humans, and ultimately
15 what the risk is; this is my science. I've been involved in this for 35 years. We
16 know this science, and we know tritium. We know tritium when it gets into the
17 environment, where it goes, how it can expose people, and ultimately what the
18 risk is, and even quantifying the uncertainties. So it's based on science and fact.
19 Where we have failed is in communicating this science and fact, that's where we
20 failed. We failed because first of all we think it's public relations, and it's not
21 public relations. And so if we want to succeed at conveying science to people,
22 we have to take that responsibility on ourselves as scientists, that's first.

23 But second, we have to come up with methods that interpolate and explain
24 what we do really means to people. By that I mean, and I mentioned this when I

1 was here back in the spring, the measurement of radioactive materials in the
2 environment, well known. We have tremendous amounts of data. And what
3 we've got to do is come up with a method to immediately take those
4 measurements -- I said immediately; that means very quickly -- in the room, right
5 now, convert that into what we call knowledge so that people can understand.
6 We need to work harder in coming up with these methods, but it can be done.
7 The science is there; the technology is available to us today.

8 Third point, transparency, we've heard the word. How much have we
9 heard this word transparency? But, as a scientist, anybody has to be able to
10 verify what I do. For you as the commission for utilities, transparency is the key
11 to trust and credibility. I think it's the most important element, and you think -- if
12 you think and aggressively try to grade yourself on how transparent we are, we
13 are really not transparent in this industry at all. I believe, and I'm a pretty radical
14 individual about this, that any radioactive material or chemical that goes across
15 the boundary of a facility is public information. It's public information at that time.
16 As soon as your results are in, as soon as we know what went out, what the
17 amount is, it should be available to people somewhere, on the web, so they can
18 see it. But we also should put with that information, something to help them
19 understand what it means, to convert the data into standards, to convert the data
20 into risks so they can understand it. And transparency means timeliness. I made
21 the point, if it goes across the boundary, it should be available to people
22 immediately.

23 My final point, and perhaps this is the one -- if you remember any of them,
24 remember this. And it's that earning trust -- to earn trust and credibility, we have

1 to go beyond what is expected of us. Meeting the regulations does not build trust
2 and credibility; that's what we're expected to do. We have to go beyond what is
3 expected of us. Can I give you examples of this? Well, I can from my own work,
4 but I cannot prescribe what I mean by going beyond what is expected of us. We
5 have to look for those opportunities to do something that really raises the bar of
6 what people expect of us to do. Examples of past work at Hanford, we
7 declassified records that had never been declassified before. We opened the
8 study to the public, truly opened it to the public, so they could come in, sit, listen
9 to us discuss the science; had never been done before. And we took on
10 communication of the results like it had never been done before. Those are the
11 kinds of things that help you earn trust and credibility, going above and beyond
12 what's expected of you.

13 I made a big issue out of trust and credibility in the April conference, and I
14 still believe it's the most important thing this commission can do. We can do all
15 of the things that were discussed in the previous four sessions. We can monitor
16 better, put pipes above ground, all of those things, but we have to do more if we
17 want to earn this trust and credibility from the public. Thank you.

18 ERIC LEEDS: Thank you so much John. Linda.

19 LINDA MODICA: Thank you. And I thank Dr. Till for that summation of
20 the problem of trust that really was the cause for the Erwin Citizens' Awareness
21 Network to have been formed in the first place. And if our projectionist could give
22 us the second slide -- this was a slide that was showed in the Knoxville News
23 Sentinel in February 2007, I believe. And it basically sums it up. The NRC had,
24 at that time, an official use only policy, which kept from the public for over three

1 years -- well for about three years, any information on what the NRC was doing
2 with respect to enforcing its own regulations, with -- at BWXT in Virginia and also
3 at Nuclear Fuel Services in Tennessee. So when it became known that this
4 official use only policy was, had been in effect, and it was a secret itself that this
5 policy was in effect. The public in Erwin, which I'm representing today, became
6 outraged, was absolutely outraged. They're still outraged. And so as a result of
7 that outrage, Erwin Citizen's Awareness Network decided to form and to channel
8 that energy to a better use than just anger and angst, and instead has been
9 uncovering and cataloging and creating timelines and understanding best that we
10 can the history of groundwater contamination that's been caused by Nuclear Fuel
11 Services in Erwin, other contamination with respect to dumping that has
12 happened by Aerojet in Jonesborough and Nuclear Fuel Services in Erwin.

13 You see the next slide, another cartoon that showed after it became
14 known that Nuclear Fuel Services had a sizable leak of 37 liters, nine or so
15 gallons of liquid, highly enriched uranium. The perception -- and I like to use
16 editorial cartoons as an indicator of public perception, because I think that those
17 artists really do have a finger on the pulse of public opinion. In this editorial
18 cartoon, which showed in a newspaper in the tri-cities of Tennessee, it's not that
19 the NRC is concerned about the leak of the special nuclear material, it's that their
20 concern that it made the news. And so that was, that is basically the
21 perception. So back to Dr. Till's issue, points regarding trust and credibility, in
22 Erwin the NRC starting at the end of the OUO policy was at the depths of trust
23 and also credibility. So there has been a need for the buildup of trust and
24 credibility in Erwin and it's not -- wasn't only the OUO policy. The next slide

1 please. You'll see is that it's kind of hard to see, but on the left see is a page
2 from a 2002 environmental assessment.

3 And penciled in on the margin, kind of hard to see because the screen cut
4 off on the left side, but anyway that table described the increase in the
5 discharges of uranium due to the down blending process that NFS was about to
6 start up of 16.6 percent; that was going to be attributable to the blue process.
7 The next number down is 210,000 percent. That was supposed to be the
8 expected increase in thorium discharges; the third number down, 5.8 million
9 percent increase in plutonium discharges. These numbers -- earlier on during
10 the day, discussion of ALARA has come up, and it's always been stunning to the
11 public what's considered reasonable. I don't think -- I would hope that there
12 would be no one in this room who would consider a 5.8 million percentage
13 increase in plutonium discharges to be a reasonable increase nor under the
14 findings of no significant impact which happened over and over and over again
15 during the blue proceedings. We questioned the use of the words -- the lack of
16 significance that the NRC had found over and over and over again. So that -- so
17 what I decided to do in this presentation is basically to give the NRC kind of a
18 number of recommendations that the public would like to offer that we believe
19 would improve the trust between the public and the NRC. And so my first
20 recommendation would be to do an environmental impact statement on NFS
21 especially since this 53-year-old company is asking for a 40 year extension to its
22 current license.

23 Next slide please. The -- another trust issue that's come up lately. These
24 are side by side office of investigations reports from, on the left side, fiscal year

1 2008, on the right, the very next year in 2009. There was a fitness for duty issue
2 in 2006 where in the -- according to the OI report, the OI substantiated that this is
3 a senior executive came in impaired and had access to the protected area at
4 NFS, and then lo and behold, how does this happen? The next year, oh it wasn't
5 the executive; it wasn't the white collar guy; it was, according to workers that we
6 know and who are our neighbors, they ended up scapegoating NR -- it's
7 perceived by the public in Erwin, that NRC ended up scapegoating the contract
8 physician. So transparency, and Dr. Till recommends completely there.

9 Next slide please. This is the factual summary of the fitness for duty
10 inspection reports. Redacted, redacted, redacted, redacted, redacted. And, you
11 know, so our strengthening trust recommendation here is for really an abolition of
12 the alternative dispute resolution process for -- especially for serial non-compliant
13 licensees. Next slide please. There have been times, and I believe that we're
14 again in one with Chairman Jaczko that chairman in the 1990s, Chairman Selin
15 [spelled phonetically], had believed that it was really important to take -- for the
16 NRC to consider the public's concerns. And at the time of this New York Times
17 article, which was from 1992, Chairman Selin was quoted as saying how much
18 the public's sense of urgency had contributed to the NRC's understanding of
19 underlying problems. And so in that respect, I would say that trust is a two-way
20 street, and that the NRC really needs to trust us, that we are being honest with
21 our concerns.

