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UNITED STATES NUCLEAR REGULATORY COMMISSION'S  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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1 UNITED STATES OF AMERICA

2 NUCLEAR REGULATORY COMMISSION

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4 ADVISORY COMMITTEE ON REACTOR SAFEGUARD

5 (ACRS)

6 RADIATION PROTECTION AND NUCLEAR MATERIALS

7 SUBCOMMITTEE

8 + + + + +

9 WEDNESDAY

10 JANUARY 12, 2011

11 + + + + +

12 ROCKVILLE, MARYLAND

13 + + + + +

14 The Subcommittee met at the Nuclear  
15 Regulatory Commission, Two White Flint North, Room  
16 T2B3, 11545 Rockville Pike, at 1:30 p.m., Michael T.  
17 Ryan, Chairman, presiding.

18 COMMITTEE MEMBERS:

19 MICHAEL T. RYAN, Chairman

20 J. SAM ARMIJO, Member

21 DENNIS C. BLEY, Member

22 DANA A. POWERS, Member

23  
24  
25  
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1 ACRS STAFF PRESENT:

2 DEREK WIDMAYER, Designated Federal Official

3 CHUCK CASTO

4 RICHARD CONATSER

5 ROBERT HARDIES

6 MARGIE KOTZALAS

7 ERIC LEEDS

8 JOHN LUBINSKI

9 LOUISE LUND

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

(1:31 p.m.)

CHAIRMAN RYAN: The meeting will now come to order, please. This is a meeting of the Radiation Protection and Nuclear Materials Subcommittee. I'm Michael Ryan, Chairman of the Subcommittee.

ACRS Members in attendance are Sam Armijo, Dennis Bley, Harold Ray, and Dana Powers. Derek Widmayer of the ACRS is the designated federal official for this meeting.

MEMBER POWERS: Mr. Ray has begged to be excused for other purposes.

CHAIRMAN RYAN: For other purposes. Okay. Well, Mr. Ray will not be with us, then. The Subcommittee will hear presentations by and hold discussions with representative of the NRC staff and other interested persons regarding this matter. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions as appropriate for deliberation by the full Committee.

The rules for participation in today's meeting have been announced as part of the notice of this meeting previously published in the *Federal Register*. We have received no written comments or

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1 requests for time to make oral statements from members  
2 of the public regarding today's meeting.

3 A transcript of the meeting is being kept  
4 and will be made available as stated in the *Federal*  
5 *Register* notice. Therefore, we request that  
6 participants in this meeting use the microphones  
7 located throughout the meeting room when addressing  
8 the Subcommittee.

9 The participants should first identify  
10 themselves and speak with sufficient clarity and  
11 volume so they may be readily heard. Copies of the  
12 meeting agenda and handouts are available in the back  
13 of this meeting room.

14 We will now proceed with the meeting, and  
15 I call on Mr. Eric Leeds, who is sitting in for the  
16 scheduled speaker, Marty Virgilio, and I'll turn the  
17 meeting over to you, sir.

18 MR. LEEDS: All right. Thank you, Mr.  
19 Chairman. Again, my name is Eric Leeds. I'm the  
20 Director of the Office of Nuclear Reactor Regulation,  
21 and I am sitting in for Marty Virgilio. Marty sends  
22 his regret that he couldn't be here today, and we  
23 thank you for this opportunity to brief you on  
24 groundwater.

25 To begin with, in response to incidents

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1 involving radioactive contamination of groundwater  
2 wells and soils at nuclear power plants, the NRC  
3 convened a Groundwater Task Force in March of 2010 to  
4 determine whether past, current, and planned actions  
5 should be augmented. Chuck Casto, who will be on the  
6 screen with us, was a team leader for the task force,  
7 and he will provide a detailed presentation of the  
8 task force review.

9 The task force in its final report dated  
10 in June of 2010 determined that the NRC is meeting its  
11 mission of protecting public health, safety, and the  
12 environment. However, in view of stakeholder  
13 concerns, the task force recommended that the NRC  
14 consider changes to its oversight of licensed material  
15 outside of its defined confinement.

16 The EDO established a Senior Management  
17 Review Group -- it was chaired by Marty Virgilio. I  
18 was one of the members -- to evaluate the Groundwater  
19 Task Force report, identify next steps, and make  
20 recommendations to the Commission about potential  
21 policy changes.

22 The Senior Management Review Group  
23 evaluated the report's conclusions and recommendations  
24 and identified actions that could be taken now, in  
25 addition to issues of policy that should be raised for

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1 Commission consideration. You'll hear more about both  
2 these activities by the staff here at the table with  
3 me today.

4 Louise Lund from NRR's Division of License  
5 Renewal has been providing support to the Senior  
6 Management Review Group. Richard Conatser from NRR's  
7 Division of Inspection and Regional Support will be  
8 discussing the industry's groundwater initiative, and  
9 Bob Harding from NRR's Division of Component Integrity  
10 will be discussing the industry's buried piping  
11 integrity initiative and newly submitted underground  
12 piping and tanks integrity initiative. In addition,  
13 Bob is responsible for the staff's Buried Piping  
14 Action Plan.

15 Lastly, Margie Kotzalas from the EDO's  
16 office will discuss the staff's communication  
17 initiatives. With that, I'd like to turn the  
18 presentation over to Chuck Casto, the Region II Deputy  
19 Regional Administrator for Construction. Chuck?

20 CHAIRMAN RYAN: He's on a connection with  
21 us. We can see him. Can you hear us?

22 MR. CASTO: I can hear you.

23 CHAIRMAN RYAN: And we can hear you just  
24 fine, so please proceed.

25 MR. CASTO: Thank you, Mr. Chairman,

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1 Committee Members. Good afternoon. I am Chuck Casto,  
2 the Deputy Regional Administrator for Construction in  
3 Region II, and thank you for your forbearance of the  
4 video conference. I had intended to be up there  
5 today, but other environmental matters --

6 CHAIRMAN RYAN: Very good. Well, this is  
7 not a bad second, I must say. It's coming through  
8 loud and clear.

9 MR. CASTO: Great. I'm glad to hear that.  
10 Thank you for the opportunity you've provided us to  
11 share the results of our report. As Eric discussed,  
12 EDO chartered the Groundwater Task Force on March 5,  
13 2010, to review past NRC actions related to  
14 groundwater.

15 Today I'd like to share with you the  
16 results of that report. I have an agenda. I will  
17 share the findings of our Groundwater Task Force, the  
18 conclusions, the key recommendations, and then hand it  
19 off for the next steps.

20 The charter that the Executive Director  
21 for Operations presented us had a number of items to  
22 review. I would consider the review of the charter  
23 basically was an effectiveness review of prior task  
24 force work and prior NRC staff efforts on groundwater.

25 We started with that prior work and

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1 determined the facts and observations, what were the  
2 facts from 2006 and beyond with regard to leaks and  
3 NRC actions. We developed conclusions and  
4 recommendations from those of their facts and  
5 observations.

6 We bundled those conclusions and  
7 recommendations into four themes. Additionally, out  
8 of those four themes we linked 16 specific conclusions  
9 to the fourth theme, and we handed the Senior  
10 Management Review Group four direct recommendations  
11 from the effort.

12 As Eric discussed, our overall finding was  
13 that the NRC is accomplishing its stated mission of  
14 protecting the public health and safety, protection of  
15 the environment through our response to groundwater  
16 leaks and spills. We could find no area where the  
17 staff had not lived up to its commitments and followed  
18 the policies and guidance and direction with regard to  
19 response or regulation of groundwater.

20 That said, we did have some conclusions  
21 and recommendations. The themes as you cross-cut --  
22 the report has four themes in it, and there are cross-  
23 cutting conclusions from the report that you can see,  
24 and the first was that we reassess the NRC's  
25 regulatory framework for groundwater protection.

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1           We made some conclusions with regard to  
2 the framework the NRC -- for observations and  
3 conclusions from the regulatory framework and how the  
4 framework is designed basically in a design -- in a  
5 design mode and as low as ALARA, as low as reasonably  
6 achievable perspective, which led to theme two, which  
7 says maintain barriers as designed to confine licensed  
8 material.

9           Basically, you have design criteria for  
10 systems and components that carry radioactive  
11 material. However, there is limited maintenance  
12 regulations or guidance on maintaining those barriers  
13 as they were defined in the licensing basis.

14           The primary guidance and direction of that  
15 is at 10 CFR Part 20, Appendix I. That's as close as  
16 you get to any kind of maintenance guidance or  
17 direction.

18           The third theme, we reviewed all of the  
19 responses to all the spills and leaks since 2006, most  
20 of them. I won't say all but most of the -- certainly  
21 all the significant ones, and what we saw were  
22 disparate responses, differing responses to a given  
23 leak or spill, some of them similar types of leaks or  
24 spills, but the NRC's response was varied.

25           We thought in terms of public trust and

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1 reliability, which is one of our organizational  
2 values, that a more reliable NRC response should be  
3 developed. That might include changes to the reactor  
4 oversight process predominantly in responding to --  
5 responding to leaks and spills. Out of that, those  
6 three themes, then perhaps we can strengthen trust of  
7 the Agency with regard to groundwater protection.

8 The next page, again, some of the  
9 conclusions -- as I said, there were about 16  
10 conclusions. As I said earlier, our response has  
11 varied. When there is a leak, oftentimes it's  
12 reported -- or spill. It's oftentimes --

13 According to the industry guidance, the  
14 industry groundwater initiative, NEI 07-07, those  
15 events are reported. However, there is very little  
16 process for following up or updating the public once  
17 the report is issued on the spill or leak.

18 It basically -- the guidance says -- the  
19 5072 report says there's been a leak or spill, and  
20 then the only update might be -- and I emphasize might  
21 be -- an inspection report somewhere down the road,  
22 either the next quarter or in some cases beyond. If  
23 it was a minor issue, if we determine it was a minor  
24 violation, then it would not even be in an inspection  
25 report, so that lack of information to the public

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1 results in a degradation of public trust.

2 The NRC's radioactive effluent PI  
3 performance indicator, really, it's never been  
4 tripped. It's never had -- it's been green on all the  
5 sites since the inception of the -- since the  
6 inception of the reactor oversight process, so it  
7 really provides no meaningful indication of  
8 groundwater contamination.

9 The NRC processes and the operating  
10 experience process do not disseminate low-level  
11 groundwater experience of inspectors, and the  
12 reasoning for that is our operating experience program  
13 is risk-informed, and because these events, these  
14 events being groundwater contamination events, are of  
15 low reactor safety risk, then that information doesn't  
16 make it through the screening process of the trending  
17 review group or the operating experience group, so  
18 therefore that experience is not passed on to  
19 inspectors.

20 Also in the reactor oversight process  
21 there was some contradiction with regard to public  
22 confidence. After the 2006 Braidwood event there was  
23 Commission interaction with the staff on public  
24 regulation, whether or not public confidence factor  
25 should be included in the SDP, and I believe, if I

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1 have this right, public confidence is still mentioned  
2 in the background document of the --

3 I had said SDP. I'm sorry for not  
4 defining that, significance determination process.  
5 That public confidence remains in the background  
6 information for a determination of public confidence  
7 or the significance of the event related to public  
8 confidence.

9 It's in the background document, but it's  
10 not -- it's been taken out of the significance  
11 determination process flow chart, so there is some  
12 contradiction within the guidance documents about  
13 whether public confidence is an element in  
14 dispositioning that finding.

15 MEMBER ARMIJO: Chuck, I'd like to ask a  
16 question related to public confidence. How do you  
17 assess that you're addressing public confidence, as  
18 opposed to the views of a few people who may be  
19 misinformed or fundamentally opposed to nuclear power?

20 They clearly can't represent the public.  
21 They represent their own particular group of folks.  
22 You know, public confidence, how would you even assess  
23 that you're improving public confidence unless you  
24 assess a broad spectrum of the public?

25 MR. CASTO: That's correct, and we often

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1 said during our review, "You cannot regulate public  
2 confidence," but our point was the guidance documents  
3 were contradictory, so, you know, we didn't take a  
4 position on whether you should try to regulate or  
5 measure public confidence.

6 It's that after 2006, after the Braidwood  
7 event, there was some confusion. There's some  
8 contraction in the guidance and the significant  
9 determination process about public confidence. Our  
10 point was either, you know, there needs to be a policy  
11 decision made either -- you either try to measure or  
12 try to evaluate public confidence or not, but don't  
13 have contradictory guidance documents.

14 MEMBER ARMIJO: Okay.

15 CHAIRMAN RYAN: Just another follow-up  
16 question, if I may, please. The two bullets up above  
17 that you mentioned, "The NRC radiological effluent  
18 performance indicator does not provide meaningful data  
19 regarding groundwater contamination," and then the  
20 other one is, "The NRC process does not disseminate  
21 low-level groundwater experience to inspectors," it  
22 seems to me those two are really saying the bar is  
23 really high related to reactors, but this isn't on the  
24 radar screen. Is that a fair --

25 MR. CASTO: That -- yes, sir. Because

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1 you're basically dealing with waste stream from the  
2 reactor, there -- you know, it's not going to trip any  
3 reactor safety threshold at all, because you're  
4 dealing with a waste stream system.

5 CHAIRMAN RYAN: Yes.

6 MR. CASTO: So, you know, it will not trip  
7 any of our traditional risk-informed processes.

8 CHAIRMAN RYAN: It sort of raises the  
9 question in my mind of something to think about, and I  
10 don't have a, you know, solution or an answer yet, but  
11 there is a transition then from regulation of the  
12 reactor, whether it's, you know, dose rates for  
13 workers or how, you know, materials are handled in or  
14 out or what's important to keeping the reactor  
15 operating safely.

16 Ultimately, what we think about is  
17 environmental requirements for very low doses or  
18 concentrations relative to groundwater or some other  
19 environmental aspect of regulation, and I guess it  
20 seems like what you're suggesting might indicate --  
21 again, it's just a supposition on my part -- that  
22 there is a lack of a proper handoff from regulating a  
23 reactor to regulating what's left when the reactor is  
24 taken out of consideration. Is that a fair view?

25 MR. CASTO: I think that's right on. The

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1 goal posts are reactor safety, and then the other  
2 side, once you get material out in the environment is  
3 dose, and these leaks, you know, you have dose  
4 regulation on the other side.

5 CHAIRMAN RYAN: Right.

6 MR. CASTO: So you have that hand-off.  
7 You have that hand-off between reactor safety and then  
8 environmental protection, which is dose, and these  
9 issues fall somewhere in that void in between.

10 CHAIRMAN RYAN: Yes, and, again, I think  
11 it's how do you hand off from a, you know, a reactor  
12 base, you know, concentration base to some other kind  
13 of criteria to a dose that's assessed by some  
14 structured model in the environment.

15 So that's -- I think that's a very  
16 important observation, the hand-off to either a state  
17 requirement, a boundary requirement, or the  
18 groundwater requirement from EPA isn't clear. There  
19 is no clear hand-off from the reactor operation  
20 aspects to these other regulatory interests, it seems.

21 MR. CASTO: And that was the conclusion we  
22 made. However, I wish we were as articulate as you  
23 were in describing that in the report as you are,  
24 because that's exactly what we're talking about is  
25 this hand-off --

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1 CHAIRMAN RYAN: Okay.

2 MR. CASTO: -- is -- okay, so the other --

3 CHAIRMAN RYAN: Well, you're pretty clear  
4 to me. I just wanted to say it a different way and  
5 make sure I understood it right.

6 MR. CASTO: Okay.

7 CHAIRMAN RYAN: Yes.

8 MR. CASTO: Thank you. The other -- the  
9 last bullet on that page, "The NRC should incorporate  
10 the industry's voluntary groundwater protection in the  
11 regulatory framework," that groundwater initiative,  
12 NEI 07-07, we have very little -- very few tools to  
13 enforce that commitment without somehow bringing that  
14 groundwater initiative into our regulatory process  
15 through some kind of commitment letter, some kind of  
16 codification of the process of the NEI groundwater  
17 initiative process. So if we are going to rely on a  
18 voluntary initiative, then we should codify it somehow  
19 and link up with the industry somehow through some  
20 kind of commitment.

21 The next page, our communication methods  
22 do not promptly delay NRC. So, basically what we're  
23 saying here is -- and consider using third-party  
24 validation for groundwater input. Basically what  
25 we're trying to say here is that risk communications

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1 on this issue, because for a lot of reasons risk  
2 communications is not as effective on this issue as it  
3 is on other issues, perhaps reactor safety issues.

4           Because this is a low risk, it's low risk  
5 for reactor safety. However, the public believes it's  
6 high risk in terms of public health, so you're talking  
7 two different languages, public health language and  
8 risk language, and that has very little impact on the  
9 public. In strengthening public confidence and trust,  
10 we suggest that using third-party, perhaps,  
11 epidemiologists, public health officials to help in  
12 communicating these results or the consequences of  
13 these incidents would be advantageous.

14           The next bullet, "The NRC regulations do  
15 not address the maintenance." As I said in my  
16 introduction, we have design criteria GDC-60 and 64,  
17 where licensees tell us the design of their systems  
18 and structures, how radioactive fluid or material will  
19 be transported. However, that does not really  
20 consider that there might be leaks or maintenance  
21 issues with those components, so we have very few  
22 regulations or guidance to insist or require licensees  
23 to keep the radioactive materials confined.

24           Also, there are some differences across  
25 sectors between power research reactors, fuel cycles,

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1 the in situ recovery. There's reasons for all those  
2 differences and how we regulate groundwater across  
3 those different sections. There are very valid  
4 reasons for those.

5 However, it leads to confusion with the  
6 public and how to deal with groundwater. In one  
7 sector we might require cleanup, immediate  
8 remediation, and another sector adds in the power  
9 reactors. We don't require immediate remediation.

10 In reality, in the power reactor world our  
11 decommissioning rules apply differently depending on  
12 what kind of reactor it is, whether it's a new reactor  
13 or an operating, the current operating fleet. So  
14 there are some differences regarding the regulatory  
15 framework among the sectors, and that leads to  
16 confusion.

17 The next bullet is about the  
18 decommissioning rule. Currently -- it's just an  
19 observation. Currently, the decommissioning rule does  
20 not require early remediation. You're all aware of  
21 that, and then we close that section out with a couple  
22 of comments regarding communications and the  
23 suggestion that better communications to the public  
24 will help.

25 The last slide --

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1 CHAIRMAN RYAN: Just before you -- before  
2 you leave that slide, maybe a couple of questions on a  
3 couple of these or comments, and I'd appreciate your  
4 reaction. The second one, "NRC regulations do not  
5 address the maintenance of non-safety related piping  
6 in tanks that contain radioactive fluids," and then,  
7 "The final decommissioning rule does not require early  
8 remediation, even if potential contamination of  
9 drinking water aquifers of sub-surface water bodies  
10 exist," you know, if you take those two together, you  
11 could make the conclusion -- you know, some could.  
12 I'm not offering this as my own, but that the NRC  
13 isn't terribly worried about groundwater  
14 contamination.

15 MR. CASTO: We have a -- there are a  
16 certain element of our public that believes that.

17 CHAIRMAN RYAN: And if -- you know, again,  
18 I think that the idea that something can now go 60  
19 years without being addressed to decommissioning,  
20 you've got to challenge that, I think, because  
21 groundwater can move a long distance in 60 years at  
22 most sites, I'm going to guess, so --

23 MR. CASTO: And one -- I'm sorry.

24 CHAIRMAN RYAN: No, that's fine. So I  
25 think that it's great that these are on the list to

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1 challenge, because they are long-held views, you know,  
2 that that's something for later on, but, you know, my  
3 experience is the simple thing to do with a leak is  
4 fix it as soon as you find it, because the problem is  
5 only going to get bigger.

6 MR. CASTO: Exactly.

7 CHAIRMAN RYAN: It's not going to get any  
8 better on its own, and it's going to get worse on its  
9 own, and how much depends on the, you know, the  
10 particulars of the circumstance you're in, so maybe  
11 part of what comes out of your analysis is the  
12 thinking that we ought to have a different strategy  
13 other than waiting. Just something to think about --

14 MR. CASTO: Correct.

15 CHAIRMAN RYAN: -- as we go through.

16 MR. CASTO: Right. We make a suggestion  
17 regarding, you know, requiring remediation for  
18 contamination that approaches drinking water aquifers.

19 You know, that might be a -- that might be a good  
20 compromise. The other --

21 CHAIRMAN RYAN: Somebody that -- just a  
22 second on that point, if I may. Somebody may correct  
23 me if I'm wrong, but I think that any saturated zone  
24 is potential groundwater as far as the EPA is  
25 concerned.

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1 MR. CASTO: Exactly, and certainly, I  
2 think, in some of the states, as well.

3 CHAIRMAN RYAN: Right. Okay.

4 MR. CASTO: The other point I didn't make  
5 here that I think is in the report or it's an  
6 observation we had, as you're aware, there are some  
7 sites who had under-funding in their decommissioning  
8 fund or under-financial assurance. I don't know if  
9 it's called funded or financial assurance, but they  
10 were -- they had -- did not have significant,  
11 sufficient financial assurance.

12 In a lot of the public's mind, from our  
13 experience at public meetings, that, too, led to some  
14 distrust of the industry and regulators when we tell  
15 them that five years before decommissioning you have  
16 to do an assessment of your plant operationally and  
17 come up with an estimate of the decommissioning cost  
18 and then find financial assurance for that.

19 Then the public says, "Well, yes, but, you  
20 know, you've got these financial institutions -- are  
21 under-funded." So that, too, leads to a loss of  
22 confidence in what the industry is trying to achieve.

23 The last page of conclusions addresses  
24 more the international aspects. We had an appendix on  
25 the international. Of course, the internationals are

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1 basically watching very closely what is happening in  
2 the United States and keeping a close watch on how we  
3 respond to this issue.

4 Canada, obviously, has an extensive  
5 program. They have a lot of tritium to deal with in  
6 Canada, and then we make some IRCP, international  
7 radiation protection standards, make some  
8 recommendations about that and the International  
9 Nuclear and Radiological Event Scale and perhaps the  
10 possible uses of that to assure the public, to address  
11 public confidence.

