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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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SUBCOMMITTEE ON RADIATION PROTECTION AND NUCLEAR

MATERIALS

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MEETING

+ + + + +

TUESDAY

MAY 5, 2009

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ROCKVILLE, MD

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The Subcommittee convened in Room T2B3 in the Headquarters of the Nuclear Regulatory Commission, Two White Flint North, 11545 Rockville Pike, Rockville, Maryland, at 1:00 p.m., Dr. Michael Ryan, Chair, presiding.

SUBCOMMITTEE MEMBERS PRESENT:

MICHAEL T. RYAN, Chair

DANA A. POWERS

JOHN D. SIEBER

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NRC STAFF PRESENT:

ANTONIO DIAS, Designated Federal Official

VANICE PERIN

STEVE GARRY

RICHARD CONATSER

STEVEN SCHAFFER

MIKE CHECK

ED O'DONNELL

ALSO PRESENT:

GEORGE OLIVER, Nuclear Energy Institute

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P R O C E E D I N G S

1:00 P.M.

CHAIR RYAN: It's the appointed hour.  
We'll come to order, please.

This is a meeting of the Radiation Protection and Nuclear Materials Subcommittee. I am Mike Ryan, Chairman of the Subcommittee. ACRS Members in attendance are Dana Powers and Jack Sieber. Antonio Diaz of the ACRS staff is the Designated Federal Official for this meeting.

The purpose of this meeting is to inform the Subcommittee about the staff's plan to finalize and publish the following Regulatory Guides: 1.21 entitled "Measuring, Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid Waste"; and Regulatory Guide 4.1, entitled "Radiological Environmental Monitoring for Nuclear Power Plants." These Regulatory Guides have already been through the public comment period.

The Subcommittee will gather information, analyze relevant issues and facts and will 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

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1 the meeting, previously published in the Federal  
2 Register. We have received no written comments or  
3 requests for time to make oral statements from members  
4 of the public regarding today's meeting. We have also  
5 received no requests for people to participate via a  
6 bridge phone line regarding today's meeting.

7 A transcript of the meeting is being kept  
8 and will be made available as stated in the Federal  
9 Register notice. Therefore, we request that  
10 participants in this meeting use the microphones  
11 located throughout the meeting room when addressing  
12 the Subcommittee. The participants should first  
13 identify themselves and speak with sufficient clarity  
14 and volume so they may be readily heard.

15 We'll now proceed with the meeting and  
16 with the presentations by the staff. First up is, I  
17 believe, Steve Garry.

18 MR. GARRY: Steve Garry. I'm with the  
19 NRR, Division of Inspection and Regional Support. I'm  
20 the co-author of the Reg. Guides and this is Richard  
21 Conatser, who is going to take the lead in going  
22 through the presentation.

23 MR. CONATSER: And my name is Richard  
24 Conatser. I'm with Division of Inspection and  
25 Regional Support. And we are going to go over two

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1 Reg. Guides today. And thanks for inviting us here to  
2 go over these Reg. Guides. This has been a long  
3 process, several years in the making and we're coming  
4 to the end of the process here with these two Reg.  
5 Guides.

6 The two Reg. Guides are "Measuring,  
7 Evaluating, and Reporting Radioactive Effluents from  
8 Nuclear Power Plants" and "Radiological Environmental  
9 Monitoring for Nuclear Power Plants."

10 So there was a team that was put together  
11 I guess almost three years ago now. Steve was one of  
12 the members on that team to help revise these Reg.  
13 Guides and put this information together. I've come  
14 into this kind of late in the game in the last year or  
15 so and helped to finish up the project. These Reg.  
16 Guides, before going any further, let me mention that  
17 the Reg. Guide 1.21 for "Measuring, Evaluating, and  
18 Reporting Effluents" is kind of a detailed Reg. Guide.

19 It talks about how licensees should be measuring  
20 their effluents, how they report those effluents, and  
21 we pretty much would like to stick to that scope in  
22 this document.

23 There are other Reg. Guides that address  
24 other things that are also mentioned in this Reg.  
25 Guide and we'd like to limit the scope to eliminate

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1 duplication between documents. Same thing with the  
2 Reg. Guide 4.1. This one deals with environmental  
3 monitoring, so we'd like to keep the scope on these to  
4 a good scope and with that said, I guess we can  
5 proceed on.

6 We did have a public meeting in January of  
7 this year. We received lots of comments from the  
8 industry. We've incorporated those comments and I  
9 guess now we're presenting it here to ACRS to get your  
10 recommendation for approval.

11 What we'll be covering today: we have two  
12 Reg. Guides, Reg. Guide 1.21 for radioactive effluents  
13 and Reg. Guide 4.1 for environmental monitoring.  
14 We'll cover each of these separately, but on each of  
15 these we're going to cover some common things. For  
16 example, why the Reg. Guide were revised, we'll  
17 address that. We will list the major changes in the  
18 documents. We will list at least for Reg. Guide 1.21,  
19 that's a little bit thicker, list a table of contents  
20 so you can kind of see the organization of the  
21 document. We're going to flip through those very  
22 quickly, but I think you'll see there why we're going  
23 to go over that when we get to that. And then we'll  
24 address some of the public comments that we received,  
25 some of the public comments that we thought that the

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1 ACRS would be most interested.

2 Why revise the Reg. Guides? Reg. Guide  
3 1.21 for radioactive effluents, Rev. 1, published in  
4 1974, 35 years ago. A lot of things have happened in  
5 35 years. Lots of operating experience, lots of  
6 lessons learned.