22 Next slide please. The strengthening trust recommendation here is with
23 respect to the geology of certain areas of the country. I'm representing what I
24 like to call atomic Appalachia, because as the moderator noted in his introduction

1 that in our area we've got a number of nuclear facilities, two in Erwin and a
2 depleted uranium weapons manufacturer in Jonesborough, less than 15 miles
3 away. All of this is in top of karst topography which is extraordinary complex,
4 maybe can be known, but it is extremely vulnerable to groundwater
5 contamination. And next slide please. This is a geological map of east
6 Tennessee, showing the black lines that run parallel to our mountains, those are
7 fault lines, and in some cases those fault lines are crisscrossed by smaller fault
8 lines connecting the larger ones with the smaller ones. I'm not a geologist. We'll
9 leave that to the experts, but it's -- this area is also characterized by numerous
10 springs. There are at least 18 just in this quadrant of the map, number of wells.
11 People take their drinking water from wells and springs, and the city of Erwin,
12 exclusively uses groundwater for wells, I mean groundwater for its public drinking
13 water. So it is a request that for the issue of, especially with respect to areas of
14 complex geology like karst regions that special rules apply for that -- for areas
15 like ours. And I guess I'm being asked to leave it there. Thank you.

16 ERIC LEEDS: Good, thank you. All right, John. Thank you Linda.

17 DR. JOHN ABRAHAM: Thank you. Thanks for inviting me back. My
18 comments are going to be focused on 30 years of public interaction as a public
19 health professional, both as a researcher and a manager, as a little league
20 coach, and also as a local politician. This is my fourth year of being on the Cobb
21 County School Board, and what was I thinking? We have 107,000 children and a
22 billion dollar budget. The lessons are going to be from these vantage points of
23 my interactions. And I say interactions versus dealing, and I think you interact
24 with the public; you don't deal with the public. Interactions mean that you throw

1 down some barriers; you work to develop those barriers. I think when you're
2 dealing with the public, there is no emotional energy involved in the relationship.

3 The second thing that we don't do a good job of and maybe it's politically
4 correct that we don't do -- that we have to do, we avoid conflict. And this kind of
5 conflict avoidance -- really what conflict is, it's a request for communication. And
6 we really look at conflict as a bad thing, but actually it's not a bad thing. I think
7 the lack of skill in managing conflict is the bad thing, and that's where the training
8 is necessary. The other thing that I see going forward is experts are not the sage
9 at the stage anymore. They're the coach on the side. I saw that happening
10 when I was just about to retire from the Centers for Disease Control.

11 Communities are very smart, they're very sharp, and they're very attuned to what
12 -- they have a piece of the puzzle that we can never. So I think you're going to
13 see that. You see that in education very much. I'm grateful for my experiences.
14 I think, to quote T.S. Eliot, "We have the experience, but sometimes we miss the
15 meaning of that experience." I was very fortunate to be recruited from the Army
16 to start a new agency in the public health service called the Agency for Toxic
17 Substances and Disease Registry. I was right on the ground floor where we just
18 were told, "This is an agency. We're the public health umpire for the Superfund
19 activities as well as communities." And it was a very good experience. And one
20 of the things I always appreciated is that I was able to take chances and I knew
21 that the supervisors had my back. Unfortunately not my butt, but they had my
22 back.

23 I want to talk today about three things, a belief system. I want to talk
24 about reformulating your policy, and I want to talk about public health

1 communication. I want to talk about this communication. So let me talk about a
2 belief system and what do I mean by that. You do not have a vision. You don't
3 have a vision. Why do you do what you do? Why do you come to work? Why?
4 You're smart people. You could go anywhere you want to work, but you choose
5 to work at the Nuclear Regulatory Commission. Why? I know what you do, but I
6 don't know why you do it. What do you do is your mission, but why you do it is
7 the evidence of why. You need to communicate that with your rank and file from
8 the inside out. You want the public to trust you, but you will not be trusted
9 lecturing from a podium or through a webinar. And I recognize we live in a very
10 hi-tech society, but what is missing is that high touch. You're managing the
11 problem through this process, but you give the illusion that you're solving the
12 problem. You can't solve the problem because you don't have all the puzzles.
13 And that's where different groups, whether it be state and federal agencies who
14 are trying to do things but also activist groups, public citizens.

15 Number two, you need to rethink your framework, okay. And I think when
16 you get your vision, and I may be wrong, but I looked on your website, I didn't
17 see a vision. I saw mission statement, values, but you don't have a vision of why
18 you are here. What -- why do you believe, you know, your belief system, and
19 that needs to be inculcated amongst your troops, or else you're going to have a
20 rate limiting step. You're never going to be able to get to this next level. Let me
21 tell you about education. I think there is a paradigm that started with the one
22 room schoolhouse. When they started this, they probably found the smartest guy
23 in town and said "Okay, you're the teacher because we're not going to question
24 you, because you're the smartest guy in town." And I see that happening in

1 education now, where -- thank you very much, thank you, like your comments,
2 yep we've got it, fine. What's changed in education is we're not educating, at
3 least in Cobb County, share croppers' kids. We're not educating factory workers'
4 kids. We're educating children of very talented, experienced, and educated
5 adults. And they want to be part of the system. Do they want to do the teacher's
6 job? Oh no, it's too tough. But they want to be involved in creating that.

7 For example, let me give you an example. We have a situation with bus
8 transportation, and we knew we had to cut. It's either cutting teachers or cutting
9 bus routes. What we did was -- as chairman, I asked the people to go into the
10 communities, work with these people, tell them the problem. Here's our problem.
11 This is the problem we have. We have to cut transportation. They didn't do it.
12 Of course, I spanked them for that, and they went and did it, very reluctantly.
13 They came back and said hey those guys were really neat, I learned
14 something, I developed something from that. They really helped me with my job.
15 I think the same thing could be said in your business, whether it just be to be --
16 instead of developing an agenda and giving it to the public, working with public
17 together to develop that agenda. I think that's one way you can do. Public is
18 willing and can be brought along on issues. You know, we've talked about
19 transparency, openness; those things are essential to develop trust. But the
20 public will seek information from a trusted source. Not necessarily an informed
21 source, but a trusted source. I'd like that trusted source to be EPA or NRC.
22 People are entitled to their own opinions, I respect that. But people are not
23 entitled to their own facts.

24 And then the final thing I'd like to talk about is public health

1 communication. Take a look around you fellows and ladies: you're a public
2 health agency whether you want to believe it or not. You are a public health
3 agency. You have to -- but do you have any training in public health? People
4 are not interested in risk communication. Maybe we are because as scientists
5 we understand the fallacies, what works and what doesn't, and we accept those.
6 But when somebody asks you how much stuff is in the groundwater, they're not
7 interested in any kind of risk message. They want to really know is that
8 groundwater going to hurt them? And the only one -- and what's the most trusted
9 profession to answer those questions? Physicians, especially physicians trained
10 in occupational and environmental medicine. They can answer those questions,
11 and they are a trusted source. But when you're talking about a variety of
12 different methods and things, you're not going to get them. They're not
13 interested in that. They want to know "Will this stuff hurt me". Sometimes within
14 normal limits is a euphemism for "we never looked". And I was a branch chief at
15 CDC in the exposure, investigation, and consultation branch. Some of the
16 things, and I could tell you stories where we found stuff within normal limits that
17 actually were a health problem, a significant health problem. So part of
18 communication is listening.

19 You need to develop some horsepower to build these skill sets in public
20 health communication. Skill sets and team skills, and it can't be done alone.
21 You have to work with people to develop that. That's that kind of new normal
22 that I'm talking about. Now, you're a talented people, you're a good people.
23 You're the number one place to work in government, but wouldn't it be nice for
24 you to be -- for the stakeholders to say this is the number one agency in the

1 government. Now, you are doing good things. I think in region four, Dallas, they
2 have done some very, very elegant work in Diablo Canyon and their seismic
3 workshop, working for Mothers of Peace. I said earlier, sometimes we miss the
4 meaning of our experiences. And the meaning I had was working in Lake
5 Charles, Louisiana. I don't know if you saw Sanjay Gupta's thing, but that was
6 my group that did the work of toxic, found levels of dioxin in people.