12 Any questions on that page of conclusions?

13 CHAIRMAN RYAN: I guess I'm not sure how  
14 many on the Committee or the Subcommittee are familiar  
15 with the INES scale. Can you talk a little bit more  
16 about how that works, perhaps?

17 MR. CASTO: I wish I had Dr. Jones with  
18 us. As you know, I think there are seven scales on --

19 CHAIRMAN RYAN: Yes.

20 MR. CASTO: Seven sections or --

21 CHAIRMAN RYAN: Seven levels of incident.

22 MR. CASTO: Yes, and basically I think we  
23 reviewed most all of ours against that seven scale,  
24 and they wouldn't trip any of them. It would not --  
25 it would not go to Level 1. That would be all Level 0

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1 events, so the point that the Committee -- the task  
2 force tried to make was, you know, you could -- you  
3 could use that in your public dialogue as that we use  
4 the international scale.

5 You know, this is all part of third-party  
6 validation of what you're trying to assert, but you  
7 can use the international scale to show the public  
8 that these would not even trip. As sensitive as the  
9 international community is to radiation and releases  
10 of radioactive material, this would not trip any of  
11 their limits, either, so that was the purpose of  
12 trying to make this -- making this conclusion in the  
13 report.

14 CHAIRMAN RYAN: Yes, you could certainly  
15 think about that different, perhaps, in some cases. I  
16 don't know, but an anomaly is the first level in the  
17 INES scale, and it says, "Anomaly beyond the  
18 authorized regime but with significant defense and  
19 depth remaining. This may be due to an equipment  
20 failure, human error, or procedural inadequacies and  
21 may occur in any area covered by the scale, for  
22 example, plant operation, transport of radioactive  
23 material, fuel handling, waste storage, et cetera."

24 So there are some fairly low-level  
25 categories that you could arguably say that a

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1 groundwater contamination event may or may not be on  
2 them, and I am by no means well experienced in  
3 applying these categories, but the language suggests  
4 that you could get on it, perhaps, but, you know,  
5 you're not -- the deviations of zero, below the scale,  
6 everything is operating normally, and there is a  
7 couple of lower levels.

8 Just to, I guess, calibrate, if I recall  
9 right, the TMI accident was a Level 4. The highest  
10 level is a Level 7, but --

11 MR. CASTO: Right, and that --

12 MEMBER ARMIJO: That's Chernobyl.

13 MR. CASTO: Right, and that comparison,  
14 even if it's a zero or a one in comparison to a four,  
15 it helps the community in understanding the  
16 significance.

17 CHAIRMAN RYAN: Yes, I almost think about  
18 it, quite frankly, as logarithmic, rather than linear.

19 MEMBER BLEY: It's not that -- somebody  
20 showed us a slide yesterday that said it's a factor of  
21 ten each one, and --

22 CHAIRMAN RYAN: No, no, I said it's more  
23 logarithmic than linear.

24 MEMBER BLEY: Yes, but just for reference,  
25 I was wrong. Three Mile Island and Windscale were

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1 both fives.

2 CHAIRMAN RYAN: Fives.

3 MEMBER BLEY: Yes.

4 CHAIRMAN RYAN: Well, pretty high up on  
5 the ladder, but --

6 MEMBER BLEY: Tokaimura was a four.

7 CHAIRMAN RYAN: Yes. Thank you, Dennis.  
8 Anyway, that's an interesting question.

9 MR. CASTO: I'll turn now to our key  
10 recommendations. As I discussed earlier, we suggested  
11 that -- to the executive director that policy issues  
12 associated with this be identified out of our report.  
13 We did -- we had themes and recommendations and  
14 conclusions, but we did not really specifically  
15 highlight the policy issues.

16 We left that for the Senior Management  
17 Team to identify, extract the policy issues for the --  
18 at the EDO level, extract the policy issues and then  
19 determine once those policy issues are addressed what  
20 changes might be appropriate to the reactor oversight  
21 process and then go back and look at the 16  
22 conclusions and recommendations we had in the report  
23 and see -- to see if there was anything specific in  
24 there that needs to be addressed once all that --  
25 before any changes are made to the reactor oversight

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1 process and then reach out, once we're satisfied that  
2 we have a framework, an appropriate framework, then  
3 reach out to other regulators and make sure that our  
4 strategies are consistent and conforming with theirs.

5 MEMBER ARMIJO: Chuck, in the issue of  
6 policy, had this -- did your task force conclude that  
7 our current -- the NRC's current policies are not  
8 okay, or did you consider that maybe they are just  
9 fine, and the problems are implementation,  
10 consistency, and communication, and that really would  
11 be the direction to go?

12 The implication I get from your  
13 presentation is there really are some problems with  
14 our policies related to groundwater, even though  
15 there's really -- in the incidents that you reported  
16 in your task force report, there really wasn't  
17 radiological hazard or health and safety issues, so  
18 I'm a little confused of where this is going.

19 MR. CASTO: Right, and that's it, exactly.

20 It almost depends on what you seek as an outcome. If  
21 public confidence or zero tolerance for leaks is your  
22 outcome, then the current framework is not sufficient  
23 to do that.

24 MEMBER ARMIJO: I agree.

25 MR. CASTO: So you have to determine, and

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1 we didn't determine what the outcome is. We leave  
2 that up to, you know, Commission and EDO level, but it  
3 depends on the outcome you want. Given -- you know,  
4 once you set your outcome, then we mapped out some  
5 issues that you need to address if your outcome is,  
6 you know, public confidence or if your outcome is  
7 protection of the environment, you know.

8 What we identify are some gaps with regard  
9 to protection of the environment. What we say in  
10 shorthand is we don't -- our framework doesn't  
11 necessarily protect the environment. It protects  
12 people from the environment by focusing on dose.

13 MEMBER ARMIJO: Right.

14 MR. CASTO: So if that's the framework, if  
15 that's the outcome you wish, then your framework, the  
16 NRC's framework is perfectly structured to protect the  
17 people from the environment, so it's --

18 MEMBER ARMIJO: From a contaminated  
19 environment.

20 MR. CASTO: Right, from a contaminated  
21 environment, so it depends on what the outcome is  
22 you're seeking.

23 CHAIRMAN RYAN: It's interesting. On that  
24 INES scale, you don't get to Level 1. You have Level  
25 0, which is of no consequence, unless you have

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1 overexposure of a member of the public in excess of  
2 statutory limits. So it would have to be an  
3 overexposure from a dose standpoint to get even to the  
4 first level of the INES scale. So, you know, the  
5 other points you made about public confidence and some  
6 of the other things are certainly driving some of the  
7 thinking that we hear about.

8 MEMBER ARMIJO: Well, you know, again, I  
9 think it's very hard to measure public confidence, you  
10 know. It's pretty easy to torque up a legislator or a  
11 political guy with calls and letters from a relatively  
12 small group of people, but that doesn't necessarily  
13 represent the opinion of the general public, and so  
14 until you really know how to assess what the general  
15 public thinks of your -- of the current NRC policies,  
16 then you're responding to a very small fraction of  
17 people who are pretty active and vocal, and I think  
18 that would be a mistake, but, you know, that worries  
19 me a lot --

20 MR. CASTO: Yes, I think so.

21 MEMBER ARMIJO: -- because it takes you  
22 out of protection of the health and safety of the  
23 public into a regime of worrying about level of  
24 interest, concern by congressional, state, local  
25 officials, et cetera, and, you know, that has nothing

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1 to do with safety, and that's really a concern. So  
2 I'd just leave it at that, and I'd like to hear more.

3 MR. HARDIES: Well, can I chime in on that  
4 real quick?

5 MEMBER ARMIJO: Sure. Sure.

6 MR. HARDIES: We did have some public  
7 outreach, some public meetings to get a broader -- a  
8 broader impression of what different people thought.  
9 I think Louise may go over that a little bit in her  
10 presentation about the public outreach to make sure  
11 that we don't just look at the select opinions of a  
12 few people but we get a broad opinion of the public,  
13 what they're saying.

14 MEMBER ARMIJO: Yes, well, I think the  
15 communication and explanation of what the hazard is  
16 and stuff like that -- Mike, of course, is our expert  
17 in that area, particularly with tritium -- goes a long  
18 way in alleviating concern for people with an open  
19 mind.

20 CHAIRMAN RYAN: Yes, I agree with your  
21 thought there, Sam. The other part that we haven't  
22 touched on yet, and correct me if I'm wrong, but some  
23 of the events that are on the radar screen in this  
24 area were unexpected.

25 There were surprises, and I think there's

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1 an element where had it been some normal operating  
2 circumstance that was well understood, well predicted,  
3 and well enveloped by the knowledge base at the  
4 facility, it might not have had the same reaction as  
5 one that was, "What's this going on?"

6 So I just -- I think there is an element  
7 of there wasn't --

8 MR. CASTO: Early detection.

9 CHAIRMAN RYAN: -- early detection and  
10 getting ahead of it. You mitigate some of that  
11 independent of the level idea, but I think that's  
12 certainly something that would strike me is if you  
13 knew about it, and it's something that's well on the  
14 radar screen and being addressed.

15 That's different than, "Boy, let's go out  
16 and take a whole bunch of samples and see what's  
17 cooking." So that's an element somewhere along the  
18 line that I think would influence the public reaction  
19 to some extent, perhaps even a regulator reaction if  
20 it was not well recognized and understood as time went  
21 on. Anyway.

22 MR. CASTO: And there is also a public --  
23 I'm sorry. There is also a public -- a little bit of  
24 anxiety. If you can't take care of these small pipes  
25 with this low-level radiation, what about those big

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1 pipes in there that have lots of radiation? We saw --  
2 we saw a lot -- we saw a lot of that concern in the  
3 public meetings.

4 CHAIRMAN RYAN: Sure.

5 MS. LUND: One thing. This is Louise  
6 Lund. I also want to mention, too, that, you know,  
7 while Chuck was doing his work with his committee or  
8 his group, task force, there was a lot of things going  
9 on in the industry that have continued on, and I think  
10 that both things have evolved, you know, since the  
11 time that Chuck was doing his work.

12 You know, what we've done in our review  
13 and evaluation of what he has provided in looking at  
14 how this has all evolved over time, because I think  
15 that in looking at what the group did in looking at  
16 the report, not only have we been looking at this,  
17 it's obvious that industry has been looking at this  
18 and responding to this, as well, so hopefully you'll  
19 get a sense of that in the presentations that are to  
20 come.

21 CHAIRMAN RYAN: Okay. Thank you.

22 MR. CASTO: And then my final slide talks  
23 about the next step, and that's the senior management  
24 review effort, so I stand ready to try to address any  
25 of your questions.

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1 CHAIRMAN RYAN: You might want to not  
2 whack the microphone, because it goes in his ears.  
3 Thank you. Any other questions from Members? Dennis,  
4 anything? Okay. Well, thank you very much. It's  
5 been a great start, and we appreciate you being with  
6 us on the electronic meeting room.

7 MR. CASTO: Thank you for the opportunity  
8 and your forbearance on that.

9 CHAIRMAN RYAN: Okay, and you're more than  
10 -- I hope you're going to stay and be with us through  
11 the rest of the meeting.

12 MR. CASTO: I am.

13 CHAIRMAN RYAN: Great. Thank you. Let's  
14 see. Next, I think, Louise, you're the next speaker.

15 MS. LUND: Okay, and I just need to figure  
16 out how to get to the next presentation. Does that  
17 work?

18 MEMBER POWERS: This is a little test.

19 MS. LUND: Apparently, and I've already  
20 failed.

21 MEMBER POWERS: What did you do?

22 MS. LUND: Yes, what did I do? Oh, no.  
23 Thank goodness it's not a pipe, right? Okay. So, as  
24 Eric mentioned, I am Louise Lund from NRR and have  
25 been providing support to the Senior Management Review

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1 Group. I did it again.

2 So what I'm going to talk about is discuss  
3 the time line that we've been working to and the  
4 outreach that has been conducted, and Richard has  
5 actually mentioned some of that, and how the review  
6 has been conducted, and I'd also like to discuss what  
7 our next steps are, because we are in the midst of  
8 this process rather than at the tail end of it.

9 CHAIRMAN RYAN: And I might add I think  
10 the Subcommittee will certainly report to the full  
11 Committee, and we do appreciate the fact you're in the  
12 middle of this and you're taking time out of your work  
13 to come and give us a first update, so we appreciate  
14 that very much. Thank you.

15 MS. LUND: And we also really -- you know,  
16 the discussion is very helpful for us. You know, we  
17 have not only done the outreach outside of the agency.  
18 The more discussion we have, I think it helps us to  
19 make sure we've considered, you know, all the  
20 different views on this, as well.

21 CHAIRMAN RYAN: Great. Thank you.

22 MS. LUND: Okay. So, as Chuck mentioned,  
23 the Groundwater Task Force issued their report on June  
24 11, 2010, and on June 17 the EDO sent a tasking  
25 memorandum to the selected group designating them as

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1 members of the Senior Management Review Group. This  
2 group was formed to discuss the recommendations and  
3 conclusions of the report and to consider them and  
4 determine appropriate actions.

5 The group held its first meeting on July  
6 12, 2010, so you can see that they got right down to  
7 business very quickly. As Chuck mentioned in his  
8 slides, the first activity was to identify those  
9 recommendations and conclusions that could be  
10 evaluated by the staff and those that contained the  
11 policy issues or potential policy issues that could be  
12 considered by the Commission.

13 The ones to be evaluated by the staff were  
14 sent in taskings down to the staff for their review,  
15 and so we are still in the process of getting those  
16 responses back from the staff as far as what their  
17 proposed actions are.

18 The public meeting was then held on  
19 October 4, 2010, to receive input on the potential  
20 policy issues from a diverse group of public and  
21 industry stakeholders to ensure the group had  
22 identified and were considering the right issues on  
23 which to focus attention as they moved forward. They  
24 wanted to make sure that they really had an  
25 understanding of what to focus on.

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1 Talking about the public meeting  
2 participants, I wanted to provide a little sense of  
3 the ones that we invited. In fact, Chuck Casto and  
4 his group had had some outreach meetings, as well. We  
5 looked at the ones that they invited, and we also  
6 invited some additional groups, as well, to engage  
7 with to make sure that we had considered a wide and  
8 diverse range of opinion.

9 In fact, down -- ones that are not  
10 specifically listed that also responded either were  
11 there or actually provided written comments -- we  
12 invited people to the meeting. We also said you can  
13 provide written comments -- were from the State of New  
14 York, the State of New Jersey, the Union of Concerned  
15 Scientists, Beyond Nuclear, Riverkeeper, and Erwin  
16 Citizens Awareness Network. So we really didn't stop  
17 with just the reactor community. We also did some  
18 outreach outside of the reactor community.

19 CHAIRMAN RYAN: Were these meetings by  
20 invitation only, or were there public announcements?

21 MS. LUND: It was public announcement.

22 CHAIRMAN RYAN: So anybody could come.

23 MS. LUND: In fact, what we did, hopefully  
24 to generate discussion, is that we had four different  
25 parts of the meeting that were arranged around the

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1 themes. In fact, Chuck had identified those four  
2 themes, and what we did was we invited people to sort  
3 of sit on a panel to provide very short presentations  
4 about their perspective to hopefully get the  
5 discussion going.

6 We also recognized that some people would,  
7 you know, as they're sitting there say, "You know, I  
8 hadn't thought of it that way," or, "That reminds me  
9 of," or, you know, "I wish I had said," or, you know,  
10 maybe we had run out of time, so that's why we allowed  
11 a certain period of time afterwards to get written  
12 comment if people decided to do that, so we had some  
13 like the State of New York that weren't in attendance  
14 but still felt they wanted to provide some input.  
15 There are some others like that.

16 So, as far as the Senior Management Review  
17 Group, you know, Eric has said that he is on the  
18 group. What it was is it consisted of office  
19 directors from the Office of Nuclear Reactor  
20 Regulation, the Office of New Reactors, Office of  
21 Nuclear Material Safety and Safeguards, Office of  
22 Federal and State Materials and Environmental  
23 Management Programs, the Region III Regional  
24 Administrator, and the General Counsel, Steve Burns.  
25 The group was chaired by the Deputy Executive Director

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1 for Reactor and Preparedness Programs, Marty Virgilio.

2 So, the Senior Management Review Group  
3 reviewed the recommendations and conclusions from the  
4 Groundwater Task Force Report to identify the  
5 potential -- the policy or regulatory changes and also  
6 identify recommendations to be tasked for the staff  
7 for appropriate action.

8 Okay. So, as far as the -- looking at  
9 Chuck's, you've seen some of these in Chuck's. What I  
10 tried to do is sort of summarize the recommendations  
11 that were tasked to the staff and looking at the  
12 procedure that he was remarking about, the Agency  
13 experience with enforcement and talking about whether  
14 generic communication was warranted. If you step  
15 through the actual recommendations and conclusions,  
16 you will see these listed, and these were ones that  
17 were sent to the staff for action.

18 Now, in looking at the policy issues, we  
19 were trying to figure out how best to develop the two  
20 papers that were -- the paper that was going to the  
21 Commission, and, actually, what we decided to do was  
22 to split it into two SECY papers. They were divided  
23 in the following way.

24 The first one was the first two themes,  
25 which had a more narrow focus on groundwater

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1 protection, because that seemed to be the case with  
2 those two themes. In the discussion, Chuck mentioned  
3 that this is one of those situations where there is  
4 high public interest in an area where the risk to the  
5 public as far as reactor safety was considered low,  
6 and there's other areas that are very similar besides  
7 just groundwater protection.

8 So some of the conclusions or some of the  
9 recommendations seem to be the type of recommendations  
10 and conclusions that we could apply more broadly, so  
11 that's why we put it in another paper that had more of  
12 a broad focus on the strengthening trust and  
13 communication sort of issues.

14 So the paper one, the first paper reviewed  
15 the regulatory framework that was associated with  
16 groundwater protection, and that's very similar to  
17 what was presented, and it followed up to SECY 09-174,  
18 the staff progress and evaluation of buried piping at  
19 nuclear reactor facilities, which was written at the  
20 request of the Commission, and Bob Hardies had written  
21 that to say where we were in groundwater protection  
22 and specifically with regard to the issue of buried  
23 piping.

24 Another issue that's discussed in the  
25 paper that we are developing is the report's

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1 recommendation that the voluntary industry initiative  
2 should be brought into the regulatory framework. We  
3 also discussed the report's recommendation concerning  
4 maintenance of non-safety related piping and tanks,  
5 and we also -- the voluntary --

6 The second one, the report's  
7 recommendation, the voluntary industry initiative  
8 should be brought into the regulatory framework,  
9 actually, Richard is going to talk about the voluntary  
10 industry initiative. The report's recommendation  
11 concerning maintenance of non-safety related piping in  
12 tanks, Bob Hardies is going to talk about the staff  
13 activities in that area.

14 We also discussed the report's  
15 recommendation regarding the current radiological  
16 performance indicator and the reactor oversight  
17 program, and I'll have a slide about that next, and we  
18 discussed the report's recommendation regarding  
19 immediate remediation of spills at NRC licensed  
20 facilities, and I have a slide on that, as well.

21 Okay. So, as Chuck mentioned, the GTF  
22 report recommended that the current performance  
23 indicator -- and, I'm sorry, I didn't write that out -  
24 - be -- oh, I guess I did in the title -- revised to a  
25 more leading indicator of performance, and it seemed

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1 to be a situation where we -- that particular  
2 performance indicator was always green. That's what  
3 was said in the report.

4 So revising that performance indicator as  
5 far as that is concerned, the staff will be addressing  
6 this recommendation through their regular process,  
7 which happens to be the annual reactor oversight  
8 process self-assessment, okay. The staff addresses  
9 feedback such as this through their self-assessment  
10 and considers whether modifications to the ROP need to  
11 be made.

12 So this self-assessment paper will be  
13 developed this spring by NRR, so that's how that  
14 particular recommendation will be handled, okay, is  
15 through that group within NRR that actually assesses  
16 whether the performance indicators are what they need  
17 to be.

18 CHAIRMAN RYAN: It's an interesting point  
19 on this slide that all the performance indicators were  
20 green. Nothing set off a rocket.

21 MS. LUND: On that particular one, you  
22 mean.

23 CHAIRMAN RYAN: Yes, on this particular  
24 part. You know, whatever was being measured was, "Oh,  
25 that's okay," so I guess I can understand from an

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1 operational perspective the reactor is what we were  
2 really focused on, and some of these other things  
3 aren't the same level of focus, but it strikes me that  
4 maybe the indicator wasn't the right one, that you  
5 need to think about these small levels of  
6 contamination in soils or on the property anywhere to  
7 be something that needs a different metric.

8 MR. LEEDS: I think we'd agree with you,  
9 and that's where the staff is coming out. The staff  
10 always struggles with issues of low risk, of low  
11 immediate safety impact for the public, and the types  
12 of quantities of tritium that are being released here  
13 are way below federal levels.

14 CHAIRMAN RYAN: No question.

15 MR. LEEDS: And that makes it very  
16 difficult, but, however, going back to public outrage  
17 and the whole idea of maintaining the confinement  
18 barrier for any type of radioactive material, that's  
19 something that we can keep track of, and it could be a  
20 leading indicator, and it goes right back to the point  
21 of if these pipes leak, well, what about others?

22 CHAIRMAN RYAN: There is a second area,  
23 which I'd appreciate your views on, is the  
24 decommissioning aspect. If I have a small leak that  
25 is fairly constant over time, I end up with, instead

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1 of 10,000 cubic feet of soil to dispose, I might have  
2 half a million cubic feet to dispose.

3 So I end up with a real expensive  
4 decommissioning bill that I may be prepared to pay or  
5 I may not be prepared to pay, but that's not a  
6 radiological kind of thing so much as it's a waste  
7 management question, but it certainly -- there's got  
8 to be a general way to figure out what to say about  
9 this. It's either in control and well managed, or  
10 it's not in control and not well managed.

11 MR. LEEDS: Well, and I think that goes  
12 back to Chuck's report. I'm sorry.

13 CHAIRMAN RYAN: No, no, that's fine. Go  
14 ahead.

15 MR. LEEDS: That goes back to Chuck's  
16 report. You know, for some industries we require  
17 immediate remediation. You know, you go look at  
18 uranium recovery. Why don't we do it for all? Why  
19 aren't we consistent? Certainly for decommissioning  
20 funding, that's one of the considerations of  
21 decommissioning funding.