7 I had the dubious honor of working -- of meeting Damu Smith and I'm
8 sorry that he's not with us anymore, but Damu Smith was with Greenpeace. And
9 Damu used to say something to me that just resonated and it still does. He used
10 to say, "There you go again." Now, what we're going to work on an agenda, I'm
11 going to share it with you, we're going to develop it. He'd go, "There you go
12 again." In my face say, "There you go again." And I finally looked at him, and I
13 said Damu, "You want to do my job?" He says "No, let me help you do your job."
14 So I got to the point where I learned from somebody that was kind of like an
15 archenemy to be able to work together to develop an answer. And I used to tell
16 our folks, "Do whatever it takes without compromising your own professional
17 integrity or your agency's integrity. And no is a good answer as long as it's
18 defensible."

19 So one of the things I would say moving forward is work with different
20 communities to develop agenda. Don't do it through e-mail. You can't have a
21 relationship via email until you've sat down in somebody's room, talked to them,
22 and worked. Is it an efficient process? No, it's not. It is not an efficient process.
23 But government is not supposed to be efficient. But is it effective? When you get
24 yes from people and you're starting to move that thing, there is a very -- synergy

1 and magic happens. So I would encourage you to do three things. What do you
2 believe? Number two, what is reformulating your policy to coordinate that? And
3 three, you need to get your horsepower with some public health people to
4 complement the stuff that you do. Thank you very much.

5 ERIC LEEDS: Thank you, John. All right, Heather.

6 HEATHER WESTRA: Thank you. Good afternoon. Again, I'm Heather
7 Westra and very pleased to be here on behalf of the Prairie Island Indian
8 Community. I believe I have one slide that has an overview of the community's
9 land. While they're bringing that up -- yeah. The Prairie Island Indian
10 Community is federally recognized Indian tribes whose homeland is located on
11 Prairie Island which is formed at the confluence of the Vermillion and Mississippi
12 Rivers in southeastern Minnesota. There we go, little bit better. And these two
13 rivers also complicate the hydrology of the area, and I'll talk about that in a little
14 bit. But as you can see from the slide, Prairie Island Indian Community is located
15 -- or immediately adjacent to the reservation is the Prairie Island Nuclear
16 Generating Plant, which is owned and operated by Northern States Power. The
17 plant's been online since the early 1970s and will operate at least until 2034 if the
18 pending license renewal application is approved. Excel is also licensed by the
19 NRC to store spent fuel onsite at a site specific independent spent fuel storage
20 installation which is approximately 600 yards from the nearest community
21 residence. Because of the proximity of the plant to the reservation, anything
22 related to the operation of the plant or the NRC is of high importance to the tribal
23 council. We are a cooperating agency for purposes of drafting the supplemental
24 environmental impact statement for the license renewal application for the power

1 plant as well until very recently, we were successful interveners in the
2 adjudicatory process for the license renewal application. We try to get involved
3 with and stay abreast of any new rule making or regulation, because as I
4 mentioned the power plant is probably the most important issue to community
5 members and the tribal council. I am pleased to be here today to discuss an
6 issue that has impacted the Prairie Island Indian community and to offer our
7 perspectives on this important issue.

8 At first I'd like to say a couple of words about trust responsibility and what
9 it means to be a federally recognized Indian tribe. Federally recognized Indian
10 tribes are governments with unique, legal, and political standing and rights.
11 Tribal governments are not state governments or local governments. We enjoy a
12 government to government relationship with all federal agencies including the
13 Nuclear Regulatory Commission. All federal agencies have a trust responsibility
14 to federally recognize tribes. Trust responsibility is a legal doctrine that has
15 grown out of treaties, statues, courts decisions, and other dealings between the
16 United States government and Indian tribes. The United States is the trustee,
17 and the tribes are similar to beneficiaries. Under this trust responsibility, the
18 federal government, which includes the Nuclear Regulatory Commission, has a
19 legal obligation to protect tribal lands, people, and resources which in our view
20 includes groundwater. There should be some recognition of federal trust
21 responsibility in any new or revised policies, guidance, or instructions that arise
22 from this effort. And I would guess that the Prairie Island Indian Community is
23 not going to be the only tribe that would be impacted by groundwater issues.

24 I stated earlier I'm pleased to be here today to take part in this discussion

1 of how the NRC can strengthen the trust among its stakeholders and increase
2 the public's confidence in its ability to regular nuclear power plants, facilities, and
3 materials. We have enjoyed a very good relationship with the Nuclear
4 Regulatory Commission both at the headquarters and at region three for the last
5 16 or so years. We nevertheless have had some issues that we feel have not
6 been adequately addressed by the agency and at the top of this list is treating
7 contamination from the power plant. Community does not believe that tritium
8 releases from the power plant to the environment, specifically in groundwater
9 have been adequately evaluated. In the late 1980s, early 1990s, tritium was
10 found in offsite wells. At that time, community members were utilizing individual
11 shallow wells to meet their drinking water needs. Since that time, the tribe has
12 developed its own central water supply system that draws water from a much
13 deeper aquifer.

14 Although we raised the issue of tritium groundwater in our recent scope
15 and comments for the license renewal supplemental environmental impact
16 statement and in our cooperating agency submissions in the environmental
17 justice area, we believe that the draft supplemental EIS does not adequately
18 address groundwater contamination and the potential health hazards posed to
19 tribal members. In recent years, tritium levels within the plant have been close to
20 20 times higher than background levels at control sites. Fortunately the highest
21 levels detected, about 4,000 picocuries per liter were much lower or were nothing
22 compared to that that was detected at Braidwood or Vermont Yankee. The fact
23 that the onsite wells had tritium levels 20 times higher than background levels
24 should have been a red flag that something was happening at the plant that

1 warranted a closer look. More emphasis should have been placed on
2 understanding why this is happening and correcting the problem. Situation is
3 also exacerbated by the fact that the hydrology in the vicinity of the plant is
4 complex and depending on the Mississippi, the elevation of the Mississippi over
5 Vermillion rivers, the groundwater flows may vary. In the draft license renewal
6 supplemental EIS, NRC points out the detected levels of tritium are below the
7 EPA's safe drinking level standards, and that is true. The fact that these levels
8 are below the EPA's standard provides no comfort or assurances to community
9 members that potential source or sources of tritium have been identified and that
10 aging underground pipes will not experience additional leaking or that tritium will
11 not migrate into the community's water supply. According to the groundwater
12 task force report, it appears that the only way to get the NRC's attention on this
13 matter is if there's heightened media interest or congressional interest. Simply
14 stating that because tritium levels are below the EPA's standards that there is no
15 health hazard ignores, we believe, the root cause of the problem, that leaks from
16 plant operations have not been properly evaluated or corrected by the Exelon
17 Energy.

18 Again in the draft supplemental EIS is stated that elevated tritium levels in
19 three onsite monitoring wells may be due to prior leakage from liquid rad-waste
20 discharge pipe that was replaced in 1992 or as a result of turbine building sump
21 water, discharged into a landlocked area. Again, these statements provide no
22 assurances that the problem has been corrected or evaluated. It wasn't until a
23 few months ago that we informed that the plant was permitted to discharge the
24 liquid waste to the landlocked area. The plant does conduct monthly tritium

1 sampling at several locations within the plant and at control sites annually at
2 other -- and annually at other offsite locations, including sites on the reservation.
3 However the on reservation sites are from one half to one mile away from the
4 power plant. We would like to see a monitoring well established at the Prairie
5 Island Indian Community power plant boundary, which would give us a clearer
6 picture of whether any tritium is migrating from the power plant to the tribe's
7 groundwater. We believe this is supported by a statement in the draft generic,
8 the revised generic EIS for license renewal which states, it's possible that a
9 different well placement could detect higher or lower activity present.
10 Furthermore, we would like to see monthly or quarterly reporting for a new site.