22 CHAIRMAN RYAN: Sure.

23 MR. LEEDS: It will drive the cost. It  
24 could drive the cost of decommissioning funding up  
25 tremendously. Has the licensee prepared for that?

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1 Right now, decommissioning funding, they don't have to  
2 address that until the last five years,  
3 decommissioning funding. Why are we waiting? Stop it  
4 now. Clean it up now. Take care of it now.

5 That's one of -- having had the discussion  
6 with Chuck, I think he makes a very strong point about  
7 these facilities. You know, 20, 30, 40, 50 years from  
8 now do we -- 60 years from now, do we want these  
9 facilities to be the dirty coal plants of today?

10 You know, clean them up now. Maintain it  
11 now, and there's a -- certainly, that would go -- I  
12 think that would go a long way to resolving some  
13 concern from our stakeholders, especially in the  
14 states, as well as the public.

15 CHAIRMAN RYAN: I mean, it's encouraging  
16 here that you have those issues, you know, firmly on  
17 your plate and, you know, they're in your thinking  
18 process. That's --

19 MEMBER POWERS: I'm a little puzzled.  
20 First of all, the effluent cornerstone is a co-equal  
21 cornerstone, so if you say let's give less focus on  
22 the reactor safety cornerstone, well, that's an error,  
23 because it's one in seven cornerstones that -- I mean,  
24 there are only seven of them, so, I mean, there's  
25 nothing that says these are less important from the

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1 others.

2 MR. LEEDS: True.

3 MEMBER POWERS: The second thing that  
4 puzzles me a little bit is that we are trying to move  
5 more toward risk, and that's risk that's quantifiable,  
6 quantitative analysis, and here it looks to me like  
7 you're reacting to headlines in *The New York Times*,  
8 which is not quantifiable.

9 MR. LEEDS: Sir, can I react to that?

10 MEMBER POWERS: Please.

11 MR. LEEDS: I think it's a wonderful  
12 observation, and I've given it a lot of thought, and  
13 when I meet with licensees, when I meet with CNOs and  
14 Senior VPs and we talk about their site, I encourage  
15 them to do everything they can do to improve the risk  
16 profile of their sites, and I talk about it in three  
17 ways.

18 Equipment risk. Improve the margin.  
19 Improve your probabilistic risk assessment numbers for  
20 that site.

21 Human factors risk. What we're seeing in  
22 the industry is the same thing we're seeing within the  
23 staff. We're having generational change, and I'm very  
24 concerned about the operators and the maintenance  
25 people who are -- who are new to the business, and

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1 they didn't learn the lessons that we learned back in  
2 the seventies and eighties the hard way, so human  
3 factors risk.

4 The third risk that I talk about with them  
5 is the public outreach risk, and I tell them they have  
6 no further to look than Vermont. Take a look at what  
7 the -- how the neglect of reaching out to the  
8 stakeholders and becoming a good member of the  
9 community has caused Entergy in terms of the risk of  
10 Vermont Yankee continuing to run due to the public  
11 outcry and the state outcry.

12 So I agree with you when we talk about  
13 risk, but I'm ready to extend risk to other areas.  
14 Does that make sense?

15 MEMBER POWERS: Well, it's --

16 MEMBER ARMIJO: To some extent, I agree  
17 with you, but I think there's a business risk by not  
18 communicating with the people who can determine your  
19 fate, even though you're a perfectly safe plant, and  
20 the question is trying to move -- to regulate the  
21 business risk unrelated to health and safety into the  
22 NRC regime could have some unintended consequences  
23 that we haven't thought through enough, so I don't  
24 know exactly where it's going to wind up.

25 MR. LEEDS: Well, I agree with you, and

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1 that would be a policy decision, and that's why when  
2 we're looking at this performance indicator, this is  
3 something that we would go to the Commission. Do you  
4 want us to go this direction, because as Dr. Powers  
5 said, you know, are we regulating by headline? Are we  
6 regulating by procedures?

7 Now, I can say one thing to a Senior VP,  
8 to a CNO, and try to get my point across, their need  
9 to outreach, but as a regulator, where do we want to  
10 stand? Well, that's a decision, certainly, that the  
11 Commission needs to make.

12 MEMBER ARMIJO: Yes.

13 MEMBER POWERS: The question, it seems to  
14 me, that we need to -- were I a Commissioner and you  
15 presented all this to me, I would -- I don't know how  
16 I would react, but a more sterile position, I'd react  
17 and say why would we move -- why would anybody move to  
18 a risk kind of regulatory system, a greater use of  
19 risk information, because I really don't want my  
20 reactors to have headlines in *The New York Times*.

21 It's never good for me. One of the  
22 principles I've learned in this position is you do not  
23 want the Chairman's picture on the cover of *Time*  
24 magazine. That is nearly always a bad idea.

25 MR. LEEDS: Yes, sir.

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1           MEMBER POWERS:    So why would we move to  
2 risk?  And the reason we move to risk is that neither  
3 the licensees nor the regulatory institution itself  
4 has the manpower to cover every little thing, and we  
5 want them instead to cover the things that are most  
6 important, and what you're recommending here seems to  
7 be a deviation from that strategy.

8           You seem - you seem to be moving to, "I'm  
9 going to cover these things, because they can make  
10 headlines, and I will ipso facto mean that there is  
11 somebody who is going to be spending less time  
12 worrying about things that can have a real impact on  
13 public health and safety."  Is that -- am I missing  
14 something here?

15           CHAIRMAN RYAN:    Back to Dr. Powell's  
16 comment, I guess I'd like to offer a slightly  
17 different view of why some of these things become  
18 important, you know, and maybe there's a way to have a  
19 lesson learned, which I'll get to right now.  A number  
20 of plants, small and large, research reactor and a  
21 couple power reactors, have been decommissioned.

22           I think there's a gold mine of data there to  
23 say, "Well, what is the state of these decommissioning  
24 -- facilities that decommission?  How much earth had  
25 to be taken out?  Was there any groundwater pumping

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1 back circumstances? What was the condition of the  
2 decommissioned property when it was released or, you  
3 know, in its current status? How many are in some  
4 state of licensure even after decommissioning the  
5 reactor?" and so on.

6 So maybe there's -- maybe there's a mine  
7 there you can dig around in and see is there anything  
8 that could teach us about what's important. I mean,  
9 was the Trust Fund adequate or, you know, all those  
10 kinds of things, and to me that might not be a bad way  
11 to begin this exercise of getting to some of the  
12 points that Dr. Armijo and Dr. Powers have raised as  
13 what, you know, what's important and why and, you  
14 know, we kind of think it was important for the reason  
15 that something ended up to be, you know, a very  
16 visible public question.

17 But somewhere there is some data, I think,  
18 in what was going on at the decommissioning that  
19 raised those issues. What were the levels of concern?  
20 What were driving people's thinking? Was it the  
21 groundwater local standard, or was it some other  
22 number? How do we sort this out?

23 I guess I would begin to look at cases  
24 where decommissioning has occurred, and maybe it's not  
25 just reactors. Maybe it's other types of fuel cycle

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1 facilities, and bring all that together and say, "How  
2 do we sort through all that?" That to me seems to be  
3 a gold mine that we haven't dug our shovel into yet.

4 MR. CASTO: This is Chuck. Can I --

5 MR. LEEDS: Chuck's been trying to speak.  
6 Chuck, before you get started -- Gentlemen, I  
7 apologize. I have to meet with Mike Johnson with NRO  
8 for just a short time, but I will return.

9 CHAIRMAN RYAN: Thank you.

10 MR. LEEDS: I'll be back, and, Margie, if  
11 you'd like to sit up here. Chuck, please.

12 MR. CASTO: Thank you. If I could make a  
13 couple of points. First of all, on that point, the  
14 Connecticut Yankee I think was twice the cost because  
15 of operational considerations into the billions of  
16 dollars unexpectedly when they did the commissioning  
17 project.

18 The other point I'd like to make with  
19 regard to the reactor oversight process, there's much  
20 of the reactor oversight process that is not risk-  
21 informed. As other considerations, many of the  
22 cornerstones are not risk-informed. In fact, the  
23 emergency action levels, we even measure how many  
24 people passed exams to be a part of the emergency  
25 response force.

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1           Take the fatigue rule. Some would argue  
2 the fatigue rule is not necessarily -- so there's much  
3 of our process, including this PI here -- much of our  
4 process is not reactor oversight process. You know,  
5 the reactor safety cornerstone is the most risk-  
6 informed, but the further you get away from reactor  
7 safety cornerstone, the less risk-informed it is in  
8 the reactor oversight process.

9           CHAIRMAN RYAN: Well, maybe that's a good  
10 area to question, well, it's not risk-informed for  
11 what reasons and in what way it shouldn't be risk-  
12 informed. Should it be in or out? You know, those  
13 kind of things I think are all part of what I'm trying  
14 to suggest, and it's got to be a systematic review of  
15 all these kinds of things.

16           MEMBER ARMIJO: But it can be. This  
17 particular indicator can be risk-informed.

18           CHAIRMAN RYAN: Right.

19           MEMBER ARMIJO: And it's amenable to that,  
20 so --

21           CHAIRMAN RYAN: That's kind of what I'm  
22 suggesting.

23           MEMBER ARMIJO: You know, what I worry  
24 about is to change the performance indicator to be of  
25 a leading indicator at levels of risk, radiological

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1 risk much lower than, well, basically below zero, what  
2 do you do with that? You know, what practical thing  
3 do you do with that? Can it lead to violations when,  
4 in fact, there's, you know, there's really no risk to  
5 health and safety? I think --

6 MR. CASTO: I also -- I'm sorry.

7 MEMBER ARMIJO: You know, we've seen as  
8 people come with plant life extensions and power up-  
9 rates and new plant designs, there's a lot of concern  
10 in the industry that I see. I'd pay much more  
11 attention to buried piping and the design of piping  
12 and the materials for piping.

13 So I think the voluntary -- it's just good  
14 business not to have a leaky, poorly maintained plant,  
15 even if it's outside of the safety system. It just  
16 makes sense, and people weren't really sensitive to  
17 that as much as they are today in the past.

18 I'd like to know more about the NEI  
19 program -- you're going to talk about that -- and just  
20 wonder how that could be used in a way that reaches  
21 your objectives but doesn't try and make public  
22 confidence a performance indicator in itself, because  
23 who'd the public?

24 A national vote is probably the only thing  
25 I would accept, because there is so -- we sample such

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1 a tiny part of the American public when we talk about  
2 public opinion, and I think a lot of that public, many  
3 of them have agendas. Some of them have open minds.  
4 Others don't, and so it's hard to say, "Hey, are we  
5 really responding to a small group, or are we  
6 responding to the general feelings of the American  
7 public?" and that's hard to do.

8 MR. CASTO: I think that, you know, our  
9 mission statement of protecting the environment, many  
10 of those members of the public have challenged this  
11 that you're not really protecting the environment.  
12 You're protecting people from the environment.

13 MS. LUND: Right, but I wanted to make a  
14 comment, too. You know, what I was talking about is  
15 things evolve. You know, one of the things that did  
16 evolve in that area, I think there was a recognition  
17 that there was this concern about how much active  
18 management has taken place with these systems.

19 It isn't so much that we've tripped this  
20 performance indicator or other things going on, but,  
21 you know, there is a concern that there may be these  
22 leaks, and how much do we know about them? We started  
23 out with the buried piping initiative, but it was very  
24 narrow as far as its scope.

25 Now, what has happened since the review

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1 that Chuck's group did and where we are now is they've  
2 expanded that particular initiative, so it covers  
3 everything that's underground, you know, the piping  
4 and tanks, and it's no longer just the buried piping,  
5 meaning -- and I hate to steal your thunder here, Bob,  
6 but, you know, the piping that's in contact with the  
7 soil, but basically it's, you know, the underground  
8 piping, as well, so it's all these particular system  
9 structures and components that we're concerned about.

10 So I think that there has been a  
11 recognition that, you know, we do have to show -- you  
12 know, the industry needs to show active management of  
13 all these things to make sure that they can have that  
14 discussion with all their stakeholders as a result. I  
15 think Bob's going to touch on that a while, but I did  
16 want to make that point while we were here.

17 MR. CASTO: Louise, can I make one more  
18 point about the performance indicator?

19 MS. LUND: Sure.

20 MR. CASTO: The purpose of the performance  
21 indicator reality is the direct NRC resources. If  
22 performance indicator crosses a threshold and there is  
23 a white performance indicator, that means a 94001  
24 inspection, which means the NRC is going to go take a  
25 look at it. Staff's going to go take a look at this

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1 issue.

2 So the performance indicator is really to  
3 direct staff resources. Is this an area we care  
4 enough about to do more work than what the baseline  
5 inspection program would have us do? So it's, you  
6 know, that performance indicator is not there  
7 necessarily to give public confidence, although we  
8 make it transparent to them so they can see what's  
9 going on at the reactor. It's merely to direct NRC  
10 resources, and is this --

11 Because the baseline program, you know,  
12 there's nothing really in the baseline program, we  
13 monitor this performance indicator to say, "Hey,  
14 there's nothing in the baseline program to go look at  
15 this, but if they trip this performance indicator,  
16 send somebody out there to take a look at it." So I  
17 just want to make sure we're clear on what the purpose  
18 of the performance indicator is.

19 MEMBER ARMIJO: Okay. I appreciate that.

20 Thank you.

21 MS. LUND: The other -- I just want to  
22 make one more point. As I was listening to all this  
23 conversation, it triggered another comment, which is  
24 communicating risk, okay, to the public, you know, and  
25 I think as we've transitioned to some of these areas

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1 being risk-informed and just trying to get that  
2 concept, you know, in the minds of the public, we had  
3 stakeholders in this meeting that we had, public  
4 meeting, telling us that this really doesn't resonate  
5 well, and I think Chuck in the public meetings he's  
6 had, as well, when they were doing the Groundwater  
7 Task Force Report, is that really is the really large  
8 challenge.

9           It's a challenge for industry. It's a  
10 challenge for us to be able to communicate that in a  
11 way that really is well understood and resonates with  
12 the people that you want to communicate this issue to,  
13 and the fact that a lot of these concepts -- in fact,  
14 industry, they did their own survey and had that  
15 communicated to them.

16           So that's one of the things that we're  
17 also looking at as far as communication strategies. I  
18 don't want to steal Margie's thunder, but, you know,  
19 in our communication councils what really do we need  
20 to take away from that as far as the recommendations  
21 of the report and how to best address those things,  
22 because that does concern us if we're communicating in  
23 a way that really does not -- is not well received by  
24 the intended audience. Anyway, having said that,  
25 those were the two things that I wanted to follow up

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1 with.

2 CHAIRMAN RYAN: Okay.

3 MS. LUND: I was going to go ahead to the  
4 next --

5 CHAIRMAN RYAN: Back to your slides.

6 MS. LUND: -- one if that's okay, and  
7 that's the immediate -- and I think you segued very  
8 nicely into that, which this is an area that FSME is  
9 working on right now, and this is -- they're  
10 developing a technical basis to address the need for  
11 immediate remediation, and --

12 CHAIRMAN RYAN: Maybe we could have your  
13 slides back up on the TV monitors, please. It's not  
14 you.

15 MS. LUND: Okay.

16 CHAIRMAN RYAN: It's somebody back there  
17 that has to do it.

18 MS. LUND: That's what I said. Do I need  
19 to push a button? I can do that.

20 CHAIRMAN RYAN: Who knows what might  
21 happen?

22 MS. LUND: Yes. Last time I had them, it  
23 was blank.

24 MEMBER POWERS: Actually, it's kind of  
25 cool. We need two on the sides standing with you,

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1 perhaps.

2 CHAIRMAN RYAN: It still beats a  
3 conference call at the Atlanta airport.

4 MS. LUND: So if there's -- and this is  
5 the schedule for doing it. We have Vince Holahan back  
6 there, and I think Jim Shepherd was going to come, as  
7 well, if you have any questions specific to that.  
8 Paper two, Margie is going to discuss that in her  
9 presentation after the presentations by Richard and  
10 Bob, so --

11 What are our next steps? Our next steps,  
12 we're finalizing the SECY papers by putting them  
13 through the concurrence process, and we're getting a  
14 lot of good discussion and comments internally, as you  
15 can well imagine, with a target date to the Commission  
16 by January 21, and the papers will be submitted in  
17 preparation for a Commission meeting that will be held  
18 on February 24.

19 So unless you have any other questions, I  
20 think probably a lot of the things that you're curious  
21 about will be probably answered by the presentations  
22 by Richard and Bob.

23 CHAIRMAN RYAN: Great. That's terrific.

24 MS. LUND: So I'll turn this over to  
25 Richard as soon as I figure out how to --

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1 CHAIRMAN RYAN: I'll tell you what. We're  
2 scheduled for a break shortly, and rather than  
3 interrupt you in just a few minutes, Robert, why don't  
4 we take our scheduled 15-minute break now and  
5 reconvene right at 3:00? That way we won't be  
6 interrupting you.

7 MS. LUND: And I can figure out how to  
8 change presentations, too.

9 CHAIRMAN RYAN: Do all the electronic  
10 stuff and be ready, so we'll adjourn the meeting now  
11 for 15 minutes and reconvene at 3:00.

12 MS. LUND: Great, thanks.

13 CHAIRMAN RYAN: Thank you.

14 (Whereupon, the above-entitled matter went  
15 off the record at 2:43 p.m. and resumed at 3:04 p.m.)

16 CHAIRMAN RYAN: We had one comment from a  
17 representative from NEI. Ralph Anderson, would you  
18 like to offer your comments? Thank you.

19 MR. ANDERSEN: This is Ralph Andersen from  
20 Nuclear Energy Institute. I just wanted to correct  
21 one comment that was made specifically about the  
22 decommissioning costs at Connecticut Yankee.  
23 Actually, that was evaluated as part of the technical  
24 basis for the decommissioning planning rule by the  
25 staff. They did look at the experience with

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1 decommissioning and increases associated with site  
2 contamination.

3 I'll throw numbers, too. They'll probably  
4 be slightly wrong, but they're in the right ballpark.

5 I believe the increased cost associated with  
6 contamination at the site was about \$20 million. I  
7 don't think it was billions of dollars, and that  
8 represented about a five to seven percent overall  
9 increase in the decommissioning cost.

10 It did not double the decommissioning  
11 cost, which I think was somewhere around \$325 million.

12 Our baseline decommissioning funding is on the order  
13 of \$300 million to \$400 million per site. That's what  
14 goes into these decommissioning funds, so it was a  
15 very small incremental increase in the overall cost.  
16 The money was obtained, and the decommissioning was  
17 completed successfully.

18 CHAIRMAN RYAN: Okay. Thank you.

19 MEMBER ARMIJO: Okay, as long as I have  
20 you, let me ask you a question.

21 MR. ANDERSEN: Okay.

22 MEMBER ARMIJO: A quick question. In the  
23 event, and it may never happen, that you wouldn't -- a  
24 utility or an owner wouldn't spend -- have to spend  
25 all of its decommissioning funds to actually perform a

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1 satisfactory decommissioning, what happens with the  
2 unused funds?

3 MR. ANDERSEN: First of all, I'm not sure  
4 explicitly except to know that it is different for  
5 each regulated situation.

6 MEMBER ARMIJO: Okay.

7 MR. ANDERSEN: By regulated I mean by  
8 public utility commissions and things like that.

9 MEMBER ARMIJO: So --

10 MR. ANDERSEN: I believe that it ranges  
11 from in some cases it actually reverts back to the  
12 coffers of the entity doing, you know, responsible for  
13 the decommissioning, and in other cases in effect it's  
14 supposed to be somehow factored back to the rate  
15 payers and everything in between. I've looked into  
16 that question, and my understanding is it's different  
17 in just about every situation.

18 MEMBER ARMIJO: Okay. Okay. I was just  
19 thinking about an incentive to make sure that the  
20 decommissioning costs are minimal, and if you had a  
21 really clean site and maintained all your piping so it  
22 wasn't leaking, no contamination, that would -- some  
23 of the reward would go back to the operator or the  
24 owner.

25 MR. ANDERSEN: Yes, and I think that it's

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1 very limited in which money actually reverts back to  
2 the operator.

3 MEMBER ARMIJO: Okay.

4 CHAIRMAN RYAN: All right. Thank you.

5 MEMBER BLEY: What --

6 CHAIRMAN RYAN: I'm sorry. I was going to  
7 make one clarifying question. Go ahead.

8 MEMBER BLEY: Okay. If Louise is done, I  
9 wanted to ask her a couple questions.

10 CHAIRMAN RYAN: Please, sir, yes.

11 MEMBER BLEY: For your open meetings, and  
12 maybe more generally for any of the ones we have here,  
13 but this one is of a highly charged issue, do people  
14 from -- staffers from the Hill or Congress folks ever  
15 come down to the public meetings you have?

16 MS. LUND: I know that certainly in  
17 license renewal they do, but for this particular one  
18 do you remember, Margie, if we had any?

19 MS. KOTZALAS: No.

20 MS. LUND: No. No.

21 MR. HARDIES: Had the GAO.

22 MS. LUND: GAO came. Thank you.

23 MEMBER BLEY: And everyone who comes was  
24 associated with some stakeholder organization, or were  
25 there independent people coming to these meetings,

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1 too?

2 MS. LUND: You know, I think we have  
3 occasionally some that come that are independent, even  
4 though when they sign in, if they put an affiliation  
5 down, then we know. Sometimes, you know, we don't  
6 know if they're unaffiliated.

7 MEMBER BLEY: Okay, but mostly they're --

8 MS. LUND: But interestingly, you know,  
9 there were people on the line, telephone line, as  
10 well. We had set up a telephone conference line for  
11 that, and some of the people that were on the  
12 telephone conference line thanked us for providing  
13 that. We also had web-streamed it, as well.

14 So I have not gone back and asked for any  
15 of the statistics, but I know that there were people  
16 out there in the ether, and, you know, some people  
17 actually, you know, said they were very happy that we  
18 had done that, and, of course, we provide that as a  
19 service for just that reason. It's also archived, so  
20 for people who weren't able to do it that way, you  
21 know, they could also go back later on and do it.

22 MEMBER BLEY: The webcast event is --

23 MS. LUND: Right, and we also put the  
24 slides up. We put the transcript up. We transcribed  
25 it, as well, so all of this information is available

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1 on our public website, so if anybody wanted to --  
2 didn't have time that day or found out about it after  
3 the fact and wanted to take a look, they are able to  
4 do that, as well.

5 MEMBER BLEY: Were there discussions about  
6 the actual health hazard of groundwater contamination  
7 to people or hazards to, actual hazards to ecosystems  
8 in these, or is it pretty much policy-focused?

9 MS. LUND: You know, it was both. You  
10 know, I think that depending on the situation, you  
11 know, there was a desire on the part of some  
12 stakeholders to have no leakage from any pipes onsite.  
13 You know, there are some that believe that plants  
14 should run in a leak-tight situation.

15 There is -- I think that even though you  
16 say that it's within the limits, you know, there are  
17 folks that would really desire that it be well below  
18 those limits, in fact, not even detectable, you know.

19 You see a range. You see a range of --

20 We actually binned all the comments that  
21 we got. You know, we had the transcription, as well  
22 as the written comments, and it was a wide range of  
23 desire to see various things happen.

24 MEMBER BLEY: Just one question more along  
25 these lines. If there hadn't been any leakage from

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1 the buried pipes, the effluents still were headed to  
2 waterways of some sort. Were there arguments about  
3 that, as well, or is that pretty much accepted, and is  
4 it just the --

5 MS. LUND: That's the interesting part is  
6 that -- probably Richard can probably speak to you  
7 even better than me, but, you know, since the plants  
8 are licensed, you know, through Part I as far as the  
9 effluent levels, you know, there is, you know,  
10 effluence in liquid and in the air, and, you know,  
11 there was no one that came in and said, you know,  
12 specifically those are the wrong limits that they're  
13 licensed to or anything that. It was very focused  
14 towards, I think, what was discussed earlier, which is  
15 the surprise aspect of it.

16 MEMBER BLEY: The loss of control.

17 MS. LUND: Yes, I think it's more of the  
18 sense of we don't know necessarily what's going on.  
19 Well, not we, but, you know, the operators don't  
20 necessarily know what's going on and the perception of  
21 that.

22 MEMBER BLEY: That helps me a lot. Thank  
23 you.

24 MEMBER ARMIJO: Louise, did they realize  
25 that these effluents would be discharged? The same

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1 people who are so concerned about the piping, did they  
2 even recognize leaking pipes? Did they even  
3 understand that, you know, this stuff is going  
4 somewhere, and it's going to be discharged within  
5 regulatory limits? Did that --

6 MS. LUND: We did -- let me just --

7 MEMBER ARMIJO: I suspect a lot of people  
8 don't know where this --

9 MS. LUND: Right, and that's the context  
10 of trying to write the papers in a way that explains  
11 context to a lot of these things, because I know we  
12 have tried to be very clear in the papers about issues  
13 like that.

14 The context of the public meeting we had  
15 was to invite public comment, so what we didn't try to  
16 do was do a point-counterpoint, because we didn't want  
17 to have a chilling effect on people providing their  
18 information or comments or perspectives.

19 We wanted to hear what their perspectives  
20 were, and so, you know, I think that as we digest all  
21 of this, you know, our opportunity to speak within  
22 these papers hopefully will help at least explain why  
23 we have come to the thought process we have.

24 CHAIRMAN RYAN: Just one other just  
25 clarification for everybody's benefit, we talked a lot

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1 about tritium in the context of these recent leaks,  
2 leaks that are detected during decommissioning and so  
3 forth. That's not the only radionuclide that's shown  
4 up. I mean, others have. Cesium and strontium in  
5 particular have been probably two of the more primary  
6 ones.

7 It's fortuitous, I guess, that tritium has  
8 a very high concentration from a drinking water  
9 perspective, and cesium and strontium are quite a bit  
10 lower by orders of magnitude than tritium, and they  
11 have different characteristics of how they move around  
12 and do all that stuff, too, but I just wanted to make  
13 it clear for the record that tritium isn't the only  
14 radionuclide that's of interest in this arena.

15 MS. LUND: That's a very good point to  
16 make.

17 CHAIRMAN RYAN: Thank you. Let's see. I  
18 think next up will be Richard.

19 MR. CONATSER: Mr. Chairman, Committee  
20 Members, thanks for taking the time to listen to what  
21 we have to say. We certainly do appreciate being here  
22 today. My name is Richard Conatser. I'm here to talk  
23 about the health physics aspects of the groundwater  
24 protection issues that we've been talking about. I've  
25 got a brief outline here of what I'll be covering for

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1 the next ten or 12 minutes or so.

2 First of all, I have a few things to say  
3 about the historical perspective just so we can put  
4 everything, perhaps, in the right frame, start off  
5 from a common viewpoint. Then we'll talk about the  
6 Groundwater Protection Initiative, the NEI 07-07, and  
7 then I'll kind of backtrack a little bit to the  
8 component parts of this whole issue.

9 I know there's been lots of discussion  
10 about what this is, what we've been talking about,  
11 radionuclides in groundwater, and I'm going to talk  
12 briefly about how to -- one way to look at that, and  
13 then we'll talk about strategy and the regulatory  
14 framework, the NRC review of the Groundwater  
15 Protection Initiative, how the licensees have fared  
16 with that, and then I'll do a summary of the health  
17 physics issues, and then we'll go over and send it  
18 over to Bob, who's got the buried pipe and underground  
19 piping issues.

20 Okay, historical perspective. This all  
21 pretty much started with a few plants, several issues  
22 at several sites. Braidwood, Salem, Indian Point were  
23 really some of the ones that really kicked it off.  
24 These were basically in the 2005 time frame. Salem  
25 was a little bit earlier, 2003, but at that time these

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1 issues were cropping up, and we knew we needed some  
2 prompt response.

3 So the NRC had the inspections that we  
4 could do, the NRC inspections at the sites, and that  
5 was one way to deal with this. We also had the  
6 deviation memos we could do for prompt response to  
7 these issues, but we also needed prompt guidance at  
8 the time.

9 So at the time, rule-making was not  
10 pursued. We knew that was a potential long-term  
11 solution, but it was just that, and we were very early  
12 into the process, and, of course, there was additional  
13 impediments to rule-making there, and that is the low  
14 safety significance of the leaks that we had seen.  
15 You know, did it really rise to the level of doing  
16 additional rule-making? So there was a lot of  
17 questions to be asked at that point.

18 So the NRC did issue Information Notice  
19 2006-13, and that's for groundwater contamination due  
20 to underground leakage of radioactive water, to  
21 provide some perspective on the issue, and, of course,  
22 then NEI in 2006 put out their voluntary industry  
23 initiative, the NEI 07-07, which is the Groundwater  
24 Protection Initiative.

25 It was drafted in May of 2006. The final

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1 came out in August of 2007, and I believe there was  
2 one version in between that time, so it was kind of a  
3 work in progress for a period of time there, but it  
4 had two main objectives there, I guess.

5 One was to improve the management of  
6 inadvertent releases. That was action one of the  
7 Groundwater Protection Initiative, and there were  
8 several objectives underneath that. I've got them  
9 listed here.

10 The site hydrology and geology, the NEI  
11 initiative said licensees should look at their site  
12 hydrology and geology and understand it, and then they  
13 should also look at their risks to their systems  
14 onsite and whether or not there is a potential for  
15 them to leak, and those with a high potential for  
16 leakage then should go to the top of the list for  
17 being addressed.

18 It also talked about groundwater  
19 monitoring, so all licensees now have groundwater  
20 monitoring onsite. It talked about remediation and  
21 the process for remediation and written guidance for  
22 remediation.

23 It also talked about record-keeping, and  
24 it had a separate objective there for program  
25 assessment. As part of the NEI initiative it has

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1 built into there some self-assessments that are done  
2 both by the industry, by the site itself and then by  
3 NEI coming in, bringing a team, and looking at the  
4 site program.

5 So that was the first, the first action  
6 there, improving management of inadvertent releases.  
7 The second one is to improve communication with  
8 stakeholders.

9 MEMBER BLEY: Are all plants participating  
10 in that program?

11 MR. CONATSER: Yes. This NEI initiative,  
12 that was -- that went to the NSIAC Committee, and I  
13 don't remember the acronym right now, to tell you the  
14 truth, but that's all of the power plant senior  
15 executives, basically, and this was passed with  
16 unanimous agreement, and all sites have implemented a  
17 -- implemented the NEI 07-07.

18 MEMBER BLEY: I didn't realize that.

19 MR. CONATSER: And it requires them to  
20 have a written program, by the way, and has these  
21 objectives I'm going over now.

22 MEMBER BLEY: Okay.

23 MR. CONATSER: The second one, the second  
24 action in the NEI initiative is to improve  
25 communication with stakeholders, and some of the

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1 objectives underneath that action are that the  
2 licensee should conduct stakeholder briefings.

3 That means they need to talk with the  
4 local authorities and let them know what's been going  
5 on at the site and come to agreement on what the  
6 locals think is important and at what level  
7 communication should begin should something occur at  
8 the site to get the dialogue rolling before there is  
9 an issue.

10 It has an objective on voluntary  
11 communications, meaning if you have a leak onsite,  
12 under what criteria, then, do you report it to the  
13 local officials, the state officials, and the federal  
14 officials?

15 It talked about 30-day reports and annual  
16 reports, and, of course, the NRC has requirements for  
17 LERs, 30-day reports, and annual reports, but it  
18 didn't necessarily require that all of these very low-  
19 level tritium leaks be included, and now the NEI  
20 initiative now goes beyond the regulatory requirement.

21 What we thought was adequate protection as far as the  
22 NRC, the NEI initiative kind of dropped the bar on  
23 that, and even incidents of a lower-level would need  
24 to be included in reports.

25 So, as a result of the Groundwater

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1 Protection Initiative and other actions that have been  
2 taken, industry is monitoring communications have  
3 improved. That's fair to say, but still gaps do exist  
4 in the implementation of this, and I'll get to that in  
5 just a second.

6 Before we get into that, though, let's --  
7 in the movies they do these flashback things where  
8 every once in a while you flash back to something  
9 else. Well, that's what I'd like to cover here. You  
10 know, in looking at this issue now that it came up and  
11 had a lot of interest in 2006, and there's been a lot  
12 of action since then, we're still kind of in the  
13 formulative stages of all of this.

14 It's still early in the game, but when you  
15 really look at this, you know, in math or algebra or  
16 complex variables or whatever you have, you like to  
17 separate your variables, and, you know, if you have  
18 three unknowns, you need three equations to solve it,  
19 right, so you've got to know what your unknowns are,  
20 and that's what this kind of does, the different  
21 component parts of this issue, and this is one way to  
22 slice and dice this.

23 The first one, engineering. That's to  
24 prevent and mitigate the source. We have tanks,  
25 pipes, and valves that leak. We have industry

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1 practices that may cause spills or whatever, so that's  
2 one big category of thing when you look at this issue  
3 that has a lot of things attached to it.

4 The second one is once you have pipes that  
5 leak, then you've got to look at the health physics  
6 aspects, and that is the monitoring and protection, so  
7 that's really monitoring the after-effects of the leak  
8 or the spill. It ensures there is adequate protection  
9 of the public, and as it turns out, the doses from  
10 these groundwater spills and leaks that we've seen  
11 thus far have had low dose consequence.

12 So the actual health impacts above those  
13 associated with activities we normally consider safe  
14 are not expected, so from a health physics perspective  
15 --

16 CHAIRMAN RYAN: Just to be clear, are you  
17 talking about calculated doses or actual doses?

18 MR. CONATSER: Calculated doses.

19 CHAIRMAN RYAN: Okay.

20 MR. CONATSER: Exactly.

21 CHAIRMAN RYAN: I want to make sure the  
22 record is clear you're not talking about measured  
23 doses to people. You made estimates of theoretical --

24 MR. CONATSER: That's a good point.

25 CHAIRMAN RYAN: -- residences and all of

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1 that.

2 MR. CONATSER: Yes, in many cases, you  
3 know, you can't measure these doses, they're so low.  
4 They're so low that you can't measure them, so you  
5 have to do it by numerical calculation to see what the  
6 dose would be, and those are theoretical doses.  
7 You're exactly correct.

8 CHAIRMAN RYAN: Thank you.

9 MR. CONATSER: And then the last part of  
10 this, the third part, this trifecta, whatever you want  
11 to call it, the environment. This is what is kind of  
12 below regulatory -- I don't want to use those words --  
13 what is below a threshold, below a threshold. What  
14 constitutes a good steward of the environment,  
15 basically?

16 So it's a lot of comments that you will  
17 hear about, "Well, you know, the NRC says it's below -  
18 - the doses are low, and there's not a safety  
19 significance," but that doesn't mean that people  
20 aren't concerned, so there's always a level of, you  
21 know, what is being a good steward, and at what --  
22 where do you draw this bar?

23 Now, the NRC has to draw it at adequate  
24 protection of the public, and I think that was Dr.  
25 Armijo's question earlier, right?

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1                   MEMBER ARMIJO:   That's where I draw the  
2 line.

3                   MR. CONATSER:   So, you know, and we have  
4 the legislative authority, you know, to draw that line  
5 for adequate protection, but then again there are lots  
6 of people who want that bar to be dropped lower, and I  
7 think a lot of the discussion goes there.

8                   CHAIRMAN RYAN:   And I think there's a  
9 second part of it that's tied into the ALARA  
10 principles, as low as reasonably achievable, and it  
11 all -- its one magic word in the middle is reasonably.

12                  MR. CONATSER:   Right.

13                  CHAIRMAN RYAN:   So it's a question of, you  
14 know, what can you reasonably do, and that's -- you  
15 know, what's reasonable to one may not be reasonable  
16 to another, and that's really where I think a lot of  
17 that conversation that you're alluding to gets  
18 focused. Would you agree?

19                  MR. CONATSER:   I agree totally. I mean, I  
20 think that's an important thing to remember there, but  
21 if you look at it in these three, with these three  
22 things in mind, generally almost all the things that  
23 you hear at public meetings or any issue related to  
24 this falls under one of these categories.

25                  If you keep them separated that way, I

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1 think the conversations become a little bit clearer,  
2 because we might say, for example, in health physics,  
3 "The doses were low. Therefore, you know, there is  
4 adequate protection of the public." I think some  
5 people hear that statement and say, "Well, you mean  
6 it's okay for pipes to leak."

7 Well, that's a separate issue, so Bob will  
8 talk about pipe leaking issues after I finish with the  
9 health physics aspects, but you've got to keep your  
10 mind on these three different items here as I go  
11 through this presentation, because that's kind of the  
12 way I constructed it.

13 Now, one other thing that goes above and  
14 beyond that trifecta, those three things, the last  
15 thing you've really got to do is to communicate all  
16 those points. You can do a real good job at health  
17 physics, but if you don't communicate it well, you  
18 haven't really finished the job.

19 Okay, so the strategy and regulatory  
20 framework. The strategy, there's a short-term  
21 strategy and a long-term strategy. The short-term  
22 strategy will continue. The NRC will continue to do  
23 the inspections and the oversight, will assess the  
24 implementation of the voluntary initiatives, and that  
25 will involve NRC inspections, NRC temporary

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1 instructions to verify implementation of the  
2 initiatives, and then there is also industry  
3 independent assessments of the voluntary initiatives  
4 that are being done.

5 We'll also in the short-term determine the  
6 effectiveness of the voluntary initiatives, and right  
7 now we looked at the effectiveness of the first  
8 initiative, the Groundwater Protection Initiative.  
9 I'll talk to that in the next slide, but eventually  
10 there will be a determination of the effectiveness of  
11 the buried pipe initiative and then the underground  
12 piping and tank initiative.

13 So we'll look at the effectiveness of  
14 those industry voluntary initiatives, and then the NRC  
15 will identify any gaps in the effectiveness there,  
16 because you may implement all aspects of an  
17 initiative, but it's not being very -- if it's not  
18 being very effective to reduce the overall number of  
19 leaks or improve confidence, then we have to look at  
20 the effectiveness of what's been done.

21 The long-term strategy is, well, we're  
22 going to take a look and see what turns out with the  
23 short-term strategy, but based on the gaps that come  
24 up, we'll evaluate the need for additional regulatory  
25 action.

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1           Okay, the assessment of the voluntary  
2 initiative. We did write up -- we have -- we do have  
3 a temporary instruction, TI-2515/173. The name of  
4 that temporary instruction is Review of the  
5 Implementation of the Industry Groundwater Protection  
6 Initiative.

7           So the NRC wrote that temporary  
8 instruction two years ago, a little over two years ago  
9 now, and the NRC went to all the sites to see how they  
10 measured up to the elements in the NEI 07-07. It  
11 turns out all power plants had a Groundwater  
12 Protection Initiative, a written plan for that, just  
13 as what you had asked earlier. Sixty-three percent of  
14 the sites had implemented all aspects of it.

15           Remember, what we had done here was really  
16 kind of a qualitative assessment, but based on the  
17 results that we had, we have a semi-quantitative  
18 number we can come up with here. It's about two-  
19 thirds. About two-thirds of them had implemented all  
20 42 individual tasks that are identified in the NEI  
21 Groundwater Protection Initiative.

22           But there were gaps in some tasks at about  
23 37 percent of the sites, and that means they could  
24 have missed just one of those 42 tasks and been in  
25 this category. What we did was say, "Okay, well, take

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1 a look and see what the most frequently -- the most  
2 frequent task that was not performed fully," and I  
3 listed them here.

4 The site component risk assessment, the  
5 assessment of the components onsite that were at risk  
6 for leaking, those were not completed at all sites.  
7 The remediation process, the stakeholder briefings,  
8 and the NEI independent assessments, those four items  
9 were identified as the most frequently not completed.

10 Now, I will say I think you'll notice  
11 there on that NEI independent assessment it says that  
12 now is corrected. Remember, this TI, this temporary  
13 instruction process that the NRC implemented was a  
14 two-year process, so over the two years from the start  
15 to the finish, we just reported which plants at that  
16 time had not completed all aspects. After we finished  
17 the initiative, obviously, things are evolving as we  
18 go along, so now all licensees have completed an NEI  
19 independent assessment of their initiative at their  
20 site.

21 MEMBER BLEY: Richard, can you give us a  
22 little more structure to those 37 percent of the  
23 sites? Are most of them only missing one or two  
24 things, or is it some of them missing most of it?

25 MR. CONATSER: The way that works is

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1 usually, usually, when something is missed, it is in  
2 like one small category, one objective. Underneath  
3 one objective you might have six or seven tasks under  
4 one objective, so normally if they miss one, it's  
5 usually under one objective. Now, there are a few  
6 sites that have missed more than one objective, but  
7 that's not extremely common.

8 MEMBER BLEY: Okay.

9 MR. CONATSER: But, yes, normally it will  
10 be isolated to one objective, sometimes two, and I  
11 don't think any plant had more than three, maybe.

12 MEMBER BLEY: When you say remediation  
13 processes, does that mean have the process in place or  
14 actually do some remediation?

15 MR. CONATSER: A written -- a written  
16 process to determine how they were going to remediate.  
17 See, a lot of licensees know intuitively, I think,  
18 how they are going to remediate, but I think the NEI  
19 initiative wanted them to, you know, document this,  
20 write it down, know what your process would be so that  
21 if you would have this you could immediately go to  
22 that process.

23 MEMBER BLEY: Okay.

24 MS. LUND: In talking about the timing  
25 issue, because they're also being assessed by, you

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1 know, NEI, as well, and also INPO has looked at this,  
2 as well, you know, some of this has to do, as Richard  
3 was saying, sort of with the timing.

4 We're doing it when it's convenient for  
5 us, you know, I mean, as far as trying to make sure  
6 that we cover all of them in all four regions in doing  
7 this, but, you know, I think that's one aspect of it,  
8 as well, and Richard will tell you how we're going to  
9 follow up with that.

10 MR. CONATSER: Any of the gaps, any time  
11 we saw where they were not implementing the  
12 initiative, those were entered into the licensee's  
13 corrective action process, and in many cases they  
14 recognized before the NRC got there in some cases  
15 that, yes, they had not implemented this, so those are  
16 entered in their corrective action process, and now on  
17 subsequent NRC inspections we'll be checking on those  
18 to close those gaps.

19 You know, there is talk about how we will  
20 be doing that, whether or not we'll be doing that  
21 under the baseline inspection, whether we'll reissue  
22 the temporary instruction for another go-around.  
23 There's lots of discussions on exactly how the  
24 mechanics of that will proceed, but we will look at  
25 those gaps nonetheless.

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1 MEMBER ARMIJO: You mentioned INPO. What  
2 is their role in this program, this voluntary program?

3 MR. CONATSER: INPO?

4 MEMBER ARMIJO: Yes.

5 MR. CONATSER: INPO doesn't have a part,  
6 really, in the Groundwater Protection Initiative, per  
7 se. Now, I know that for the buried piping aspect of  
8 it, they go in and do inspections for the buried pipe,  
9 and so they have a bigger part of it from that  
10 perspective, but they haven't really jumped in on this  
11 part, the Groundwater Protection Initiative.

12 MEMBER ARMIJO: Does NEI maintain a  
13 program manager for this voluntary program and a  
14 period assessment and report to the --

15 MS. LUND: They do have a project manager.  
16 In fact, they would probably be able to tell you  
17 exactly who that is.

18 MR. ANDERSEN: The answer is yes.

19 MEMBER ARMIJO: Okay.

20 MR. ANDERSEN: Cathy.

21 MR. CONATSER: Is that Cathy? Okay.  
22 Thank you. Okay, so the gaps will be entered in the  
23 corrective action process, and we will continue to do  
24 oversight inspection to close these gaps.

25 Now, in summary, basically, then, for the

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1 health aspects -- next slide. For the summary, the  
2 health physics aspects, then, health physics, that  
3 part of it is to monitor and protect, make sure they  
4 have monitoring in place to detect early detection of  
5 the leaks when they do occur. Adequate protection of  
6 the public is one of the NRC's missions there.