11 Because tritium data are presented retrospectively in the REMP reports
12 and the special tritium monitoring reports, we do not know if there were elevated
13 tritium levels until one year after the last sample was collected. Within the last
14 year, because of concerns raised by the tribe and the public, in a state certificate
15 of need proceeding for a proposed up rate for the power plant, the plant was
16 ordered by the Public Utilities Commission to discontinue the practice of
17 discharging the turbine sump water into the landlocked area. As well the
18 company was ordered to provide quarterly reports to the tribe and the city of
19 Redwing that summarizes groundwater monitoring data and provides information
20 relative to the company's implementation of the groundwater protection initiative.
21 According to the last report, there seems to be a steady decrease in tritium that
22 were previously 20 times higher than background levels, so we're seeing some
23 improvement. Whether this is related to the discontinuance of discharging
24 turbine sump water to the landlocked area is not known. But these quarterly

1 reports have been helpful to us in understanding what the tritium levels look like,
2 and not in real time but as close to within the last couple of months as possible.

3 With respect to the question that's presented to us, how can the NRC
4 increase confidence in its actions and communications related to groundwater
5 protection, and I think most of us have said the same thing, that you need to start
6 building relationships with communities or partnerships. With respect to
7 communities hosting power plants, don't assume that there's a good relationship
8 between the licensee and the public, there may not be. You've got to be
9 responsive to community concerns. Don't downplay community or individual
10 concerns. We're not reassured by statements that elevated levels are below the
11 EPA standards and therefore don't present any health risks. It's there in the
12 groundwater, and we want to know why, we want to understand why, and we
13 want to know when it's going to stop. With respect to working in Indian tribes, I
14 would suggest working with them on a government to government basis as well,
15 a good partner to work with Indian tribes would be the EPA because they've got
16 a well developed Indian program. And so that's all I've got. We were also going
17 to be submitting some written comments on this issue. Thank you.

18 ERIC LEEDS: Thank you so much, Heather. All right, Ann, please.

19 DR. ANN BISCONTI: Well as your last speaker, I hope to be able to give
20 you some helpful insights from focus group research that we just completed on
21 this subject last month on the subject of groundwater, tritium, and underground
22 piping. Next slide please. Good, better to see that than me. So next slide
23 please. The focus groups were held in September. They were sponsored by
24 Nuclear Energy Institute as part of an ongoing program of research. Next slide

1 please. What I'm going to do is address four insights from our public opinion
2 research, from these focus groups. And then see how they relate to answers to
3 four questions that were asked of this panel.

4 So let me start with the four insights. The first is to address public
5 concerns. And boy we've heard that over and over again. The public in these
6 focus groups indicated they really want to know that the situation is under control.
7 They want to know that some responsible actions are being taken to find and fix
8 problems. They want to know the when, where, why, how, who, just all the
9 specifics of that, and proactive efforts in particular to prevent future problems.
10 They want to know there's some oversight. The public really wants a strong
11 regulator, a strong independent regulator or regulators. Transparency, we've
12 heard that over and over again, and that came up in these focus groups. The
13 public wants assurances that dangers are not hidden. And safety and health
14 effects, as John said, they're really focused on health. What does this mean to
15 me, to my health, to my children's health? The public wants multiple validations
16 and yardsticks. Now, they're not looking for yardsticks in terms of relative risks,
17 because I have to tell you, although the scientific community thinks of risk as a
18 relative or scalable thing, the public does not. The minute you mention the word
19 risk, the public thinks danger. It either is or it isn't. So what they're looking for is
20 what are the effects on me and on my children?

21 Next slide please. Now, this may come as a surprise to you because
22 we've heard a lot about what the public thinks about the NRC, but in reality most
23 of the public has never heard of the NRC, has no clue about the NRC. You have
24 a name, Nuclear Regulatory Commission, which sounds really good. I mean,

1 there's an organization out there that is regulating. Wow, that's a good thing. So
2 the public is very happy to have a nuclear regulatory commission. But the public,
3 in responding to research, is very happy to have that, and in fact rates the
4 Nuclear Regulatory Commission very high as a credible agency. However, they
5 hadn't heard about it before. You really need to do a better job -- could I have
6 the slide back? Same slide, yeah -- of explaining the NRC's role; that it's an
7 independent regulatory agency; that it has a mission and vision to protect and
8 vision to protect public health and safety and the environment -- and I know you
9 do have this, but you need to communicate it so that the public really
10 understands who you are and what you do; that you monitor and inspect every
11 nuclear power plant daily and will shut a plant down if it is unsafe. Boy, that's a
12 powerful, powerful point about the NRC. Most people don't even know that.
13 Experts -- the fact is, that there are experts on nuclear energy and radiation who
14 work for the NRC. It's not just a political group in Washington D.C. that's forming
15 policies. And you may need to counter a perception that the NRC promotes
16 nuclear energy. That is not your role but it may be a perception who vaguely
17 have heard something about you.

18 Next slide please. Now, this is the third insight, probably the most
19 important one from our focus groups because it's really a new one. We do know
20 that a prerequisite to having trust and establishing trust is to be understood. And
21 so one of the purposes of the focus groups was to test the language that's used
22 in talking about these very complicated, technical subjects. And what we found
23 was that it is very difficult to communicate these subjects with the public. You
24 really need very, very simple terms. So here are some of the things the public

1 didn't understand. First of all, groundwater: I started out the focus groups asking
2 people, can you write down three words that come to mind when I say energy.
3 No problem. They could do that. And then I said, could you write down three
4 words that come to mind when I say groundwater. And they looked at me like,
5 "Oh, my God, how come I decided to come to these focus groups?" They had no
6 idea what groundwater was. They thought maybe it was runoff, pollution,
7 garbage, dirt, mud; they just didn't know. So that's number one.

8 Tritium, only two people in four focus groups had heard of tritium before,
9 so it's an unfamiliar subject. Now, once you start talking and we did in the
10 materials that we tested, picocuries, millirems, isotopes, radioisotopes, people
11 start to close their eyes, and they lose what you're trying to tell them. They're
12 very unfamiliar terms. Standard, what we thought that telling people about the
13 Environmental Protection Agency's safe drinking water standard would give the
14 idea that this was kind of a cut-off level. And if the standard is here and the
15 amount found is here, that they would feel that that was safe. But they didn't
16 understand standard meant a level. So you have to be clear on that. The
17 standard does not necessarily communicate this is the safe level. Cosmic rays,
18 you know, we're talking about radiation originating in tritium, coming from the
19 universe and cosmic rays. People had no idea what cosmic rays were. So we
20 changed to sun and stars, they did understand that. Nuclear industry, when
21 you're talking about the nuclear industry, you may be thinking power plants, but
22 public didn't imagine power plants. They had all kinds of ideas, so that has to be
23 clarified. Contaminated, the minute the word contaminated is used, you may
24 think something can be contaminated and still safe to drink, not the public. If

1 something is contaminated, they won't touch it. Half-life, well, talking about half-
2 life of 12.3 years -- boy that's a scary concept to the public -- it's other-worldly;
3 it's eerie; it's odd. Buried piping, buried piping, unfortunately, is a term I've heard
4 all day long, but buried pipes are not reachable and they kind of convey the idea
5 of dead. When you say underground piping, people start, at least be willing to
6 listen to what you're talking about. You talk about below grade -- a lot of people
7 thought you were talking about poor quality. So you do have to be really careful
8 about the terms you use.

9 Next slide please. Simple visuals, now I mentioned that the public is
10 looking for a yardstick, so we were looking for ways to communicate a yardstick
11 or a benchmark or a comparison that John Till was saying we need to have. And
12 quite frankly, we haven't found a perfect one. However, it seems, if one can put
13 into pictures somehow, the amount of tritium found in the water compared with a
14 level determined to be safe by the EPA or the number of glasses of water with
15 this amount of tritium one would have to drink to get the same dose of radiation
16 that one would get from drinking one glass of orange juice or other food or
17 beverage, so a comparison with amounts in food. However, neither of those
18 translated in the way we tested them to an understanding that we're talking about
19 public health here. We're talking about amounts, but they didn't get the public
20 health connection and that's really, as John said, very key.