7 So far, these items have had low safety  
8 significance, and if you calculate the dose, the  
9 calculated doses from this, if you look at the risk  
10 aspects of it, the risks would be similar to those  
11 tasks that we consider safe in everyday life,  
12 basically, so we haven't had a big issue.

13 Yet, additional staff actions will be  
14 taken to improve transparency, and one of the things  
15 we've done just recently, as a matter of fact, is to  
16 post an NRC summary of the licensee's annual effluent  
17 reports. We post those now on the NRC web page to  
18 improve the transparency there about what the  
19 effluents really are, and there's other actions there  
20 to improve transparency, as well.

21 We'll continue to assess the industry  
22 initiatives and close the gaps, and then there is the  
23 potential in the long-term here for additional  
24 regulatory action, but we're going to -- you know,  
25 we're still early in the process here. We're going to

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1 wait and see how these other initiatives play out and  
2 how effective they will be.

3 Even though the doses have been low so  
4 far, we do want to ensure the doses are ALARA, just  
5 like what Mike said earlier, and to do that we need to  
6 reduce the leaks at the source, which means -- which  
7 means we need to look at the pipes, the tanks, and the  
8 components.

9 In order to do that, we'll take a look at  
10 these voluntary industry initiatives, the Groundwater  
11 Protection Initiative, the Buried Pipe Integrity  
12 Initiative, and the Underground Tank and Pipe  
13 Integrity Initiative, to help reduce those leaks at  
14 the source. That really gets into the engineering  
15 part of it now, which I think Bob is going to speak to  
16 next.

17 MEMBER BLEY: Before you get there -- I  
18 might have missed it -- how much -- once you've  
19 determined that you've had some leakage, what kind of  
20 responsibility do the sites have over what kind of  
21 time frame to characterize the state of that  
22 contamination?

23 MR. CONATSER: Well, the NRC requires  
24 adequate surveys, so we want -- you know, once they  
25 detect leakage there, then we want to know -- we want

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1 to have some assurance that the public is being  
2 adequately protected, so we want to make sure there is  
3 a few things we want to know.

4 We want to make sure there is no doses  
5 that are going to exceed any of the limits. We want  
6 to make sure the licensee knows when any of this  
7 contamination is going to cross from the site property  
8 to outside the site property, because that needs to be  
9 reported. So those are two things from a regulatory  
10 perspective we're concerned with.

11 MEMBER BLEY: So they have to characterize  
12 where it is and how it's moving and where aquifers  
13 might be, that sort of thing.

14 MR. CONATSER: That is absolutely correct.  
15 That's why they need to do the site hydrology and  
16 geology is to know beforehand, because that takes time  
17 to do that, right. You want to know all that  
18 beforehand.

19 Before you get a leak or a spill, you want  
20 to know the direction of the water flow. You want to  
21 know where the, for example, public drinking water  
22 supplies might be located. You want to know how long  
23 it will take, whatever leak it is, to get to those  
24 areas if, indeed, they are traveling in those  
25 directions, and so, yes.

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1           MEMBER BLEY:    So is that development of  
2 the map of the hydrology, if you will, is that part of  
3 the EPRI program?

4           MR. CONATSER:    Yes, that's one of the  
5 objectives.

6           MEMBER BLEY:    Okay, so everybody is  
7 underway on that?

8           MR. CONATSER:    That's correct, and that  
9 required licensees to bring in licensed  
10 hydrogeologists to do an assessment on their site of  
11 their hydrogeology, and they take a look at  
12 groundwater movement, direction, and flow rates.

13          MEMBER BLEY:    Just an aside, that could  
14 help us with those other issues --

15          CHAIRMAN RYAN:   I recall --

16          MEMBER BLEY:    -- on water showing up  
17 underground.

18          CHAIRMAN RYAN:   Yes, the ACNW went to TMI  
19 and had a presentation on that exact program there,  
20 geohydrological mapping for the island, and, you know,  
21 we had our geohydrologist for the folks, and it was  
22 very informative and, in our view, you know, very  
23 thoroughly done assessment in that case. Then, of  
24 course, there's lots of public documents now on  
25 investigations like that at other sites, so quite a

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1 body of information has been developed on that  
2 particular aspect.

3 MR. CONATSER: Since 2006, you know, since  
4 the advent of this whole issue, really, there have  
5 been a lot of documents put out in the industry. EPRI  
6 has put out some documents on how to look at  
7 groundwater flow and look at transport and the  
8 environment, et cetera, so there have been lots of --  
9 there has been lots of work in this area.

10 MEMBER BLEY: This isn't directed at you,  
11 but let me ask Mike a question. Mike?

12 CHAIRMAN RYAN: Yes.

13 MEMBER BLEY: If, in fact, most people  
14 have done this now -- I don't know if they've actually  
15 done it -- I wonder why on license renewal, when you  
16 ask if people have characterized where the water goes,  
17 why they don't know.

18 CHAIRMAN RYAN: I just was thinking of the  
19 exact same thing, Dennis, so we brought this up, and  
20 it's a question I wanted to pose to Richard and  
21 perhaps Bob and all of you that, you know, we ask  
22 about during plant -- I particularly ask, "What have  
23 you found with your underground piping? Are there any  
24 issues?"

25 In some cases people, "Oh, yes, well, we

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1 did a survey of our piping and made these decisions to  
2 make improvements," and, you know, you hear about that  
3 a little bit, but I wondered if you're capturing in  
4 any integrated way what people are doing during power  
5 uprights, plant license renewals, and other major  
6 licensing actions with regard to these groundwater  
7 questions. We heard anecdotally on a few of them.

8 MEMBER BLEY: It's not just contamination.  
9 It's water showing up in electrical manholes.

10 CHAIRMAN RYAN: That's right.

11 MR. CONATSER: During license renewal, I  
12 mean, they do look at the environmental aspects there.  
13 They look at what's been done onsite, and so --

14 CHAIRMAN RYAN: That's not my question.  
15 My question is are you guys capturing as part of this  
16 task force to see what's going on in a routine way?  
17 I'll give you an example of something that is still  
18 stuck in my mind as something that needs attention.

19 A lot of folks blame water in a manhole as  
20 rain running in when, in fact, it's probably more  
21 likely groundwater coming up, so things like that sort  
22 of, you know, catch your attention, and I wonder if  
23 there's a fruitful area to think about additional data  
24 collections.

25 MR. CONATSER: You mean just looking at

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1 the individual incidents, you mean?

2 CHAIRMAN RYAN: Well, yes, what do -- when  
3 people find --

4 MR. CONATSER: Yes, we do those.

5 CHAIRMAN RYAN: When people find water in  
6 underground systems, whether they're piping or  
7 culverts or culverts carrying piping or double-wall  
8 piping or single-wall piping, whatever it might be,  
9 are you collecting those onsite anecdotal kinds of  
10 reports --

11 MR. CONATSER: Yes, we do.

12 CHAIRMAN RYAN: -- in this context of your  
13 activity today?

14 MR. CONATSER: Yes, we have been looking  
15 at that. As a matter of fact, I keep a list of -- at  
16 least for the last 18 months, I've got a pretty  
17 complete list of a lot of these incidents, what has  
18 occurred.

19 You know, we've even gone as far as, and,  
20 of course, INPO has done this, as well, to bin these  
21 events, whatever you want to call them, into, you  
22 know, what's the cause, what are the components most  
23 often associated with these leaks, because, obviously,  
24 if you know which components are most often the  
25 offenders, then you need to focus your efforts in

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1 those areas.

2 CHAIRMAN RYAN: No, and, again, that's  
3 what's in the pipe. I'm talking about the groundwater  
4 system in which all of this sits. If you're in the  
5 saturated zone, your pipe and water are going to be in  
6 contact. If you're in the unsaturated zone, you know,  
7 obviously you have some kind of a changing groundwater  
8 level and so forth.

9 I think the question that Dennis is asking  
10 is how can -- should, you know, there be a more  
11 sophisticated look at buried underground piping from  
12 the standpoint of what geohydrologic environment is it  
13 in, and does it trigger you to be in the mode of  
14 expecting to address problems down the line and being  
15 proactive against those potential problems, or do you  
16 wait for something to happen?

17 MR. CONATSER: Yes, the Buried Pipe  
18 Initiative is looking at exactly those types of  
19 things.

20 CHAIRMAN RYAN: And how is that integrated  
21 into your overall program?

22 MR. CONATSER: We'll have to look at that  
23 in more detail on how we integrate that.

24 CHAIRMAN RYAN: Because that's the leading  
25 edge of the problem that you're addressing.

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1 MS. LUND: Right, and, you know, the other  
2 --

3 CHAIRMAN RYAN: If that's done right, you  
4 may not have any additional headaches is my point.

5 MS. LUND: The other -- the other thing  
6 that I wanted to mention, too, is I think, you know,  
7 with a lot of these programs being put into place and  
8 evolving in them getting actually data collection  
9 systems underway to put all this together, I think  
10 they have a lot more to draw from at this point that  
11 may not have been there before, you know, because I'm  
12 thinking --

13 CHAIRMAN RYAN: Because I'm sure it's like  
14 drinking from four-inch fire hose.

15 MS. LUND: I'm thinking on license, you  
16 know, specifically in license renewal it takes some  
17 two years to put together an application. You know,  
18 basically a lot of the information they have is, you  
19 know, not necessarily from --

20 CHAIRMAN RYAN: Yesterday's data.

21 MS. LUND: Yes, exactly, so I think that,  
22 you know, I think what we're seeing as, you know,  
23 these initiatives are put together and these various  
24 programs are put together, I know that one of the  
25 things that was communicated to me was the value

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1 across the industry of having some of these databases  
2 put together where they start to understand more  
3 fully, you know, what's going on. So that's what I  
4 offer, I mean, is sort of a thought on this particular  
5 issue.

6 CHAIRMAN RYAN: And, again, I appreciate  
7 the magnitude of the problem. It is -- it is a --  
8 there's a lot of information coming quickly, but by  
9 the same token, you know, it does all address things  
10 going on with the same system. There's a groundwater  
11 system. There's a surface hydrology system, and  
12 there's stuff in it.

13 MS. LUND: Right.

14 CHAIRMAN RYAN: And we're trying to figure  
15 out how all that behaves, so --

16 MS. LUND: In talking about the -- going  
17 back to the idea of the active management part, too,  
18 you know, of course, you can do that a lot better the  
19 more information you actually readily have at hand, so  
20 I think that that's where some of the probably  
21 benefits of, you know, looking at these things, having  
22 these things in their programs where they actually are  
23 looking at these things and have this information at  
24 hand, I think that will give them additional insights  
25 going forward, you know, in that way. Anyway, I just

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1 offer that.

2 MR. CONATSER: I guess one last thing I  
3 will say about this, Mike, I'm not sure if I've  
4 answered your question yet or not, but as part of the  
5 NEI initiative they do look at the individual  
6 components onsite, the systems.

7 For example, in their risk assessment they  
8 will say, "Okay, is this a carbon steel pipe? Is it  
9 in contact with soil? Does it not have any cathodic  
10 protection or coatings?" and if that's all the case,  
11 then that's a high-risk type system.

12 CHAIRMAN RYAN: Yes, we've heard that  
13 scale, you know, that kind of evaluation process for  
14 underground piping and for other things during, you  
15 know, license renewals and other activities, so we've  
16 heard a little bit about that, so I appreciate the  
17 fact that's there.

18 I guess what I'm asking is has somebody  
19 systematically looked at all those reports and  
20 improvements that have come out of license renewals  
21 and plant life extensions to say, "Here's a pattern,"  
22 or, "There is no pattern," or, you know, "We're seeing  
23 a lot of this type of problem with this type of  
24 piping"? I just wonder.

25 MR. CONATSER: I don't have a good answer

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1 for you.

2 CHAIRMAN RYAN: I'm going to guess the  
3 answer is it's, again, back to there's too much coming  
4 so fast. We might have to make that a subset of some  
5 activity, but, you know, that's a potential idea you  
6 might think about as having a real rich source or  
7 stuff to mine to see patterns and areas for focus,  
8 perhaps. Just a thought.

9 MS. LUND: Good insight.

10 MR. CONATSER: That's all I had.

11 CHAIRMAN RYAN: Thank you, Richard.

12 MS. LUND: Are we ready to move to the  
13 next one?

14 MR. HARDIES: Yes, I'm ready.

15 MS. LUND: Okay.

16 CHAIRMAN RYAN: Please, yes.

17 MS. LUND: Let me see if I can actually --

18 MR. HARDIES: I'm Rob Hardies. I'm from  
19 the Division of Component Integrity in NRR, and over  
20 the last 18 months or so I've been shepherding  
21 activities related to buried piping. Those activities  
22 began before this Groundwater Task Force was  
23 empaneled, and so we have activities coming into it  
24 that sort of supplement each other. They're related,  
25 so I'm going to discuss some of them today. Go to the

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1 next slide.

2 Just to begin with the conclusion -- now  
3 go back one slide -- the summary is that our  
4 objectives with respect to buried piping is  
5 maintenance of safety function. You have to deliver  
6 the right amount of water at the right time, and  
7 releases remain below regulatory limits, and the  
8 current regulations and industry activities are  
9 adequate with regard to these two.

10 We're going to continue monitoring what's  
11 going on in the industry, monitoring operating  
12 experience, learning to validate that those objectives  
13 continue to be satisfied, and then along the way we're  
14 going to work to understand the industry initiatives  
15 to see how they're affecting actual rate of leakage.

16 So I'm going to then go into my outline.  
17 I'm going to give some background context, then go  
18 over the Buried Piping Action Plan a little bit,  
19 discuss codes and standards activities that are going  
20 on that impact buried and underground pipe, discuss  
21 our inspections actions and performance assessment for  
22 the industry initiative, and I'm going to repeat those  
23 conclusions I just made, so that last slide will be  
24 relatively quick. So one more slide.

25 Background. We start with Braidwood

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1 having a leak and then a Groundwater Protection Task  
2 Force and then a Groundwater Protection Initiative in  
3 industry and it says, "Find leaks. Drill wells.  
4 Monitor them more often. Lower your threshold, and  
5 then, when you find something, report it to these  
6 people, those people, and those people."

7 So what we have is discovery and  
8 reporting, and the effect of that is they started  
9 finding things, and they started reporting things, so  
10 naturally the stakeholders became aware all of the  
11 sudden that there's lots of leaks.

12 Now, there may not have been more leaks.  
13 They just might have been reported more, but in any  
14 case the natural product of the Groundwater Protection  
15 Initiative is a lot of reinforcement that there is  
16 leakage going on.

17 The staff noticed that leakage. There  
18 were some high-profile events, a lot of stakeholder  
19 interest in 2008, 2009, and it caused some groundwater  
20 contamination. The staff was looking, performing a  
21 kind of collective significance review of those, and  
22 in September of last year the Chairman asked the staff  
23 to do a pretty specific scope of evaluation of buried  
24 piping activities.

25 That was due in December, and between

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1 then, when he tasked us, and in December the industry  
2 created an initiative. They do that by vote of all of  
3 the chief nuclear officers, and they promise  
4 themselves that every utility is going to implement  
5 the aspects of the initiative that the initiative  
6 describes. The initiative had the objective of  
7 reducing the number of leaks in plants.

8 In December we issued a SECY paper that  
9 indicated, again, what our conclusions were, that our  
10 current regulations, codes, standards, and industry  
11 activities were consistent with our goal of ensuring  
12 structural integrity so that the pipe can deliver the  
13 water that's needed when it's needed and ensure that  
14 releases are below regulatory limits.

15 So we issued that paper in December. In  
16 January, Vermont Yankee began leaking into a vault.  
17 The paper that we wrote, we wrote about buried piping,  
18 and buried piping was defined as pipe that was in  
19 intimate contact with soil or concrete.

20 That has a couple implications. One is  
21 that it's got an electrolyte around it so you can  
22 cathodically protect it. Another is that you can't  
23 capture any leakage from it. It's already in the  
24 ground once it leaks, but Vermont Yankee, initially  
25 the press reported it as buried piping leaks.

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1           It turned out to be what we define as  
2 underground piping leaks. That's piping in a fault or  
3 a chase where you can't deliver cathodic protection to  
4 it, but if it leaks, it's leaking into something that  
5 you can monitor for leakage. You can capture the  
6 leakage.

7           At Vermont Yankee that would have been  
8 great, except the drain was blocked. It backed up,  
9 and then they dumped water into the ground, anyway,  
10 despite the fact that it should have been collected.

11           In May of last year, we were working with  
12 the Buried Piping Action Plan. The SECY paper to the  
13 Chairman identified a number of ongoing activities  
14 that I'm going to describe over the next few minutes,  
15 and we recognize that those activities supported a  
16 long-term reduction in the rate of leakage from buried  
17 pipes, and so to track those activities we created a  
18 Buried Piping Action Plan, modified it, updated it  
19 September 14.

20           We've met with industry a number of times  
21 over the past year, approximately every three or four  
22 months, to discuss their initiative and to discuss  
23 degradation of buried piping in general, and in August  
24 of this past year we sent a letter to the industry  
25 asking for some information that will help us complete

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1 some of the buried piping activities. I'll describe  
2 some of that information.

3 Welcome. The Buried Piping Action Plan,  
4 as I said -- you're going forward one, right? The  
5 Buried Piping Action Plan has a number of activities.

6 It's sort of broadly categorized into four groups:  
7 data collection, where we're seeking information on  
8 historical rate of occurrence of leaks, because really  
9 these leaks were largely in non-safety related  
10 systems.

11 They don't get reported. They're not  
12 reportable to us. They're below regulatory limits.  
13 We really don't have much information about them, so  
14 that's one of the pieces of information that we asked  
15 the industry to provide us through their initiative  
16 group.

17 We're collecting information on what  
18 systems are affected, the system ASME code  
19 classifications, because we want to validate that  
20 there is no -- there is no Class I piping buried. We  
21 just want to validate that, and there is no Class II  
22 piping buried, but we just want to validate that, and  
23 we've asked industry to provide that information.

24 Then we're collecting information on the  
25 rate -- all the tritium releases from buried piping,

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1 and Richard's got a database where he collects that,  
2 and we're also collecting information on the  
3 mechanisms that lead to leakage.

4 So far, we've found most of the buried  
5 piping leaks are caused by pitting when they're  
6 externally generated, where it's a coating damage  
7 that's localized, and it doesn't lead to a structural  
8 integrity failure, really, I mean, is challenged  
9 essentially ever or for a very long time.

10 We have found an instance of general  
11 corrosion, and it was caught well before there was a  
12 structural integrity challenge, but we're seeking  
13 information on any mechanism there is, just in case  
14 there's one we don't know about that we haven't --  
15 that aren't within the bounds of our evaluation.

16 MEMBER BLEY: We've seen a number of folks  
17 come through here who are changing to this new -- and  
18 I forget the material, some kind of composite buried  
19 pipe that gets fused together.

20 MR. LEEDS: High-density polyethylene.

21 MEMBER BLEY: Yes, that stuff. Is there -  
22 - is there substantial experience with that in other  
23 industries so that we know about degradation problems  
24 that might have occurred?

25 MR. HARDIES: I would say that there is

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1 substantial information. The polyethylene pipe, I'm  
2 not the expert on that, but I understand it's used  
3 very widely in the water distribution, gas  
4 distribution, and there's a safety-related application  
5 in the gas distribution industry.

6 There's one great picture they show where  
7 there's a landslide. Part of the mountain went away,  
8 and literally it's hundreds of feet from where the  
9 pipe is going across between the two places where the  
10 mountain went away and the valley below.

11 So it's got a history, so when you ask  
12 what the history is, it fails by a slow, stable crack  
13 growth mechanism where it gets these short little  
14 cracks. If you bury it on a rock, 30 years later it  
15 has a little leak. That's an issue. That's the same  
16 issue we have now.

17 MEMBER BLEY: So, in this data collection,  
18 that will include --

19 MR. HARDIES: No, we're not -- we're not --  
20 -- we're not in this program addressing that change to  
21 polyethylene pipe. There's --

22 MEMBER BLEY: Are we collecting that  
23 information somewhere --

24 MR. HARDIES: There's a different --

25 MEMBER BLEY: -- because a lot of people

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1 are moving that way --

2 MR. HARDIES: Yes, there's a --

3 MEMBER BLEY: -- to avoid these problems.

4 Are we trading for a different problem, I guess, is -

5 -

6 MR. HARDIES: I should say the group I'm  
7 working with is a piping group. We're not addressing  
8 the polyethylene piping issue. There's people in  
9 reactors and in NRR who are working on the code cases  
10 to develop --

11 CHAIRMAN RYAN: Bob, is there also  
12 information on the lifetime experience base? You  
13 know, we're looking now at 60 years for some of this  
14 piping to be serviceable or have to be replaced within  
15 some period of time in that 60 years. Do you have any  
16 insights there?

17 MR. HARDIES: Are you talking about --

18 CHAIRMAN RYAN: The polyethylene.

19 MR. HARDIES: -- the polyethylene? I  
20 don't know if there's 60 years.

21 CHAIRMAN RYAN: Okay, that's fair enough.

22 MR. HARDIES: Again, I'm not the plastic  
23 piping guy.

24 CHAIRMAN RYAN: Fair enough. Yes, I just  
25 wanted to see if you had anything on the top of your

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1 head.

2 MR. HARDIES: But your point's well taken.

3 It needs -- the failure modes in classic piping need  
4 to be addressed, and they are being brought up and  
5 raised to the code committee that's trying to get a  
6 code case to approve use of plastic pipe, but the code  
7 case progresses slowly, because there's a lot of  
8 questions here.

9 MEMBER BLEY: But I'm -- just I'm  
10 wondering why it's not part of your program, because  
11 this will have an action plan, and at least some of  
12 the actions we've been seeing on license renewals,  
13 people worried about these issues, are, in fact, we're  
14 going to bat to get out of the problems that we've had  
15 with the carbon steel pipe.

16 MR. LEEDS: I think it's a good thing to  
17 watch. I think it's a good thing. Right now they're  
18 mainly using the high-density polyethylene for surface  
19 water systems, huge, very, very large systems.

20 CHAIRMAN RYAN: Some outfall systems, too.

21 MR. LEEDS: Right, not radioactive  
22 material systems, but that doesn't mean that we  
23 shouldn't start monitoring and see what the  
24 operational history is.

25 MEMBER BLEY: It would just be a shame to

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1 see people try to avoid one problem and get into  
2 another.

3 MR. LEEDS: And insert another one, yes,  
4 sir.

5 MEMBER BLEY: And the license renewal is  
6 when we've asked this. Nobody seems to know even the  
7 brief highlight of history you just gave me.

8 MS. LUND: Well, there was actually a REC  
9 session on that last year, you know, on the, you know,  
10 changing over, and --

11 MEMBER BLEY: I'd been at that one, yes.

12 MS. LUND: And I think it was somebody  
13 from the Division of Engineer was going to -- I think  
14 Kamal Manoly was the one that was specifically on  
15 that, and I think that they were discussing some of  
16 the other industry experience. Unfortunately, like  
17 Bob I don't have all the details at hand, but I think  
18 that is something that the staff has been looking at.

19 CHAIRMAN RYAN: You might ask Derek to  
20 maybe follow up with you and track that down so we can  
21 learn from that. That information would be great.

22 MEMBER BLEY: Yes, I'd like to --

23 MR. HARDIES: If it's buried pipe at a  
24 nuclear site, when they go into license renewal, if  
25 someone has a buried polyethylene pipe, it falls under

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1 the industry program, so it will be evaluated under  
2 the industry program.

3 MEMBER ARMIJO: And that's independent of  
4 the material.

5 MR. HARDIES: Correct.

6 MR. LUBINSKI: If I could add -- this is  
7 John Lubinski from NRR. Louise had mentioned that our  
8 Division of Engineering, as well as the Division of  
9 Component Integrity, did look at two applications in  
10 the nuclear industry for surface water, issued  
11 approvals for those, but there were questions about  
12 the life expectancy of the pipe where they had  
13 originally come in and asking for approval without a  
14 limit.

15 I believe we put a condition that it was  
16 for ten years based on the fact that we did not have  
17 additional data, and the industry to remove that  
18 condition would need to come back with additional  
19 testing and data to address these issues. Also  
20 related to that was a question of how they were doing  
21 the fusing of the piping, and that was a condition of  
22 those approvals, also.

23 So you mentioned a follow-up. We do have  
24 a couple of examples there where we've looked at that,  
25 have some technical concerns, and have asked them to

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1 look towards other industries, since they brought that  
2 up as an example in the gas industry where it's been  
3 used to give us the data, put the burden on them to  
4 prove that.

5 CHAIRMAN RYAN: Well, that's a helpful  
6 data point. At this point at the NRC it's a ten-year  
7 approval and then with a requirement to come back.

8 MR. LUBINSKI: Bob had mentioned a code  
9 case that we're working on, and they wanted us to  
10 approve it under the code case, but we had some  
11 additional concerns and could not do that, so there  
12 was a ten-year for the two plans.

13 CHAIRMAN RYAN: Thank you. That's very  
14 helpful.

15 MR. LUBINSKI: I have a lot more  
16 information.

17 MR. HARDIES: So, the first broad category  
18 in the Buried Piping Action Plan is collection of  
19 data. The second is program assessment, where we're  
20 seeking to understand the Buried Piping Integrity  
21 Initiative, so it involves deciding whether to write a  
22 temporary instruction.

23 We have done that. That's a complete  
24 activity. We've decided to write one. We were  
25 writing one in draft, and we'll eventually inspect

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1 licensees' actions implementation the initiatives, and  
2 then we have some items under there to understand some  
3 of the technical details associated with carrying out  
4 the initiatives.

5 We have codes and standards activities,  
6 and I'm going to talk about them on the next slide,  
7 and then some regulatory activities. We have a  
8 website two clicks away from the front of the public  
9 page when you get into the Buried Piping Action Plan  
10 and the SECY paper and the initiatives, and so it's  
11 accessible and up-to-date.

12 We wrote a new aging management program  
13 for the new GALL report on buried piping and updated  
14 it and provided some improvements, and then in the  
15 action plan in the regulatory activities we have if we  
16 find out through our temporary instructions or  
17 inspection that licensees aren't implementing the  
18 initiatives, then we may decide that we need to get  
19 some kind of commitment from them.

20 So there's placeholders in the Buried  
21 Piping Action Plan to, you know, ask ourselves, "Is it  
22 adequately being implemented?" Also, there's a  
23 placeholder to question ourselves about whether it's  
24 efficacious, whether it's having the effect of  
25 reducing or minimizing occurrence of leaks, and if it

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1 isn't, then we're going to come back and reassess  
2 whether we need to change something in our regulatory  
3 framework.

4 With respect to codes and standards, the  
5 ASME code addresses safety-related piping. A lot of  
6 the leaks are coming from non-safety related piping,  
7 and also for Class III piping, which is most of this  
8 piping, ASME code isn't always leak-tight.

9 It is for the pipe. You're not supposed  
10 to have a hole in the pressure boundary, but if you  
11 have a valve or a flange, you're allowed to leak, so  
12 the ASME code doesn't really satisfy our need to  
13 prevent leaks.

14 It does ensure structural integrity, but  
15 we have a lot of people working on the ASME code.  
16 There have been activities ongoing to modernize design  
17 requirements in Section 3 for buried piping, to  
18 modernize flaw assessment in Section 11 for buried  
19 piping.

20 The key point I want to make here is we  
21 met with the ASME management last August and discussed  
22 our buried piping issues in a way that caused them to  
23 consider the issues, and in their last meeting in  
24 November they agreed to create a new committee in  
25 Section 11 to evaluate whether to extend the scope of

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1 Section 11 to address the non-safety related, non-  
2 class pipe that contains radioactive material --  
3 that's one -- and whether to develop some enhanced  
4 inspection requirements for the buried piping, even  
5 safety-related buried piping.

6 CHAIRMAN RYAN: One of the things that I  
7 think is important here is non-safety related piping  
8 probably miscommunicates what you really mean. Non-  
9 safety related doesn't mean devoid of all radioactive  
10 material, does it?

11 MR. HARDIES: No, it means important to --

12 CHAIRMAN RYAN: For the reactor safety.

13 MR. HARDIES: For the reactor safety. It's  
14 a nuclear safety protection.

15 CHAIRMAN RYAN: I mean, I understand it,  
16 because I'm here, but if you look at communicating to  
17 the public, non-safety related means I don't have to  
18 worry about safety at all. That's not the case here,  
19 so I just wonder if that terminology is, you know, one  
20 of the stubbed toes that we have here is that we're  
21 telling folks it's not safety-related, but here we  
22 have this whole tritium task force addressing what's  
23 coming out of these non-safety related pipes.

24 MR. HARDIES: I appreciate that comment.  
25 We had someone from NEI or an NEI consultant come to

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1 one of the groundwater meetings, and she --

2 MR. LEEDS: Yes. NEI consultant, correct.

3 MR. HARDIES: She had a focus group. She  
4 had conducted a focus group, and she had some  
5 terminology. She said, "This is what you say. This  
6 is what we hear."

7 CHAIRMAN RYAN: What's heard, yes.

8 MR. HARDIES: So buried, they think buried  
9 means trash, and I think safety-related was one of the  
10 terms.

11 CHAIRMAN RYAN: I'm sure.

12 MR. HARDIES: In any case, Louise I'm  
13 pretty sure very eloquently defined safety-related, or  
14 I think she addressed your point in her section.

15 MS. LUND: Right, this is -- and the other  
16 thing is that this was actually one of our speakers --  
17 no, not speakers but panel members at the public  
18 meeting we had. It's Ann Bisconti who was doing that  
19 work, Dr. Ann Bisconti, and, you know, she had  
20 actually talked about the results of the survey that  
21 she had conducted.

22 But she wasn't really the only person that  
23 has really given us this feedback, you know, within  
24 the public meetings that we've had I think up in the  
25 Northeast, you know, with these different clients and

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1 just in general trying to communicate. I think you  
2 make a very good point, and I think that, you know,  
3 through this examination of our communication, you  
4 know, I think that that's one of the things that we  
5 will have to try to understand how to get our message  
6 received the way that we want to get it received.

7 CHAIRMAN RYAN: Well, you know, a simple  
8 scheme is to call everything safety-related at a Level  
9 1, 2, 3, or A, B, C, whatever you want to do, but when  
10 you say something is non-safety related or not  
11 important to safety, then that's exactly what it  
12 means, and it can't all of a sudden be important to  
13 safety or be safety-related in some way down the line.

14 It means you've missed the boat in what  
15 you've called it to the average speaker of the  
16 language to me. That's my interpretation of it, so I  
17 think that's one. Obviously, you're tuned into this.  
18 You've been thinking about it and working with  
19 experts on that.

20 MS. LUND: Right, and then that's -- we  
21 had, for the last two themes of the Groundwater Task  
22 Force Report, not only did we have Dr. Bisconti talk  
23 about it within the context of the survey, but we also  
24 had -- I'm trying to remember his name.

25 He was somebody in public, had worked a

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1 lot in public health, you know, to talk about the  
2 communication challenges they had had there, too, and  
3 trying to make sure that people really understand the  
4 effects, you know, on them, because what I was saying  
5 earlier, you know, sometimes talking in risk language,  
6 that's not how they want to receive, you know, the  
7 communication.

8           They want to understand, "What is the  
9 impact on me? What is the impact on my family?" It  
10 comes down to a more fundamental way to communicate,  
11 and that's one of the things that he was recommending,  
12 having healthcare people try to help explain really  
13 what the impact is. So, anyway, we got a lot of very  
14 good input on, you know, just the way that a lot of  
15 the information is being received.

16           CHAIRMAN RYAN: Yes, and I'm sure every,  
17 you know, engineering and professional discipline has  
18 the same challenge of overcoming their own jargon, you  
19 know.

20           MS. LUND: Right. That's a very good  
21 point.

22           CHAIRMAN RYAN: That's why it strikes me  
23 as one that has the real high risk of miscommunicating  
24 what you're intending. In fact, it is safety-related.  
25 It's just not a safety-related pipe. Anything that

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1 contains radioactive material on a licensed facility  
2 that came from the licensed activity is of interest,  
3 correct?

4 MR. HARDIES: Yes.

5 CHAIRMAN RYAN: See the problem?

6 MR. HARDIES: Yes. We asked ASME code if  
7 they would consider expanding their scope of  
8 governance from just piping that's important to  
9 reactor operation to other piping that, while not  
10 important to reactor operation, may contain low levels  
11 of radionuclides that if not rigorously contained  
12 could present a challenge to the environment.

13 CHAIRMAN RYAN: Yes.

14 MR. HARDIES: Did you like that better?

15 CHAIRMAN RYAN: It sounds really good.

16 MR. HARDIES: Point well taken.

17 MEMBER BLEY: And where does that stand?

18 MR. HARDIES: Well, the first meeting of  
19 this new task force is at the end of this month.

20 CHAIRMAN RYAN: Well, that's, I mean,  
21 that's great that you're really on top of that.  
22 That's very good.

23 MR. HARDIES: But it's by no means a  
24 foregone conclusion that --

25 CHAIRMAN RYAN: Oh, yes, I understand.

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1 MR. HARDIES: -- they will agree to extend  
2 the scope to that.

3 CHAIRMAN RYAN: They can shovel work to  
4 make it happen.

5 MR. HARDIES: It's actually a very  
6 challenging activity. The next thing I want to  
7 discuss is NACE International. NACE used to be called  
8 the National Association of Corrosion Engineers, but  
9 they changed their name to just NACE. It no longer  
10 needs that second thing.

11 They write corrosion protection standards,  
12 and those corrosion protection standards are widely  
13 used around the world to protect buried pipe, gas  
14 lines, petroleum lines. There's Code of Federal  
15 Regulations, regulations that say, "If you have a line  
16 that goes across state boundaries and it contains --  
17 is transporting petroleum, you have to have cathodic  
18 protection and coatings, and you have to monitor the  
19 cathodic protection system every two months, and every  
20 year you have to bring an expert to make sure it's  
21 running and check out your pipe."

22 It's very mature technology, and the  
23 requirements are kind of prescriptive, and they're  
24 used on 500,000 miles of piping in this country. A  
25 few years ago there was the groundwater incident at

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1 Braidwood. There was a Groundwater Protection  
2 Initiative.

3 INPO decided that there were too many  
4 leaks, I guess. They just decided to take the NACE  
5 standard and write up an inspection protocol using the  
6 objectives of the standard, the broad objectives, and  
7 then they began inspecting plants.

8 They had a focus area, and they issued a  
9 few findings, and then the industry got together and  
10 decided they could let INPO come in and give each one  
11 of them a finding one-by-one, or they could get  
12 together and develop some kind of approach where if  
13 the utility implemented it, they would reduce  
14 corrosion in buried pipe.

15 So they created -- they got EPRI to create  
16 a document, effective program for managing  
17 degradation of buried pipe, and it's modeled on these  
18 NACE standards. It's modeled on the basic criteria  
19 that are described in these NACE standards, and then  
20 when the industry created the Buried Piping Integrity  
21 Initiative, the activities that they require in that  
22 initiative are basically the activities that are  
23 required, you know, in the broad philosophical sense  
24 by the NACE standards on how you take care of buried  
25 pipe.

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1           So, in a sense, these corrosion protection  
2 standards are being implemented at plants by the  
3 industry initiative, because there aren't any  
4 regulations that govern buried pipe at nuclear power  
5 plants that require these regulations to be followed,  
6 nor -- I mean these standards. Nor are these  
7 standards precisely applicable to nuclear power  
8 plants.

9           The configuration of nuclear power plants  
10 is much more challenging than a long, straight pipe.  
11 You know, we have pipes looping in and out, so they've  
12 created a new task force to develop standards for  
13 nuclear buried piping.

14           We sit on that task force. The first  
15 meeting was last fall, and they meet twice a year, and  
16 eventually they'll be writing a standard for nuclear  
17 buried piping that will offer a way to prevent pipes  
18 from corroding. Go on to the next slide.

19           The industry has two new initiatives.  
20 I'll discuss them later, but first I'm going to  
21 discuss how we're going to inspect them. We write a  
22 temporary instruction and then send inspectors out to  
23 verify some things, and what we -- we've got approval  
24 to generate the instructions, and what we plan to do  
25 is two phases of inspections.

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1           The first phase is sort of a participation  
2 survey where we go out and we make sure the plants are  
3 all doing the steps that are required in the  
4 initiative and then 18 or 24 months later going back  
5 to the plants and this time evaluating the actions  
6 that they're doing and seeing what kind of impact it  
7 has in changing maintenance practices from run to  
8 failure, which was what got us into the problem in the  
9 first place, to a predictive maintenance approach.

10           We also have a need to understand some of  
11 the new inspection techniques. The industry is  
12 deploying guided wave techniques, and we're not that  
13 familiar with it, so we've got some training, and then  
14 we're going to see how licensees implement that  
15 technique.

16           Then, as I said before, we've written a  
17 new aging management program that really plants who  
18 have cathodic protection or who decide to install  
19 cathodic protection or keep their cathodic protection  
20 systems in good working order do less inspection than  
21 those who don't cathodically protect their piping as  
22 well, and it also adds significantly more inspection  
23 that was required in the old -- than the old AMP  
24 before they go into the license renewal period and  
25 after they go in the license renewal period. Go on to

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1 the next slide.

2 These are the two initiatives, the broad  
3 aspects that plants agreed to -- all the utilities  
4 agreed to implement, and the Buried Piping Initiative  
5 was to write a program, a governing document, program  
6 procedures. That was supposed to be done last summer.

7 By last week, week before, December of  
8 2010, they were to have ranked their piping system.  
9 The risk ranking involves finding all the pipes  
10 buried, finding whether it's important to reactor  
11 operation or not. If it's ASME Class III, you know,  
12 that ranks you high, or if it contains radioactive  
13 material, that ranks you high.

14 Then there is some piping that will rank  
15 you low, and actually they would -- they would no  
16 longer pay attention to that pipe. Things like  
17 potable water to outbuildings or plant heating to  
18 outbuildings may be of no interest. You know, it's  
19 appropriate to have those pipes as run-to-failure.

20 So you end up with a ranking of things  
21 that could leak bad material, things that could  
22 degrade and need to not degrade because they have a  
23 function of delivering water, and then pipes that  
24 might have less stringent requirements on them.

25 So they're just supposed to catalog

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1 everything they have and then rank it, and that was  
2 due in December. Then this summer they complete an  
3 inspection plan for which of those piping systems and  
4 which parts of them will be inspected, how they'll be  
5 inspected.

6 Some of them will be excavated. Some of  
7 them may be remotely inspected with -- some of them  
8 may be inspected with pigs. There's a lot of  
9 technology development still going on in the industry  
10 to find ways to inspect them without digging up the  
11 dirt, because digging up the dirt is expensive, risky,  
12 and it entails a possibility of damaging the pipe.

13 So there's a lot of reasons you don't want  
14 to dig up, but the inspection plan will delineate  
15 which pipes get which kind of inspections. Then a  
16 year later the inspections are to begin.

17 Then in 2015, actually, asset management  
18 plans are required, and that means for each piping  
19 system you get the long-range plan for what they're  
20 going to do about it. They're going to either, you  
21 know, run to failure maybe if it's low risk.

22 If it's higher risk, maybe inspect it, dig  
23 it up twice, and remotely inspect it three times --  
24 these are hypothetical examples -- or maybe they're  
25 going to dig it up and replace it or dig it up and put

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1 it in a vault or dig it up and run it underground, but  
2 they do the cost benefit analysis for long-term  
3 evaluation of how they keep pipes from leaking, and  
4 they write it in a plan. That's what the asset  
5 management plan is.

6 They created the initiative in November of  
7 2009. Vermont Yankee began to leak in January of  
8 2010, and it became very apparent, I think, to the  
9 industry, became very apparent to the NRC that as far  
10 as addressing stakeholder interests, if the initiative  
11 was limited to just buried pipe and there were  
12 utilities out there that had underground pipe, which  
13 is kind of semantically confusing for -- it was easily  
14 -- it's easy to semantically confuse those issues.

15 MEMBER ARMIJO: Well, the expectation is  
16 that anything that is underground is buried --

17 MR. HARDIES: Yes.

18 MEMBER ARMIJO: -- to most of us.

19 MR. HARDIES: Yes, but we had --

20 MEMBER ARMIJO: This distinction really --

21 MR. HARDIES: We had a distinction for a  
22 purpose.

23 MEMBER ARMIJO: Yes.

24 MR. HARDIES: It had engineering reasons.

25 MEMBER ARMIJO: Right. I understand.

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1 MR. HARDIES: And, in any case, the  
2 industry wrote a new initiative that completely  
3 encompasses all the requirements of the Buried Piping  
4 Initiative but also extends the scope to underground  
5 piping and to buried and underground tanks.

6 So, now if it's underground and it's  
7 important to reactor operation, meaning ASME code  
8 class, or if it contains radioactive material or maybe  
9 a few other hazardous materials, it's within the scope  
10 of these initiatives, and it's going to be addressed  
11 in some way or another by inspection.

12 MEMBER BLEY: Is that language,  
13 underground piping and buried piping, common outside  
14 of NRC? Does ASME use it?

15 MR. HARDIES: We adopted the buried piping  
16 definition that ASME uses.

17 MEMBER BLEY: Okay.

18 MR. HARDIES: That's where we started.

19 MEMBER BLEY: You're consistent, that is.

20 MR. HARDIES: We went to the code, and we  
21 grabbed buried pipe. This is what buried pipe is, and  
22 then when Vermont Yankee, once they figured out  
23 Vermont Yankee wasn't buried pipe, then we had to come  
24 up with a term after that.

25 MEMBER BLEY: Okay, so this is new.

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1 MR. HARDIES: That was very difficult to  
2 come up with a term for that. We wanted to call it  
3 buried piping that's not in contact with --

4 MEMBER BLEY: Low-grade unburied.

5 MR. HARDIES: So I'm going to go to the  
6 next slide. Ultimately, the information we're  
7 grabbing in the data collection phase of the Buried  
8 Piping Action Plan leads to our objective for really  
9 measuring the effectiveness. I mean, we're going to  
10 do the temporary instructions, but we want a numerical  
11 measure, and that is we want to compare pre-2009  
12 failure data, pre-2010 incidents of leaks to post-2015  
13 incidents of leaks.

14 In the middle, there is an inspection  
15 transient going on, and we're going to find more than  
16 the natural degradation rate, but if the initiative is  
17 effective at causing people to maintain their piping  
18 better so that leaks are reduced, then we should be  
19 able to compare that post-2015 rate to the pre-2010  
20 rate and show it.

21 So that's our overall metric. We're going  
22 to continue to monitor operating experience and  
23 evaluate needs for commitment for the initiative, and  
24 in the long term, if the incidents of leakage doesn't  
25 end up being reduced by these initiatives, then we're

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1 going to revisit the need to take regulatory action of  
2 some other sort.

3 MEMBER ARMIJO: Other than not performing  
4 the actions in the initiative, how could they not be  
5 successful? I mean, they just --

6 MR. HARDIES: Well, you could -- I mean,  
7 now, you could risk rank your pipe, and then you could  
8 decide that you're going to inspect in a way that  
9 isn't adequate to capture all the important areas that  
10 might leak. I just think you could deploy the  
11 technology wrong.

12 MEMBER ARMIJO: You basically aren't  
13 performing the program as it was intended, but there  
14 are no new mechanisms of failure piping, for example,  
15 other than the ones you already know about, I expect,  
16 except maybe for the high-density polyethylene where  
17 we don't have enough experience.

18 MR. HARDIES: I agree that it should go  
19 down. The rate of leakage should go down. We're just  
20 going to validate it.

21 MEMBER ARMIJO: Right. Right, and do you  
22 -- maybe this is a policy question. When you evaluate  
23 the need for commitments to the initiative, in a way  
24 that could be like if it goes down, we're finished.  
25 The regulatory involvement would be finished, since

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1 it's below a health risk.

2 MS. LUND: I think --

3 MEMBER ARMIJO: You know, some sort of a  
4 sunset clause on something that has been handled at  
5 the industry level but doesn't really have to be --  
6 take the time and effort of the regulatory mission.