21 Okay, next slide please. So having heard what you heard from me, here
22 are the implications of the research that I think are most important for the four
23 questions to our panel. For increasing confidence, use simple, clear, consistent
24 communications that focus on public concerns and do explain the role of the

1 NRC. Do not assume they know who you are. Second, the question had to do
2 with should there be multiple validations really from other agencies, and, yes, the
3 skeptical public wants to hear from more than one source. They'd like to hear
4 from experts from the nuclear power plant. They would like to hear from
5 environmental groups. They would like to hear from the NRC, the EPA, from all
6 sorts of different -- and independent university professors, so having -- and
7 particularly local public health departments. So having those multiple validations
8 is good. Question was, should the international nuclear events scale be used,
9 and I have to say we have never tested that. I don't know how that would sit with
10 the public here. However, they are certainly seeking some sort of yardstick and
11 particularly on health effects. And finally enhanced public awareness of the role
12 of different agencies in regulating nuclear energy, definitely, I would say a primer
13 would help, along with joint appearances at information events when an incident
14 occurs. I know that happened at Braidwood, and I think it was very important for
15 resolving public concerns there. So thank you very much.

16 ERIC LEEDS: All right, Ann, thank you so, so much. I'm going to do
17 something a little different than the other panels before I turn it over to Drew. I'd
18 like to go back to Linda because I feel like Linda didn't give us a chance or didn't
19 get a chance if you could summarize your constructive feedback, two or three
20 minutes, and let you finish up before we go to questions.

21 LINDA MODICA: All right, if the projectionist could give us slide 12 that
22 would be real handy. And this kind of goes back to some maybe panel envy that
23 I might have had, wanting to have been earlier, and also not having gotten here
24 early enough thanks to Delta's mishaps, to hear what was said about barriers.

1 When it comes to groundwater contamination, and especially in karst topography
2 as we have in northeast Tennessee, there are scant few barriers I believe. And if
3 you'll see on this slide, this is something that was done and this kind of -- this
4 also goes to the question of independent analysis. This chart comes from a
5 publication called *Living on Karst*, which was done by a number of non-profits
6 with respect to the Missouri situation that they had. And what they did was dye
7 traces. And it's -- if you look just under the key, that's where, on the upper left
8 hand corner there -- thank you -- where it shows you what part of Missouri this
9 study was done, what you have, if you notice, there are rather bright red lines
10 that separate in a very jagged way, the watersheds. If you look at just under the
11 key and our projectionist is being very helpful, pointing out these long, these long
12 lines. What those long lines do is follow where the dye was injected and then
13 follows off to where the dye was received from the spring. This study showed
14 that the dye traces crossed counties, crossed watersheds, and also proved,
15 because this was done by a bunch of nonprofits, that this can be done. And so
16 an agency, I highly -- as one of the requests for strengthening trust, if the NRC
17 really, really wants to identify what groundwater contaminants there are with
18 respect to the various licensees, I hope that it would be seriously considered that
19 this type of analysis and also widespread sampling be done to address the
20 public's concerns of where are those contaminants, where did they go? And I
21 fully agree with what was said before, one that's contaminated, it's not for my kid
22 to drink anymore, period, end of story. And that's from a mom.

23 Next slide please. Another request is to strengthen the NRC's institutional
24 memory. This article showed in the *Kingsport Times News* in 1981, it was a

1 United Press International story and it was -- it ran at the time that Love Canal
2 was a big issue. And as you can clearly see, the concern -- there were a number
3 of concerns addressed. When you go online, you can -- I think you'll be able to
4 catch the gist of this article pretty well. But right in the middle there, it said since
5 the plant opened in 1957, more than 200 different sites were used to bury the
6 waste and that was according to an NRC representative. Those 200 -- were
7 those 200 sites in sinkholes? Were they near sinkholes? Were they -- that's the
8 -- which are characters -- were they above underground caves? Those are all
9 features of karst topography. So we urge the NRC to take karst topography very
10 seriously when it comes to licensing nuclear facilities.

11 And then the next slide I think will pretty much finish up with this and then
12 skip to the last. The question of barriers, I believe, was addressed earlier in the
13 day when you have a facility that is so nearby the community. The pink section
14 of this aerial photo is Nuclear Fuel Services' facility. You'll see the yellow is an
15 industrial park operation called Impact Plastics. Just beyond there and sweeping
16 up in a big curve is the Nolichucky River, that's the source of public drinking
17 water for the towns downstream and counties downstream. The -- off to the right
18 of Nuclear Fuel Services, down a little bit, follow those streets, all those little
19 houses, those houses were there before NFS was built. And these -- so the
20 proximity of the neighbors who, by the way, are all drinking groundwater, if you
21 follow up from Nuclear Fuel Services, just along the railroad tracks, you'll see, it's
22 kind of faint, two red dots. Those represent the railroad well. Thank you
23 projectionist, for pointing those out. Those are the source of drinking, a good
24 portion of the drinking water that Erwin provides to the public. So these -- so

1 here we have a community that relies on groundwater, and so that's one of the
2 reasons why I like -- some like Phil had mentioned earlier in his talk, that this isn't
3 a low-risk issue to us, to us consumers of groundwater. And as was said before
4 by Ann, if it's contaminated, it's not considered potable anymore by the public.
5 So we have a concern about the quality of our drinking water because we take
6 our drinking water from groundwater, exclusively in the town of Erwin, wells and
7 springs. And then the last slide please, just on a lighter note. *The New Yorker*
8 was kind enough to publish this a little while back. And I hope that the NRC will
9 err on the side of transparency, thank you.

10 ERIC LEEDS: Linda, thank you so much, really appreciate it. All right, I'll
11 turn this back to Drew.

12 DREW STUYVENBERG: All right, thank you, Eric. What we'd like to do
13 now is the same thing we did for the other sessions and that is turn it over to the
14 folks in the room and on the line for any comments or perspectives on the issues
15 we've touched on here in this session. So, again, we'll call folks up as they're
16 interested. Anyone who'd like to speak should raise their hand. Don't all do it at
17 once. Okay.

18 ERIC LEEDS: I think we wore them out.

19 DREW STUYVENBERG: I'm going to the phone line then. Let's see, is
20 anyone on the phone who has any perspectives they'd like to share on this
21 issue? Okay, oh, I'm sorry, we have one over here.

22 PAUL GUNTER: Paul Gunter with Beyond Nuclear in Takoma Park. I
23 guess I would just address the obvious: it's a lot easier and a lot quicker to
24 destroy public confidence than it is to build it. And you can -- you know,

1 consistently damaging public confidence will have a consequence that it may not
2 be restorable. I think the -- again, I think -- it would behoove the agency to
3 identify its unique responsibility in this case. And that is -- it is your job that has
4 already been identified by your own publications earlier, that you have a duty to
5 prevent, not monitor, not regulate, but really it's -- that in this case, regulation is
6 about maintaining barriers. And that's what -- that's what the public expects of
7 the NRC, is to maintain these barriers and to make sure that the licensees are
8 preventing these leaks. And so just to reiterate it's clear that one way for you to
9 restore public confidence is to provide that these barriers are monitored,
10 maintained, and contained in the event of the leaks. Thank you.

11 DREW STUYVENBERG: Do we have another one in the room?

12 RON LAVERA: Hi, Ron LaVera, Nuclear Regulatory Commission. I heard
13 some discussion regarding if it has contamination and it is unfit for consumption
14 by the public, and I would like to address the public health experts on the panel
15 how they receive that statement and put it in context of the drinking water
16 standards published by the EPA. Thank you.