7 MS. LUND: Well, I think -- can I take a  
8 stab at the policy, and then I'll let you say what --  
9 I think one part of it is once you have that  
10 infrastructure, I think, at least from my perspective,  
11 these industry initiatives are about putting this  
12 infrastructure in place that tracks and is able to  
13 give them, the industry and us overseeing this, the  
14 opportunity to see what the trends look like over  
15 time.

16 As far as, you know, looking at these  
17 trends, you know, and trying to figure out whether  
18 these have been effective or not, it still comes back  
19 to how well is this being managed. I think, you know,  
20 that was one of the things that was raised earlier on  
21 in the discussion is, you know, the surprise aspect of  
22 it or the fact that it looks like it's being actively  
23 managed.

24 I think that's what putting these industry  
25 initiatives in place is all about, putting that

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1 structure in place that allows everybody to be a very  
2 open and transparent sort of process, you know, to be  
3 able to follow through on this. So I think over time  
4 you can very easily see, you know, is there a problem,  
5 is there not a problem.

6 MEMBER ARMIJO: Yes, but once you get to  
7 the point where the problems have been addressed and  
8 they're really below the level of safety significance,  
9 there comes a time when you don't need to be doing  
10 that anymore, and some of these regulatory activities  
11 can just be --

12 MS. LUND: Well, as far as the --

13 MR. LEEDS: Reactive.

14 MEMBER ARMIJO: Radioactive.

15 MR. LEEDS: But I'm sorry, sir.

16 MEMBER ARMIJO: Regulatory. I was talking  
17 regulatory. Once you are sure the problem is solved  
18 and it's not our --

19 MR. LEEDS: Then you can just be reactive.

20 MS. LUND: Right.

21 MEMBER ARMIJO: Huh?

22 MR. LEEDS: Then we just become reactive.  
23 You wait for something to occur.

24 MS. LUND: Right.

25 CHAIRMAN RYAN: But then you're thinking,

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1 Sam, that the routine inspection programs continue on,  
2 and it becomes a pro forma routine program.

3 MEMBER ARMIJO: Well, it takes on a life  
4 of its own, and it never ends, even though the problem  
5 is solved. That's my concern.

6 MR. LEEDS: Yes, we always try to take a  
7 look at our inspection program from year to year to  
8 see where the bang is for the buck -- where is the  
9 value? -- and alter things as we go forward. It's a  
10 continuous process.

11 MEMBER ARMIJO: Okay. I've got to think  
12 about that.

13 MR. HARDIES: If they implement the  
14 initiative and there are no more leaks.

15 MEMBER ARMIJO: And they follow through.

16 MR. HARDIES: Then we would conclude that  
17 there wasn't -- there is not additional regulatory  
18 action needed. The commitment words are if, you know,  
19 32 of the utilities aren't implementing the  
20 initiative.

21 MEMBER ARMIJO: Sure.

22 MR. HARDIES: We would, you know, then  
23 solicit, try to encourage those other ones to do it,  
24 but if the initiative actually works, then our  
25 conclusion in the action plan is likely to be that we

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1 don't need to take any more regulatory action.

2 Now, if they concluded, the industry, that  
3 that meant they didn't need to follow the initiative  
4 anymore --

5 MEMBER ARMIJO: No, no, that's not what  
6 I'm talking about.

7 MR. HARDIES: -- the leak rates would go  
8 back up again, so you'd have to continue to pay  
9 attention to it. I'm almost done. I want to mention  
10 a couple other things about the initiative.

11 One is that INPO changed their EPIX  
12 database. That's an operating experience database.  
13 They made that very focused change for buried piping,  
14 because buried piping leaks didn't really rise often  
15 to the level that they got reported to APEX, and so  
16 when we look at the historical data, it's just not  
17 very good.

18 So they have a concerted effort to grab  
19 some historical information, and then they've  
20 developed a set of data fields that they've sort of  
21 really highly encouraged utilities to report in a  
22 consistent manner and to report at very low thresholds  
23 buried piping leaks or degradation, so that database  
24 will provide us a wealth of information on what kind  
25 of degradation is going on and what systems and how

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1 frequently and how it went in the past.

2 MEMBER BLEY: So they're actually going to  
3 take that backward in time?

4 MR. HARDIES: Yes.

5 MEMBER BLEY: How far back?

6 MR. HARDIES: At least a couple years.

7 MEMBER BLEY: Okay.

8 MR. HARDIES: One year.

9 MEMBER ARMIJO: Will they include the  
10 underground, as well as buried?

11 MR. HARDIES: Yes. Yes, they're including  
12 important operation of the reactor, as well as --

13 MEMBER ARMIJO: Underground piping tanks.

14 MR. HARDIES: -- stuff that's not so  
15 important to reactor operation but may contain low  
16 levels of radioactive nuclides that if not rigorously  
17 contained --

18 MEMBER ARMIJO: Stop there. Just  
19 radioactive nuclides, period.

20 MR. HARDIES: I've got to shorten that,  
21 but, yes, because -- so like potable water is always  
22 the example I use. I'm expecting those kind of leaks  
23 to be in the EPIX database, and we asked for that, and  
24 I think the industry had already decided to do it.  
25 The rationale for collecting all kinds of failures is

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1 that you're always looking for another mechanism that  
2 isn't within the bounds of our evaluation.

3 The second thing I wanted to point out is  
4 they do do a self-assessment each year of the program  
5 itself, and they report to NSIAC, which I don't  
6 remember the acronym, either. It's most -- I think  
7 it's Nuclear SIA Committee, but they report who has  
8 completed what and the failures and the number of  
9 leaks, so they're providing a summary each year, also,  
10 and they provide it to us.

11 I'm going to go to my conclusions, which I  
12 began with. Our objectives with respect to buried  
13 pipe, maintenance of intended function and releases  
14 are below regulatory limits. Our current activities  
15 are compatible with that, and we are going to keep  
16 watching operating experience to validate that those  
17 conclusions are valid. That's it.

18 CHAIRMAN RYAN: Thank you, Bob. That was  
19 very good.

20 MS. LUND: Do you want to move to the next  
21 one, or are there additional questions?

22 CHAIRMAN RYAN: Are there any additional  
23 questions for Bob? No? We tend to ask them as we go  
24 along.

25 MS. LUND: Great. Where is Margie? And

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1 our last presentation is by Margie Kotzalas.

2 MS. KOTZALAS: Okay. My name is Margie  
3 Kotzalas, and I'm a technical assistant in the Office  
4 of the Executive Director for Operations, and Bob and  
5 Richard have just discussed the actions associated  
6 with the conclusions that the Groundwater Task Force  
7 had regarding our regulatory framework. I'm going to  
8 briefly discuss the evaluation that we have done of  
9 the Groundwater Task Force's conclusions associated  
10 with the themes of creating a more reliable NRC  
11 response and strengthening trust.

12 The Senior Management Review Group  
13 evaluated the conclusions and recommendations, and  
14 they identified actions that the staff could take in  
15 the near term. These included developing an agency-  
16 wide community of practice for groundwater  
17 contamination issues. That involves staff associated  
18 with the regulation of operating reactors, new  
19 reactors, fuel cycle facilities, uranium recovery, so  
20 it's a broad range of all the regulation of the  
21 facilities that we regulate.

22 We're also developing a standard protocol  
23 for split samples, improving the existing fact sheets  
24 that we have for groundwater protection in tritium,  
25 and also considering the need for a generic

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1 communication on groundwater protection issues to the  
2 industry.

3 MEMBER ARMIJO: Margie, could you explain  
4 what standard protocol for split samples means? I  
5 don't understand that.

6 MS. KOTZALAS: Okay. When we have -- when  
7 we have found leaks to the groundwater, the licensees,  
8 they do a sample.

9 MR. CONATSER: Yes. What that means  
10 basically is we -- independent of the licensee's  
11 analysis for the groundwater samples, et cetera, the  
12 NRC will split samples with the licensee. We'll send  
13 samples for our own laboratory, a contractor that we  
14 have.

15 MEMBER ARMIJO: Oh, okay, and everybody  
16 does it the same, so you can compare it.

17 MR. CONATSER: That's the way --

18 MEMBER ARMIJO: Okay.

19 MR. CONATSER: It just adds more --

20 MS. KOTZALAS: Consistency to our  
21 response.

22 MR. CONATSER: Confidence.

23 MS. KOTZALAS: Yes.

24 MR. CONATSER: Public confidence.

25 MS. KOTZALAS: Correct. For the longer

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1 term actions, we had sought input from internal and  
2 external stakeholders, and we have talked several  
3 times about the public meeting that we had held and  
4 our request for public comments. In order to focus  
5 our public comments, we had formed questions based on  
6 the recommendations that the Groundwater Task Force  
7 provided, and the questions that are listed right here  
8 are the ones that we published in the *Federal Register*  
9 and we received public comment on.

10 Okay. Informed by the comments that we  
11 received, the Senior Management Review Group directed  
12 the staff to undertake a number of initiatives, and  
13 these are some of the more longer term initiatives  
14 that we have begun to work on but not have fully come  
15 to any conclusions on.

16 Some of these initiatives are directed  
17 solely at incidents of radioactive releases to the  
18 groundwater, but what we have learned is that these  
19 are more applicable to other incidents of low risk but  
20 high public interest, and this bulleted list that I  
21 have here provides some of the more significant  
22 initiatives.

23 We have talked throughout the afternoon  
24 about choosing our words better, like non-safety  
25 related and underground and buried piping, and so

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1 there is going to be a group that is going to look at  
2 some of the simple wording choices that we use and how  
3 we communicate and, you know, just to do a better job  
4 in general of those, you know, the way we communicate  
5 our strategies.

6           Additionally, starting in 2010 we are  
7 making some positive changes to the user friendliness  
8 of the information that the licensees provide in their  
9 annual effluent reports. Data from these reports are  
10 now being compiled into a user friendly format.

11           The new reports summarize the information  
12 so that the user is not overwhelmed by all the data  
13 that is provided in these reports, but the user still  
14 has sufficient information that they can make an  
15 informed decision. This new summary report contains  
16 explanatory text and colorful graphics, and, in  
17 addition, we normalized the data so that the user can  
18 compare their -- you know, on a per-unit site they can  
19 compare, you know, their local facility with, you  
20 know, another operating unit.

21           Another initiative that we're undertaking  
22 is to work with the international regulators so that  
23 we can better understand the regulatory approaches for  
24 effective resolution of groundwater issues. The staff  
25 is gathering information on domestic and international

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1 activities, remodeling the movement of radioactive  
2 materials through the environment, and the eventual  
3 impact of these materials on the environmental  
4 systems. In addition to keeping informed of the  
5 international efforts, the staff will use this  
6 information to improve our communications with our  
7 domestic stakeholders.

8 The last major initiative is to develop a  
9 standard protocol for engaging states on unplanned  
10 releases. This protocol will incorporate the lessons  
11 that we've learned from the groundwater incidents and  
12 the feedback that we have received from the state  
13 representatives.

14 In addition to engaging the -- our current  
15 practice of engaging the states through the Governors'  
16 State Liaison Officers, we are going to consider  
17 multiple channels such as engaging states through the  
18 Conference of Radiation Control Program Directors.  
19 Once established, this protocol can be used for other  
20 communication -- other communication needs besides  
21 just groundwater incidents.

22 This concludes my summary of the major  
23 communication initiatives that we have undertaken, and  
24 I'd be happy to answer any questions that you have.

25 CHAIRMAN RYAN: Okay. I thought it was

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1 state organizations, the Organization of Agreement  
2 States. Do you communicate with them, as well?

3 MS. KOTZALAS: Yes.

4 CHAIRMAN RYAN: It's really the same folks  
5 that you're going to communicate with, so --

6 MS. KOTZALAS: Right. Right. That's part  
7 -- yes.

8 CHAIRMAN RYAN: They have a slightly  
9 different status with the NRC than Agreement States,  
10 so they may have the obligation to pick up some or all  
11 of, you know, what you've developed from regulatory  
12 initiatives.

13 MR. LEEDS: I think Charlie Miller in FSME  
14 does a yearly meeting with them, and I think it's a  
15 great idea. We should engage with them.

16 CHAIRMAN RYAN: Yes.

17 MS. LUND: Well, this concludes the  
18 information that we've prepared for you today. I hope  
19 that you've gotten sort of a sense for there's been a  
20 lot of activity, you know, since the Groundwater Task  
21 Force report, and there's certainly a lot ongoing now  
22 and in the near future, and we have, we think,  
23 processes in place to evaluate whether this is being  
24 effective, and that's our plan going forward is to  
25 ensure that this is put into place, and we have

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1 avenues to do that.

2 CHAIRMAN RYAN: It's been a very full  
3 afternoon. I really appreciate everybody's hard work  
4 in preparing a very excellent set of briefings. It  
5 gave us all a different perspective on, you know, what  
6 the elements of this program are, so it's been very  
7 helpful to learn from you this afternoon on what's  
8 going on. I've learned a lot that I didn't know was  
9 going on, so it's been very good in that regard.

10 Before we finish up, though, I'd like to  
11 go around. Any last questions? Dr. Bley?

12 MEMBER BLEY: No questions. I've enjoyed  
13 the presentations, learned a fair amount from it. I  
14 have a little trouble, as, I think, some of my  
15 colleagues, with an area where you don't see direct  
16 safety consequences to people, but it's very clear to  
17 me that two things are really important here.

18 One is the issue of adverse publicity and  
19 the risks of that. They're risks not only to the  
20 licensee and the future use of the plant, but it seems  
21 to me there are risks to the NRC, as well, in terms of  
22 reputation and the possibility of being driven into  
23 focuses away from the safety aspects of regulation.

24 I've seen this happen with the Federal  
25 Railroad Administration and some other regulatory

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1 bodies that through adverse publicity and pressure  
2 from Congress suddenly their whole regime of  
3 regulation gets undermined, and the focus leaves the  
4 really important ones of safety.

5 The other side is from engineering good  
6 practice. Knowing the status of the equipment just  
7 seems obvious, and it seems like the industry is  
8 really on board with that, so that appears right on  
9 target.

10 CHAIRMAN RYAN: Dr. Armijo?

11 MEMBER ARMIJO: Yes, I appreciate the  
12 presentations. They're all very well thought out, a  
13 lot of information. I think the -- I didn't comment  
14 on Margie's presentation. I think the communication  
15 activity, while that's not an ACRS type of thing to  
16 worry about, I think that's very important.

17 I think part of our problem in this area  
18 is just a lack of understanding of what really is  
19 important to safety and what can be used and can be  
20 misunderstood and raise a lot of concerns when it  
21 really is a business issue, not a safety issue, but,  
22 you know, everybody doesn't necessarily share those  
23 views.

24 I think the role of the NRC should be  
25 maintained to be independent of the political winds on

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1 things that are not really safety, because we have a  
2 new Congress. They may have a different view. They  
3 may have different pressures that I would hate to see  
4 those pressures used to reduce the effectiveness of  
5 the NRC in areas that are important to safety, just  
6 because somebody says we've gone to far.

7 So, you know, again, I think steer your  
8 own course is what I would say, and where there is  
9 business problems, operational problems that INPO and  
10 NEI can handle, keep an eye on it, but don't mix up  
11 the NRC's role with the role of industry, and that's  
12 kind of where I'm thinking. I haven't said it very  
13 well, but that's where I'm at.

14 I think as a temporary action plan to  
15 really make sure that this thing is all in order and  
16 everything else is fine, and once you're satisfied  
17 that it's okay, I think it's a -- the NRC can step out  
18 of that stuff, because it's really not NRC's area, at  
19 least, so I'll leave it at that.

20 CHAIRMAN RYAN: Okay. Dr. Powers?

21 MEMBER POWERS: I do not want to  
22 underestimate the challenge that people face, and  
23 maybe I can express how big the challenge is by an  
24 anecdote. I once had the misfortune of having put a  
25 large amount of water into the public sewer system

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1 that ran two picocuries per liter. We had to get  
2 permit from the city to do that, even though the tap  
3 water as it comes out of the pipe ran 35 picocuries  
4 per liter, so you would be able to detect this water  
5 as it went down, because the radiation monitors would  
6 go down.

7 So we made our supplication to the City  
8 Council on doing this, explained to them carefully  
9 that radioactivity showed them that Coors beer runs  
10 about 180 picocuries per liter. We did not  
11 demonstrate to them what urine was but told them what  
12 it was, and one of the influential observers in the  
13 audience stood up and explained to the City Council  
14 that he didn't have any idea what a picocurie is, but  
15 two of them was a lot. We ended up evaporating that  
16 water.

17 I think I somewhat echo Mr. Armijo's point  
18 that I am tempted to say that I can't help you very  
19 much and advise you, because you are out of my domain  
20 of influence, especially Margie when she talks about  
21 public communication. Obviously, I'm a dismal  
22 failure, because two picocuries turned out to be a  
23 lot, so I'm a dismal failure at that.

24 I come back to say, gee, I have a very  
25 hard time understanding how this fits within a risk-

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1 informed regulation, and I've come to the conclusion  
2 that that's the wrong context to put it in, and maybe  
3 I ought to just stay out of this issue and come back  
4 to something I'm more familiar with, which is the  
5 issues of buried pipe may affect the feedwater and  
6 things like that, because that's a safety issue I can  
7 really grab hold of, but I understand you've got a  
8 problem, and I'm going to echo everybody around here.

9           You guys have done as good a job on this  
10 as anybody can, but I think you're generating an awful  
11 lot of activities, and you may want to consider  
12 saying, "Here, industry, here's what we've done. You  
13 guys figure this out," because they're the ones that  
14 have to make the cost benefit judgment, and justifying  
15 it by telling them that in the long term this is going  
16 to be better for you.

17           Maybe that's good advice, but I certainly  
18 wouldn't enforce it upon them. That's about all I  
19 could say. I mean, I understand your problem, because  
20 I've had it myself.

21           CHAIRMAN RYAN: And I second some of the  
22 ideas that both Dr. Powers and Dr. Armijo have said  
23 about where is the scope of all this. You know, it's  
24 growing at the moment. Maybe it's grown a lot  
25 already, and you've got a few other activities you're

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1 going to do, but at some point it's going to become,  
2 and I think you touched on this, but it's going to  
3 become a routine program for the licensees to manage  
4 and deal with, and then it's a matter of inspection  
5 and all that.

6 So how it's growing is clear today, but  
7 how it's going to grow to a routine program, that's  
8 going to be part of the planning here at this early  
9 stage. So I share some of the thoughts that there is  
10 a risk it could become a really big program without a  
11 whole lot of return on investment from a safety  
12 perspective or even from a effluence management  
13 perspective after a certain point.

14 There's a point now where you'll learn and  
15 you'll have implemented programs, so you've got to  
16 sort of weigh that, but, you know, you're at the -- I  
17 don't know the early stages is quite right, but you're  
18 probably not at the middle yet, and, you know, there  
19 will be things to do, so you really informed us, I  
20 think, of a very comprehensive program from a wide  
21 variety of points of view that you've initiated.

22 I do second the idea that the industry  
23 initiatives and the industry organization initiatives  
24 you've begun for industry groups is very good, because  
25 it is, after all, something that can be handled by

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1 national standards type guidance, you know, from those  
2 organizations. That would certainly be the benchmark  
3 that you could rely on.

4 I do think that from a radiological  
5 perspective there is an opportunity to better  
6 communicate on things like, you know, picocuries and  
7 micro this and mega that and all the units and  
8 buzzwords that we use routinely in this room or in  
9 this building. It's fine and dandy, but when we get  
10 outside we've got to be careful not to miscommunicate,  
11 and you know, how much is a little and how much is a  
12 lot is often judged by different metrics in different  
13 settings by different folks.

14 So I think having the expertise to learn  
15 how people think about things is critically important  
16 to do that. I have seen, you know, a former employee  
17 from the NRC, Chip Cameron, run many a public meeting  
18 in the waste arena, you know, and he never uses the  
19 jargon of the waste folks, which, you know -- one.

20 So it's a good lesson learned to think  
21 about that carefully and often to, you know, hopefully  
22 avoid miscommunicating and getting it straight across  
23 and straight answers back, which is mostly helpful,  
24 but I join Dennis in commending you on a valiant  
25 effort and a good program to move forward here. It

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1 looks like you've got still a lot of work to do but a  
2 good, straightforward plan on how to get there.

3 MS. LUND: Thank you.

4 CHAIRMAN RYAN: Thank you. Anything else  
5 from your team?

6 MS. LUND: Just thanks to Chuck Casto for  
7 staying with us.

8 CHAIRMAN RYAN: Oh, Chuck, yes, hello.

9 MR. CASTO: Thank you. Thank you, Mr.  
10 Chairman.

11 CHAIRMAN RYAN: You're on the line. I'm  
12 sorry. Your picture is big as life.

13 MR. CASTO: I don't always feel big as  
14 life.

15 CHAIRMAN RYAN: Well, you know, sorry the  
16 weather didn't cooperate. It would have been nice to  
17 have you here in person, but, as I said, this is not a  
18 bad second way to go.

19 MEMBER POWERS: Actually, this is better.  
20 I mean, he looks like he's, you know, the Godfather.

21 CHAIRMAN RYAN: Look at it this way. You  
22 don't have a four-hour plane ride to get back home.

23 MR. CASTO: Actually, I have to try to get  
24 back to Atlanta. I'm in Dallas.

25 CHAIRMAN RYAN: Okay. Safe travels. Safe

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1 travels.

2 MR. CASTO: Take care. Thank you for you  
3 comments. Those were helpful.

4 CHAIRMAN RYAN: All right. Thank you very  
5 much. With that, if there are no other comments,  
6 we'll close the record and adjourn the meeting.

7 (Whereupon, the above-entitled matter went  
8 off the record at 4:47 p.m.)