17 DR. JOHN TILL: Thank you for your question. Let me answer that. I
18 think, what I would in a case like that is to basically go to the community. I mean,
19 when I said that you work with a community to develop an agenda together, we
20 would do things like that. We would get in a room -- we don't have public
21 meetings anymore, at least we didn't. Public meetings are a terrible way to
22 exchange public health information. They're terrible; they're a carnival; they're a
23 circus. People are screaming. You're on the news; just doesn't work. What we
24 did, was we had these public availability sessions, where we made ourselves

1 available, physicians, nurses, all types of technical people to listen to the public
2 one on one, to listen to those things. After we heard their information, we may
3 have a public meeting saying, "This is what you said to us, and then how do we,
4 together, go forward?" For example, your question on contamination, okay, ask
5 them. You have a piece of the puzzle. You guys are very sharp at what you do.
6 You really are. But these folks have another piece of the puzzle, and you need
7 to engage them and say, how do I ask that question.

8 I mean, I don't understand why you can't come to the public and say,
9 "Hey, we've got a problem. We got a problem and we have a tough time
10 communicating these things to you, so can you help us out?" And I'll tell you, it's
11 just like my bus analogy, they're go -- they will love you. They would love being
12 considered for that and all of a sudden you're starting to develop a relationship
13 where you can talk to them on email or you can call them up on the phone. And
14 it's that fear. I mean, you're in your ivory castle, and, you know, "Hey, I got this.
15 I'm the expert. You know why, I got all these degrees." People don't care about
16 that anymore. They want to be assured that they have a relationship. And,
17 again, sustainable partnerships are built on trust. You have to get out there and
18 interact with them. And it's different interacting with people in Illinois as it is
19 different interacting with people in Lake Charles, Louisiana, and it's different
20 interacting with the Indians on a Navajo reservation. So you ask a good
21 question, but don't ask it to me. Ask it to the community. You'll get -- you may
22 get a variety of different questions that will be very helpful to you.

23 ERIC LEEDS: I'm sorry. We can't actually get you on the transcript
24 unless you get to the microphone.

1 ANN BISCONTI: May I also, and then you can come back? You know,
2 the word contaminated or contaminated was not included in any of materials that
3 we tested. It was not absolutely necessary to use that term. We -- I asked, if you
4 hear that the water is contaminated. And the reason that I asked, if you hear that
5 the water is contaminated would you drink it, is because I saw it on the NRC
6 website in one of the documents there. And I guess my question to you is, what
7 do you mean you say it's contaminated? Do you mean that there's tritium in it?
8 Well, say that there's tritium in it. Because the public views contaminated as
9 unsafe, that's what it means to them. It's like, there's garbage in it or there's
10 poison in it or there's toxics in it. So talk about what's in it, rather than it's
11 contaminated, don't use that word. That's my recommendation.

12 DREW STUYVENBERG: Thank you. Do we have any other questions or
13 comments, perspectives on this issue of trust?

14 BILL BUSCHER: This is Bill Buscher.

15 DREW STUYVENBERG: Please.

16 BILL BUSCHER: In Illinois. I think one of the questions I have is that in
17 the lessons learned task force report, there were several recommendations, a
18 total of 25 or 26 recommendations that were made. And I realize in this report,
19 there weren't recommendations, there were more issues laid out. But I wanted to
20 make a point, and this is one of the things I didn't quite finish up this morning in
21 my presentation, but the lessons learned task force and this was on liquid
22 radioactive waste releases, had 25 recommendations. And this is in the --
23 around 2006, which was right after Braidwood, basically I believe Braidwood kind
24 of stemmed that task force being put together. The agency as in the NRC has a

1 program called the Lessons Learned Program. I don't work for the agency. I do
2 know that what the Lessons Learned Program does do is it formalizes actions
3 that are taken after -- on recommendations I should say. And in the process of
4 my preparing for this meeting, I was online on the NRC, and I found an
5 interesting memo and I think it's worth bringing up. I think that it didn't happen
6 that lessons learned task force, the 25 recommendations, they didn't go
7 unnoticed by the agency. In fact, what I ran across was that November 1, 2006
8 memo, and it was to then Chairman Klein, and it was from Gregory B. Jaczko.
9 And I just want to share with you two paragraphs, and then I'm done here. But I'll
10 open quotes:

11 "The lessons learned oversight board reviewed the recommendations
12 provided by the task force against four criteria necessary for submission into the
13 lessons learned program. Eighteen of the 30 recommendations met three of the
14 four criteria, but none of the recommendations met all of the criteria. Thus none
15 of the recommendations were entered into the LLP, the Lessons Learned
16 Program. While I understand that all the recommendations will nonetheless be
17 tracked and ultimately closed out under the staff's traditional tracking system,
18 none of the recommendations will receive the 'gold plating' associated with the
19 treatment of an item, followed through the LLP, the Lessons Learned Program.

20 Entry into the LLP would require implementation of a formal corrective
21 action program and documented follow through, thus enabling the public to easily
22 follow the agency's response to this issue. Moreover, it would allow the agency
23 to be able to ensure that we not only correct the problem but that we learn from it
24 as well. It was this lack of visible oversight that raised so many concerns

1 regarding the tritium leaks in the first place. Therefore, I believe that the 18 task
2 force recommendations that met three of the four criteria including the first
3 criteria, that of the item having significant organizational, safety, security,
4 emergency preparedness, or generic implications should be entered into the
5 Lessons Learned Program. In doing so, the commission will ensure that a formal
6 corrective action program is established for these items, making the public more
7 informed and the NRC more aware of these issues, now and in the future.”

8 This memo was dated November 1, 2006. From at that time,
9 Commissioner Jaczko, as I understand it, he’s got a higher post in the
10 organization now. But what my point is I think if we’re not going to deal with the
11 recommendations from the GTF, the Groundwater Task Force, I would suggest
12 you go back to the Lessons Learned Task Force, look at the 25
13 recommendations in there, and I’m not real familiar with the Lessons Learned
14 Program, but it looks to me like there’s further scrutiny on following up on those
15 items. And I do appreciate your time, and I think, you know, that’s transparency.
16 And I think I would love to see the NRC move ahead on this issue, and as I
17 stated when I participated last April, you know, people don’t fully understand risk,
18 but they fully understand the boundaries of a nuclear plant, and they fully
19 understand when their property is adjacent to that plant, and they have
20 contamination coming onto their property, regardless of the level. The bottom
21 line is, as a regulatory agency, regulating an industry that is for profit, that
22 movement of contamination onto private property is a problem, and it needs to be
23 addressed. It needs to be addressed appropriately.

24 I’m not saying that the sky is falling and that we’ve got all kinds of issues

1 out there, but it's just not something you can look at and say it hasn't impacted
2 public health and the environment, so we're doing a good job. And I -- at the end
3 of the previous workshop that I participated in, the NRC in their wrap up
4 statements, indicated we think we're doing a pretty good job. And I think with
5 regard to public health, I think from exposure to radiation, I would say they're
6 doing a commendable job. With regard to the environment and other issues, I
7 think there's work to be done. And I don't think that it's a big, major issue that it
8 has major health ramifications. I think the public needs to know what is going on
9 at these sites and, you know, how the NRC regulates -- if the public doesn't like
10 it, they can go and they can have laws or regulations changed through their
11 channels, but I believe it is the duty of the NRC to keep the public as informed as
12 possible. Thank you.

13 DREW STUYVENBERG: Thank you. Any others, any comments or
14 perspectives to share? Yes, back there.

15 STEVE GARRY: Steve Garry again from NRC. I just want to answer a
16 little bit about the transparency. Nuclear power plants have always been known
17 to release radioactive materials. They were licensed and evaluated that way.
18 There were ALARA hearings back in 1973 where standards were set on how
19 much radio-activity could be released through planned releases into the air and
20 into the water. And we've been transparent, we've provided the Effluent Reports
21 on the NRC webpage and in our ADAMS system, where the public can go look
22 and see what those releases are. So I just want to say that these aren't -- were
23 never designed zero release plants. The idea was to ensure an adequate level
24 of protection and public health and safety. And maybe the expectation is zero by

1 some of the people, but the original design basis, we recognized that the plants
2 were going to release some levels. And our job as a Nuclear Regulatory
3 Commission, at least part of our job, is to ensure that those levels are below the
4 ALARA levels and definitely within public health and safety limits that we set. So
5 thank you.