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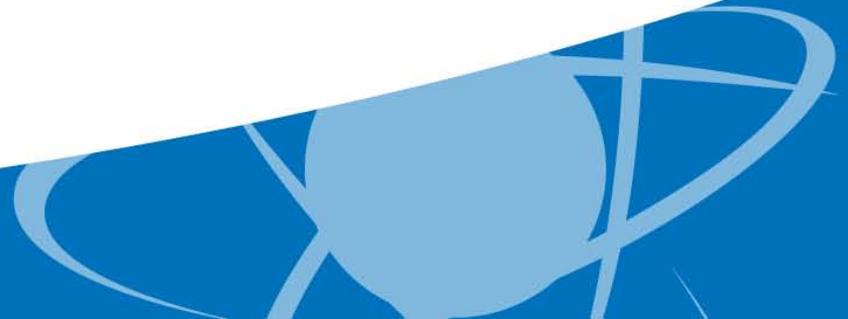
# Groundwater Task Force Report

A Presentation for the  
**Advisory Committee on Reactor Safeguards**  
January 12, 2011

Chuck Casto  
Team Leader

# Agenda

- Findings of the Groundwater Task Force
- Conclusions and key recommendations
- Next steps



# Groundwater Task Force Report



- Completed review of charter items
- Determined facts and observations
- Developed conclusions and recommendations
- Identified four themes
- Identified 16 specific conclusions
- Identified four key recommendations

# Overall Finding

- After a thorough review, the GTF determined that the NRC is accomplishing its stated mission of protecting public health, safety, and protection of the environment through its response to groundwater leaks/spills. Within the current regulatory structure, NRC is correctly applying requirements and properly characterizing the relevant issues.

# Themes

- Theme 1 – Reassess NRC’s regulatory framework for groundwater protection
- Theme 2 – Maintain barriers as designed to confine licensed material
- Theme 3 – More reliable NRC response
- Theme 4 – Strengthen trust



# Conclusions

- NRC response to leaks/spills has varied widely and has been case specific
- NRC Event Reports alert the public to leaks but no process exists to update the public on resolution or consequences
- NRC radiological effluent performance indicator does not provide meaningful data regarding groundwater contamination
- NRC processes do not disseminate low level groundwater experience to inspectors
- NRC findings associated with groundwater contamination that were based solely on “public confidence” require review
- NRC should consider incorporating the industry’s voluntary groundwater protection initiative (NEI 07-07) into the regulatory framework for groundwater protection

# Conclusions

- NRC communication methods do not promptly relay NRC staff assessments of groundwater incidents. Consider using third-party validation methods for groundwater incidents
- NRC regulations do not address the maintenance of non-safety related piping and tanks that contain radioactive fluids
- NRC regulations regarding radiological impacts of facility operations vary for different types of facilities (e.g., power and research reactors, fuel cycle, in-situ recovery)
- The final decommissioning rule does not require early remediation even if potential contamination of drinking water aquifers or subsurface water bodies exists
- NRC staff should develop methods to more effectively communicate information on incidents involving a loss of confinement to the public
- NRC public Web site information is fragmented and in some cases, out of date

# Conclusions

- International regulatory authorities effectively communicate radiological monitoring results annually in a public report to their legislatures
- More than 65 countries (including the U.S.) use the International Atomic Energy Agency's International Nuclear and Radiological Event Scale to explain the significance of events associated with radiation
- Timely information exchange and cooperation regarding operational events that are below regulatory limits will help regulatory authorities respond to emergent issues such as buried piping tritium leaks
- NRC and international regulators should cooperatively develop technical understanding of radionuclide transport through environmental pathways

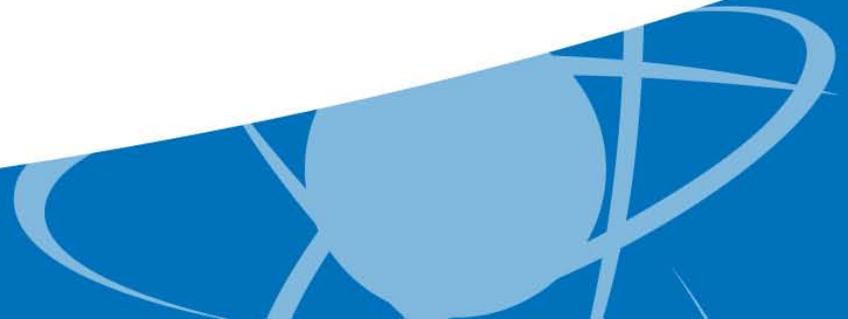


# Key Recommendations

- Identify the policy issues associated with an assessment of the NRC's groundwater protection regulatory framework
- Once the policy issues are addressed, implement conforming changes to incorporate appropriate enhancements in the Reactor Oversight Program
- Consider development of specific actions to address the key themes and conclusions in this report
- Conduct a focused dialogue with EPA, States, and international regulators to develop a collaborative approach for enhanced groundwater protection strategies

# Next Steps

- The Executive Director for Operations established a senior management review group to evaluate the GTF report, identify next steps, and make recommendations to the Commission about potential policy or regulatory changes



# Overview of Senior Management Review Group Efforts

Advisory Committee on Reactor Safety  
January 12, 2011

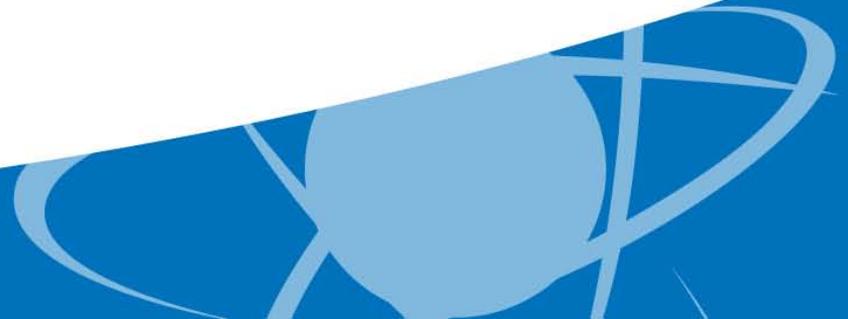
Louise Lund

# Agenda

- **Timeline/Outreach**
  - **Senior Management Review Group**
  - **Recommendations Tasked to Staff**
  - **Development of SECY papers**
  - **Next Steps**
- 

# Timeline

- GTF Report Issued June 11, 2010
- EDO formed Senior Management Review Group to consider findings
- Began work on July 12, 2010
- Held public meeting to invite public input on October 4, 2010



# Public Meeting Participants



- Environmental Protection Agency
- Department of Energy
- US Geological Survey
- State of Illinois
- Canadian Nuclear Safety Commission
- National Mining Association
- Conference of Radiation Control Program Directors
- Health Physics Society
- Prairie Island Indian Community
- Nuclear Energy Institute
- Licensees
- Public advocacy groups

# Senior Management Review Group

- Consisted of office directors, with Deputy Executive Director as Chair
- Evaluated the report, identified next steps, and made recommendations for the Commission about potential policy or regulatory changes
- Recommendations that did not involve policy issues were tasked to offices for appropriate action



# Recommendations Tasked to Staff

- Review baselines procedure 71124.06
- Review agency's experience with enforcement
- Determine if generic communication warranted
- Ensure OpE effectively disseminated
- Standard protocol for split samples
- Factsheet and community of practice
- Publication of annual effluent report
- International collaboration
- Monitoring and modeling movement of radioactivity
- Summary of results of TI
- Strengthen communications

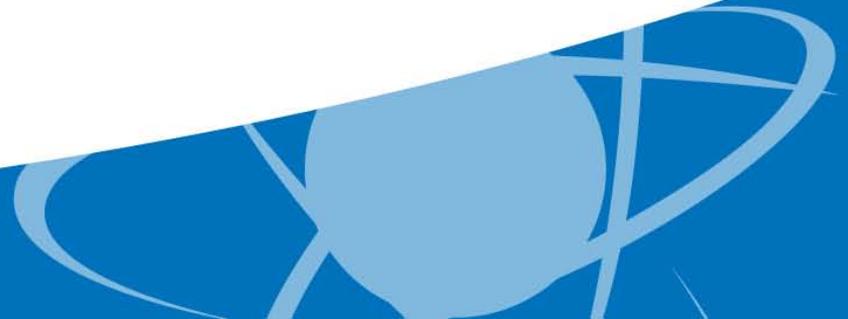
# Development of SECY papers

- Paper 1
  - Theme 1 – Reassess NRC’s Regulatory Framework for Groundwater Protection
  - Theme 2 – Maintain Barriers as Designed to Confine Licensed Material
- Paper 2
  - Theme 3 – More Reliable NRC Response
  - Theme 4 – Strengthen Trust

# Paper 1: Overall Regulatory Approach to Groundwater Protection

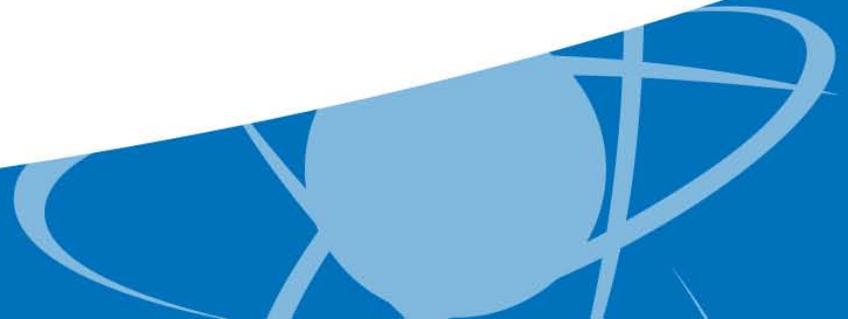
## **Discusses:**

- **Regulatory Framework**
- **Incorporating the Voluntary Industry Initiative on Groundwater Protection Into the Regulatory Framework**
- **Considering Modifications to the Regulatory Framework to Address Maintenance of Non-safety Related Piping and Tanks That Contain Radioactive Material**
- **Revising the Current Radiological Effluent Performance Indicator in the Reactor Oversight Program**
- **Considering Immediate Remediation of Spills at NRC-licensed Facilities**



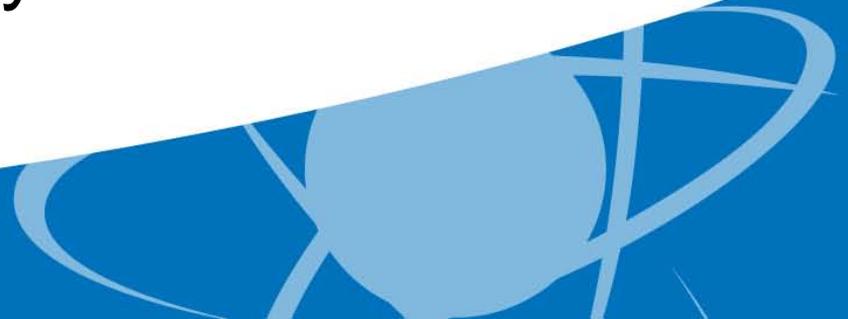
# Revising the Radiological Effluent Performance Indicator

- GTF recommended that current PI be revised to be a more leading indicator of performance
- Recommendation will be evaluated in the annual ROP self-assessment paper (Spring)



# Immediate Remediation of Spills

- GTF concluded that staff is developing a technical basis to address the need for immediate remediation, which may lead to rulemaking
- The staff started work on this technical basis in FY 2010 and is scheduled to complete their work by October 2011



# **Paper 2: Initiatives for Improved Communication of Groundwater Incidents**

## **Discusses:**

- Improved Communication Strategies**
- Improved Annual Effluent Reports**
- International Outreach**
- Communication with States**



# Next Steps

- **SECY paper target date January 21, 2011**
- **Commission Meeting – February 24, 2011**



# Health Physics Aspects of Groundwater Protection

A Presentation for the  
Advisory Committee on Reactor Safeguards  
12-Jan-11

Richard Conatser  
Health Physicist, NRR

# Outline

- Historical Perspective – 2006
- Groundwater Protection Initiative (NEI 07-07)
- Component Parts of the “Leak/Spill” Issue
- Strategy with Regulatory Framework
- NRC Review of Licensees Implementation of the GPI
- Summary of Health Physics (Transition to Buried Pipe)



# Historical Perspective (2006)

- Issues at several sites
  - Braidwood
  - Salem
  - Indian Point
- Prompt response
  - NRC Inspections
- Prompt guidance
  - Rulemaking was not pursued (potential long-term solution, low safety significance)
  - NRC Information Notice 2006-13
  - Voluntary Industry Initiative



# GW Protection Initiative

- Industry Groundwater Protection Initiative (NEI 07-07)
  - Draft 9-May-06
  - Final Aug-2007
  - Improve management of inadvertent releases
    - Site Hydrology and Geology & Site Risk Assessment
    - Ground Water Monitoring & Remediation
    - Record Keeping & Program Assessments
  - Improve communication with stakeholders
    - Stakeholder Briefings & Voluntary Communications
    - 30-day Reports & Annual Reports
- Industry's monitoring and communication have improved
- Gaps still exist in implementation

# Component Parts – Leak/Spill Issue

- Engineering – Prevent/Mitigate at the Source
  - Tank, pipe, valve,... (leaks)
  - Industry Practices (spills)
- Health Physics – Monitor and Protect
  - Monitor the aftereffects
  - Ensure adequate protection of public
  - Doses have been very small
  - Actual health impacts – above those associated with activities we normally consider safe – are not expected
- Environment – Good Stewards
  - NRC policy – Protecting people protects the environment
  - Environmental issues beyond regulations (adequate protection)

# Strategy & Regulatory Framework



- Short-term Strategy
  - Continue to Do NRC Inspections and Oversight
  - Assess Implementation of Voluntary Initiative
    - NRC Inspections
    - NRC Temporary Instructions to Verify Initiatives
    - Industry Independent Assessments of Voluntary Initiative
  - Determine Effectiveness of Voluntary Initiatives
    - Groundwater Protection (GPI), Buried Pipe (BPI), Underground Piping and Tanks Initiative (UPTI)
  - Identify Gaps in Effectiveness of Voluntary Initiatives
- Long-term Strategy
  - Based on Gaps, Evaluate Need for Additional Regulatory Action

# Assessment of Voluntary Initiative

- NRC Temporary Instruction – TI-2515/173
- All power plants had a Groundwater Protection (GP) Program in Place
- 63% of sites had all ~42 tasks in GP Program
- Gaps in some tasks at 37% of sites
  - Site Components Risk Assessments,
  - Remediation Processes,
  - Stakeholder Briefings, and
  - NEI Independent Assessments (now corrected)
  - Gaps are entered into the site's corrective action process
- NRC will continue oversight and inspections to close gaps

# Summary – Health Physics

- Health Physics – Monitor and Protect
  - Low Safety Significance (Similar to Tasks Considered Safe)
  - Additional Staff Actions to Improve Transparency
  - Continue to Assess Industry Initiatives & Close Gaps
  - Potential for Additional Regulatory Actions
- Even though Doses are Low, We Want to Ensure Doses are ALARA
- To Reduce Leaks at the Source (Pipes, Tanks, Components), the GPI, BPI, and UTPI will be used
- Engineering – Prevent/Mitigate Leaks (Next Speaker)

# Buried Piping

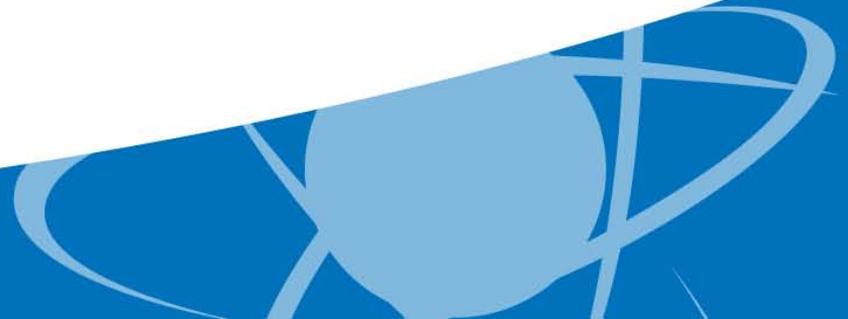
A Presentation for the  
Advisory Committee on Reactor  
Safeguards

January 12, 2011

Bob Hardies  
Senior Level Advisor, NRR

# Summary

- NRC's objectives related to buried piping
  - Maintenance of intended safety function
  - Releases remain below regulatory limits
- Current regulations and industry activities are adequate with regard to these objectives
- NRC is monitoring and responding to events related to buried piping
- NRC is working to understand and assess licensee implementation of the Buried Piping Integrity Initiative and the Underground Piping and Tanks Integrity Initiative



# Outline

- Background
- Buried Piping Action Plan
- Codes and Standards
- NRC Actions (Inspection and License Renewal)
- Performance Assessment
- Conclusions



# Background

- The Groundwater Protection Initiative led to enhanced groundwater monitoring and communication practices
- Several leaks from buried piping in 2008 and 2009 resulted in groundwater contamination
- September 3, 2009, Chairman Jaczko tasked the staff with providing a summary of activities related to buried pipe
- Industry establishes the Buried Piping Integrity Initiative, November, 2009
- December 3, 2009, SECY 09-0174 (ML093160004)
  - Look at regulations, codes and standards and industry activities

# NRC Actions

- Leaks at Vermont Yankee in 2010 from underground piping (in a concrete vault) generated significant stakeholder interest
  - Definitions:
    - Buried – In intimate contact with soil or concrete; it can be cathodically protected
    - Underground – Below grade in a vault or chase. In contact with air.
- May 18, 2010, Buried Piping Action Plan (ML101480739)
- September 14, 2010, Buried Piping Action Plan update (ML102590171)
- Meetings with industry 10/22/2009, 2/24/2010, 9/21/2010
- Letter to industry August 18, 2010 (ML102300270)

# Buried Piping Action Plan

- Data collection
  - Historical rate of incidence
  - Affected systems
  - System classifications
  - Tritium releases
- Program assessment
  - Understand Buried Piping Integrity Initiative and Underground Piping and Tanks Integrity Initiative
  - Temporary Instruction for NRC inspection of Initiative activities
  - Initiative details (scope, risk ranking, inspection techniques)
- Codes and standards
- Regulatory activities
  - Website
  - License renewal
  - Commitments
  - Recommendations for rulemaking

# Codes and Standards

- ASME Code
  - Met with ASME, Section XI management August 6, 2010
  - In November Section XI established a committee to address leaks from buried piping
    - Consideration of enhanced inspection requirements
    - Consideration of extension of scope to nonsafety-related piping that contains radioactivity
  - First meeting of the committee is this month
  
- NACE International (formerly National Association of Corrosion Engineers)
  - Task group to develop standards for nuclear buried piping
  - First task group meeting September, 2010
  - Meets September and March

# NRC Actions

- Inspection
  - Temporary Instruction for inspection of buried piping activities
    - Made decision to generate a TI as part of the action plan
    - Implementation by June 2011
    - Temporary Inspection instructions may exist through 2015
    - Seeking to understand details:
      - Risk ranking processes
      - Inspection techniques and processes
        - » Guided wave
        - » Excavations
- License renewal
  - Revised buried piping aging management program

# Industry Activities

- Buried Piping Integrity Initiative, November 2009
  - Initiative requirements:
    - Write program and procedures
    - Ranking
    - Inspection Plan
    - Inspection
    - Asset Management plan
- Underground Piping and Tanks Integrity Initiative, September 2010
  - Similar requirements with added scope

# Performance

- Seeking to establish a pre-2010 incidence rate for leaks as a performance baseline
- Monitoring operating experience
- Evaluating need for commitments for initiative

# Conclusions

- NRC's objectives related to buried piping
  - Maintenance of intended function
  - Releases remain below regulatory limits
- Current regulations and industry activities are compatible with these objectives
- NRC is monitoring current events related to buried piping
- NRC is performing action plan activities, including monitoring industry initiatives

# Initiatives for Improved Communication of Groundwater Incidents

A Presentation for the  
**Advisory Committee on Reactor Safeguards**  
January 12, 2011

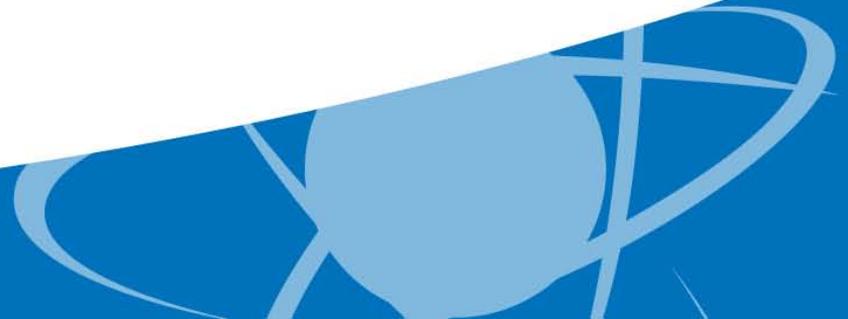
Margie Kotzalas  
Executive Technical Assistant, OEDO

# Overview

Addresses GTF themes of creating more reliable NRC response and strengthening trust

– Short-term actions

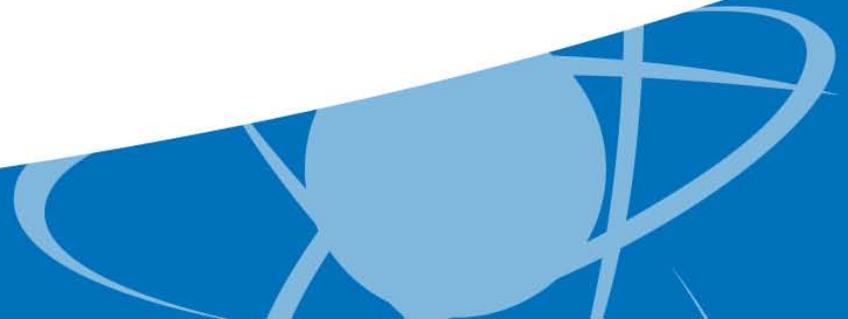
- Community of practice
- Standard protocol for split samples
- Factsheets
- Generic communication



# Overview

## – Long-term actions

- Should oversight programs be modified to ensure greater consistency when addressing low risk/high public interest issues?
- How can NRC improve communications and support to other regulatory agencies?
- How can NRC increase confidence in its actions and communications related to groundwater protection?
- What role could 3<sup>rd</sup> party verification play in responding to groundwater incidents?



# Initiatives

- Improved communication strategies
- Improved annual effluent reports
- International outreach
- Communication with States