6 DREW STUYVENBERG: Thank you. I'm sorry, I think we have two here
7 -- Dr. Till first, then we'll take you Heather.

8 HEATHER WESTRA: Thank you, Drew. There's one point I wanted to
9 make and as Steve was mentioning the Effluent Reports, and it was something
10 that Ann said in her presentation, use plain language. We get the Effluent
11 Reports, we get the REMP Reports, but it's not in language than an everyday
12 person can understand. The Effluent Reports have a lot of scientific notation; it's
13 very hard to track what it all means so that my recommendation with respect to
14 increasing public's confidence is if you were to present that information, I think it
15 would be very helpful that it's in a way that the public can understand. We know
16 that there are releases from the plant and that's regulated. It's just
17 understanding well how much and where it's all going in the plainest language
18 possible, I think would be the most helpful.

19 DREW STUYVENBERG: Dr. Till

20 DR. JOHN TILL: Since I was the first one to really stress this
21 transparency issue, and I appreciate your point Steve, and also commend the
22 commission for putting these reports, think you're going to be putting them on the
23 web, the annual reports. My point is this: my point is we can do a lot more than
24 that. The fact is, that these data are collected routinely, some weekly, some

1 daily, some quarterly, whatever. They come back into the facilities. They're
2 pretty much validated. The fact that the lab results are good and my point is, that
3 that's when I think we put the -- we make this information available to people.
4 We can put it on a website, so that they can see it. And I'm going to tell you, this
5 has been done at Los Alamos, and we worked for six years to do it. Los Alamos
6 and the state of New Mexico, all the samples being collected, are now being put
7 on a website. Every week it's updated. There are eight million records on the
8 website. But also on the website is a tool that helps people understand what the
9 data means, and this is where I think we can get to transparency -- that's as
10 transparent as you can get. When you get data, you're satisfied it's good, you
11 make it available to the public. And you also give them something to help them
12 understand what that data means, okay. That is true transparency, that's what I
13 mean by timely and transparent. Thank you.

14 DREW STUYVENBERG: Thank you, Dr. Till. Mr. Gunter.

15 PAUL GUNTER: Yes, Paul Gunter again, Beyond Nuclear. I just want to
16 respond that I -- Steve, you're clear that when, particularly in the context of this
17 gathering, what we're talking about is concern over uncontrolled and
18 unmonitored releases. And everybody, I think we all understand that we're not
19 talking -- that there are folks that want zero release. That's not this forum,
20 though. The concern is that the public is sophisticated enough to know that if
21 you have an uncontrolled path leaving the plant that is also not monitored, that
22 you cannot accurately and fairly assess risk. And yet even though these
23 releases are uncontrolled and unmonitored and underground and moving in
24 plumes that are not--often through areas where there are no monitoring wells, it

1 doesn't behoove the agency to trivialize what it doesn't know. I mean, I think that
2 that doesn't build public confidence.

3 DREW STUYVENBERG:

4 Thank you. Steve, if you could keep it brief please, we don't want to get
5 into too much of a back and forth. If there's something new that hasn't been said
6 yet, stick to that please.

7 STEVE GARRY: Okay.

8 DREW STUYVENBERG: Thank you.

9 STEVE GARRY: Steve Garry, NRC. The abnormal releases are also
10 reported in the Effluent Reports and the Environmental Monitoring Reports are
11 designed and aimed at looking at the pathways including drinking water, where
12 people actually get their water, where their samples are taken, analyzed and
13 results are reported in the radiological environmental monitoring report. So we
14 do report the abnormal. We do look in the environment.

15 DREW STUYVENBERG: Thank you. Other comments? I believe we
16 have one more over here.

17 PHILLIP MUSEGAAS: I just want to offer what I think may be a useful
18 analogy to this. Riverkeeper, in addition to working on nuclear issues, we also,
19 of course, work on water quality in New York City. The New York City
20 Department of Environmental Protection, which is the city's environmental
21 bureau samples water quality all around the city for indicators and sewage
22 pollution. They do a report once a year where they -- bear with me for one sec,
23 where they put all this water quality data in a report. They put it on their website,
24 and technically it's available to the public, but most of the public doesn't know

1 where to find it, and when they get the report, they don't really know how to
2 decipher it.

3 So Riverkeeper, about four years ago started taking water quality samples
4 from our boat that we have out in the river, analyzing those. We have an
5 overnight lab that we can analyze the results for sewage pollution indicators, and
6 we put those results up on our website. We have a separate sub-website to our
7 organizational website that's only for water quality. We put the results up there.
8 We have worked for three years now to put very user friendly explanations of
9 what the water quality samples mean, what the data means. And we're getting a
10 tremendous response. We're getting counties along the Hudson River, New
11 York City, DEP, coming to us and saying we want to talk to you about this water
12 quality program, about how you've communicated this to the public because
13 you're generating a lot of interest. And so this goes back to what Dr. Till is
14 saying. I understand that the NRC has a system of collecting this data, and once
15 a year in probably, I think in March or April of the following year, these reports
16 come out. But that's not often enough for the public. I think that once the data
17 goes through a quality assurance program, and you know the data is valid, it's
18 got to be put out there to the public, should be put up on a website. It's simple, if
19 we can do it, the NRC can do it, it's not that complicated. So, thank you.

20 DREW STUYVENBERG: Thank you.

21 DR. JOHN TILL: Thanks for that vote of confidence.

22 LINDA MODICA: Just so that I don't give the wrong impression about the
23 Erwin Citizens' Awareness Network, I don't believe that we're in the category of
24 some of the respondents, say to Dr. Bisconti's focus groups. These are folks

1 who have read thousands of NRC documents. These are folks who have
2 approached our Tennessee Department of Environment and Conservation and
3 have been told over and over and over again, including our Tennessee
4 Department of Health, that if you don't like the way we're doing our job, you've
5 got to go -- you've got to sue us. These are folks who have educated
6 themselves. They have also invested thousands of dollars on water treatment
7 systems for their own homes to protect themselves from whatever contaminants
8 that they know are in their drinking water. And they know this because we did
9 have a public health assessment done by the ATSDR at the request of citizens in
10 our area. And the ATSDR did come back and say that Nuclear Fuel Services
11 was an indeterminate public health hazard.

12 We also have had a supplement analysis on the down blending program,
13 revealed to us by some -- we're talking some cracker jack researchers in our
14 group who found that the DOE had buried on their website, this is really
15 questionable whether there was an intent to not make this public, but the
16 supplement analysis ends up having a footnote saying that the chance of a latent
17 cancer fatality in Erwin is one in 71. If you compare that -- due to the down-
18 blending program there, compared to say one in 350 something for Savannah
19 River site, so that local journalist from the *Greenville Sun* said, "Man, if you're
20 worse than Savannah River site, you got trouble." So we're an educated group
21 of citizens who have taken on the necessary task of educating ourselves, and so
22 it's not without support, supportive research that these conclusions have been
23 drawn. They're not empty, just hair brained, bunch of hysterical women who are
24 concerned about the contamination. We know what we're talking about.

1 DREW STUYVENBERG: Thank you. What I want to do right now is just
2 check to see whether there are any more comments or perspectives on this
3 particular session.

4 BARBARA O'NEIL: Hello.

5 DREW STUYVENBERG: Yes.

6 BARBARA O'NEIL: Can you hear anybody on the phone line? Are you
7 checking the phone line?

8 DREW STUYVENBERG: Yes, we're actually in the middle of the meeting
9 here. The phone line is open, did you have a comment?

10 BARBARA O'NEIL: Yes.

11 DREW STUYVENBERG: Okay, please identify yourself and the
12 organization you're with and then go ahead.

13 BARBARA O'NEIL: Okay, my name is Barbara O'Neil. I'm with the Erwin
14 Citizen's Awareness Network. I appreciate the fact that Linda Modica has
15 travelled there today to represent us. And I have a comment to give an example
16 of how things are so complicated and how the NRC makes things complicated.
17 When Nuclear Fuel Services finally admitted that they were discharging highly
18 enriched uranium into the Nolichucky River, the NRC said, "Well, it would be too
19 expensive for them not to do otherwise, okay." And so then we asked the NRC,
20 in writing, how much do they discharge? And they came back with an equation,
21 three times ten to the minus seven, and that was region two. We finally had to
22 go to a physicist or a scientist to get that down to, what is that in picocuries?

23 So we came up with 300 picocuries per liter, is what that equation. So
24 then we get back again to the NRC, to Steven Dias at region two; I believe we

1 also copied Peter Habighorst at headquarters. And we said, and so how -- what
2 does that mean, as far as 300 picocuries per liter? And how often is that? A
3 day, once a week, once a month, what is that, what does that mean? Now, that's
4 been over a month and we still have not received a response. So that's a good
5 example of how they make things so -- the NRC makes things so complicated
6 and so convoluted, and it appears to us that they don't want us to understand
7 what is being discharged and the frequency that's being discharged. So that was
8 just an example that I wanted to share. Thank you.

9 DREW STUYVENBERG: Thank you very much. Any others in the room
10 or on the phone line have any other perspectives on this particular session?

11 JOHN TANNENBURG: On the phone line?

12 DREW STUYVENBERG: Please identify yourself and your organization.

13 John Tannenburg [spelled phonetically]

14 My name is John Tannenburg from STARS Regulatory Affairs. When you
15 first asked for comments on the phone, I heard an off camera or off-mic
16 comment, I think it was disappointing. I just want to let you guys know that I
17 really appreciate these webcasts. It allows people like me, who's on the west
18 coast to participate, and, you know, you should know, I've been watching this
19 since the very beginning. So I know you go through some effort, and it does help
20 in transparency because ordinary folks -- well, I'm an industry professional, but
21 ordinary folks can participate and see what you're doing. So thank you very
22 much, appreciate it.

23 DREW STUYVENBERG: Thank you. Any others? Were there any other
24 comments on any of the other items from today's discussion that anybody

1 wanted to share, before we wrap this discussion up?

2 BARBARA O'NEIL: I think it's a great thing that you're doing this and that
3 you do have it webcast. Barbara O'Neil, Erwin Citizens' Awareness Network.

4 DREW STUYVENBERG: Thank you. Let's have another here in the
5 room.

6 MICHAEL RINKER: Hi, I'm Mike Rinker with the Canadian Nuclear Safety
7 Commission. And speaking earlier about some of the reports we have up on
8 tritium on our website, one of them deals with drinking water standards from
9 around the world, how they're developed. And I think it might be useful if I could
10 try to remember them, but give some context on where the U.S. sits. Generally
11 drinking water standards or guidelines are based on public dose of one
12 millisievert per year. I think that's a hundred millirem. In Australia, that means
13 2,000 picocuries per liter -- sorry, two million picocuries per liter, and that's the
14 standard they impose. The World Health Organization Canada, several other
15 countries choose something that is 0.1 millisievert per annum, which is
16 approximately 200,000 picocuries per liter or 7,000 Becquerels per liter. And
17 that's 0.1 millisievert per year assuming that exposure would be varied, drinking
18 water is only one avenue. In the U.S. you're order of magnitude lower, which is
19 20,000 picocuries per liter or 740 Becquerels per liter. There are some other
20 numbers that have been thrown about a little bit. In the European Union, they
21 consider 100 Becquerels per liter as an indicator of potential for contamination,
22 sometimes misquoted as a guideline for drinking water. Thank you.

23 DREW STUYVENBERG: Thank you. One more in back.

24 DAVE LOCHBAUM: Dave Lochbaum with the Union of Concerned

1 Scientists. I just have a process question. Is this meeting being transcribed and
2 will that transcript be publicly available before the October 15 date? I got half of
3 it, but the other half, will it be available for making comments?

4 DREW STUYVENBERG: Sure. The short answer is we'll get a complete
5 answer to you in just a minute when Marty Virgilio comes on. But it is being
6 transcribed and I understand that it's also going to be available. Marty can talk
7 more about some of the timing. Likely about a week is what I'm getting at here, a
8 week, thank you. Any further comments on the day's sessions? In that case I'm
9 going to turn it back over to Eric Leeds who's going to have an opportunity to
10 thank some of the panelists here and close out this particular session.

11 ERIC LEEDS: Marty is it all right if I close it? Well, first I'd like everybody,
12 if we could thank the panel. I think they've done a terrific job.

13 [applause]

14 And if I can close the meeting, I wanted to thank everyone for their
15 participation. If you recall, when Marty opened up this meeting, the big purpose
16 of this meeting was to get feedback, to get constructive feedback, get your input.
17 And I appreciate all the stakeholders, and if you noticed, we had stakeholders
18 from all over the industry, in various parts of the country, and we sincerely
19 appreciate all the very candid feedback that we've received.

20 MARTIN VIRGILIO: Thank you. Marty Virgilio from the NRC. I just want
21 to add to what Eric has said. We really do appreciate all of the contributions
22 today. When we started out this morning at nine o'clock, it sort of bogged down
23 a little bit maybe around 9:30, and I was thinking boy, is this -- when is this going
24 to be over, are we going to over before lunch? But actually, it kept going, and it

1 kept going very well. So I'd like to really add my thanks to Eric's. I want to
2 specifically acknowledge that I believe that we heard enough to frame the issues
3 today. I think the range of options that we talked about, they extend from
4 implementing the programs that we have today, just going ahead and doing that
5 and not changing a thing, to adopting a whole new paradigm for regulation that
6 takes a different approach to protecting the environment. So there's a wide
7 range of issues to deal with. But I would say that there was complete agreement
8 on the objectives. And I would summarize that to say that when we think about
9 objectives and outcomes, I didn't hear anybody differ from a standard that was
10 zero or no on intended releases. And I didn't hear anybody say anything
11 different than they wanted to see a trusted, credible regulator. So in those two
12 areas, I think we had a very tight alignment.

13 The differences lay in the strategies. How do you get there? What are the
14 things that you need to do to achieve those two objectives? How should
15 licensees maintain the barriers? How should they prevent and respond to
16 groundwater and soil contamination issues? How should NRC be working with
17 EPA, the recognized Indian tribes, and states on groundwater issues? And how
18 can NRC enhance its credibility? I think those are all issues we have to think
19 about. Those are where I think we had the differences and the strategies for
20 achieving the objectives that we all want to achieve.

21 As far as next steps, what we're going to do is continue to gather input.
22 The comment period is open until October 15. The Federal Register Notice,
23 which is at either door, provides you instructions on how to provide comments,
24 and there are six ways to send these. There's opportunities for you to still

1 provide comments. I heard from our staff that we should have the transcript
2 completed and the slides and the transcript posted on the web within a week, so
3 that'll help you as you frame your final comments if you had any additional
4 comments to make. We'll do a careful review of the transcript and the written
5 comments. What we need to do is aggregate and assess the comments, both
6 the ones we received here and the written comments, and see how they can lead
7 to possible program improvements. Our next step will be to implement those
8 changes that we can implement, that don't involve a matter of policy. And in
9 parallel with that, we'll develop a set of policy recommendations for the
10 commission. Throughout all of that, we will continue to maintain an open and
11 transparent process, so that as we make changes to our programs and as we
12 develop recommendations for the commission consideration, that'll be an
13 opportunity for you all to comment on all of this as we proceed.

14 So in closing, I just want to thank you all again for your participation today.
15 It's been a long day. I really appreciate the people that participated by webinar,
16 especially those of you who are out on the west coast that got up and joined us
17 at six o'clock this morning, that's a heroic effort and we really do appreciate that.
18 So let me turn it over to Drew for any other things that we have to, administrative
19 issues to close the meeting. Thank you.

20 DREW STUYVENBERG: Thank you, I appreciate it. Just one last thing,
21 on your way out we have some public meeting feedback forms by the doors. If
22 you have any thoughts, suggestions on public meetings in general for the
23 Nuclear Regulatory Commission, please do fill one of those out. They're postage
24 paid so you can send them in later on if you'd like. But again, thank you all for

1 your time and effort in participating today. The NRC greatly appreciates it. Have
2 a good day.

3

4 [Whereupon, the proceedings were concluded]