7 Reg. Guide 4.1 published in 1975, Rev. 1.

8 So over the years a lot of things have happened. We  
9 wanted to include the latest staff guidance to address  
10 some of these issues. And I guess one of the things  
11 that really tipped the scales here was the NRC's  
12 Radioactive Effluent Lessons Learned Task Force Report  
13 that looked at the groundwater contamination issues  
14 and some of the recommendations that came out of that  
15 said hey, you guys need to take a look, the NRC needs  
16 to take a look at these Reg. Guides and revise them  
17 and bring them up to speed for the operating  
18 experience.

19 And here were some of the Lessons Learned  
20 Task Force recommendations. These were the ones  
21 related to Reg. Guide 1.21. And there are quite a few  
22 of them. I'll go through them kind of quickly, but I  
23 want to make sure everyone understands these are kind  
24 of new issues that have come up in the last few years  
25 and one of the main reasons for upgrading these Reg.

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1 Guides or this Reg. Guide in particular.

2 Recommendation 2 says you need to provide  
3 guidance for detecting, evaluating, and monitoring  
4 releases from unmonitored pathways. And this Guide  
5 does that. It takes a look at how licensees should be  
6 detecting, evaluating, and monitoring spills to the  
7 ground, to surface waters or what not, and then how  
8 they need to report those.

9 Recommendation 3, it said to provide  
10 guidance consistent with industry standards. Well,  
11 the whole document, if you look at the original  
12 document, we've revamped the whole document and kind  
13 of brought it up to speed for 2009, so the whole  
14 document has kind of been brought up to speed for  
15 that. Some of it is cosmetic. Some of it is more --  
16 Lessons Learned Task Force Recommendation 5 said  
17 provide guidance to define magnitude of leaks and  
18 spills that need to be documented. And that's also  
19 contained in this document. People are saying, well,  
20 you know, if you open a door and one atom escapes, do  
21 you -- what's your level of detail, what is the  
22 specificity that we need when we start looking at this  
23 stuff? So the document addresses that.

24 CHAIR RYAN: Richard, if I may, just  
25 looking ahead a little bit, if you could, maybe not

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1 now, but when you get there, give us some specifics on  
2 how you've accomplished that for each one of these  
3 categories. That would probably be helpful, however  
4 you want to do it.

5 MR. CONATSER: Okay.

6 CHAIR RYAN: Now or later is fine, but I  
7 think it's helpful to give examples for those  
8 statements.

9 MR. CONATSER: I think we do have some  
10 examples later on. If we don't, we will hit them.

11 CHAIR RYAN: That's fine. Thank you.

12 MR. SIEBER: Right now, when you're  
13 talking about identifying miscellaneous effluents that  
14 are unmeasured, unplanned, basically undocumented  
15 before the fact, you're relying on the NEI document  
16 for licensees to follow which is one of the outcomes  
17 of the Lessons Learned Task Force?

18 MR. CONATSER: We get into that a little  
19 bit later on, but I'll address that now. The NEI  
20 document that's out there, NEI 07-07, a very good  
21 document, by the way, a lot of detail in that directed  
22 from the perspective that licensees need to be very  
23 transparent in their communications. And that's more  
24 communications protocols, it covers a lot of different  
25 things that are of less than regulatory significance,

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1 I guess I should say. That may not be the proper  
2 words, but these documents here try to address things  
3 more from the regulatory perspective.

4 For example, for surveys, what is required  
5 for a survey, if there's a spill or a leak on site.  
6 These guidance documents here would say this is what  
7 would be acceptable for an accurate survey, whereas  
8 the NEI document may not go into that level of detail.

9 That's not really a regulatory -- their document is  
10 not really regulatory-driven.

11 MR. SIEBER: Well, it's PR-driven in  
12 effect. On the other hand, I think it's a useful  
13 document. Now absent a revision to the Reg. Guide and  
14 the lack of specificity in the NEI document, what is  
15 the previous basis, all of 1974, that would require  
16 licensees to report above minimum detectable levels of  
17 spills, unmonitored releases, and what have you?

18 MR. CONATSER: Yes, there is a guidance  
19 out there in Rev. 1. It talks about -- there's a  
20 couple of things. One, in Rev. 1 of Reg. Guide 1.21,  
21 it talks about abnormal releases. It says you will  
22 report your abnormal releases in your annual report.  
23 You will do some type of characterization to look at  
24 the nuclides involved, the activities, the  
25 concentrations, the locations, etcetera, and then

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1 document those in the annual report. So Rev. 1 has  
2 that now because Rev. 1 is still active out there.

3 In addition, here's another point in the  
4 existing Reg. Guide 4.1, but it escapes me right now.

5 But there are some things in Reg. Guide 4.1 that do  
6 like abnormal releases that address that type of  
7 stuff.

8 MR. SIEBER: Well, what about the  
9 situation which has happened a bunch of times, some of  
10 which are reported, others of which may not have been,  
11 where you have an incident, on-site pipe breaks or  
12 what have you, something like that, that contaminates  
13 some area inside the protected area, inside the owner-  
14 controlled area, below 20,000 picocuries per EM, no  
15 other fission products and the licensee says I could  
16 drink that. Maybe we'll clean it up. Maybe we won't.

17 MR. CONATSER: There are a couple of  
18 issues there. I'm sure what your question -- is your  
19 question directed to a remediation?

20 MR. SIEBER: My question is what would you  
21 have done prior to issuing this and what would you do  
22 now? It's different.

23 MR. CONATSER: They would still need to  
24 report things that go off-site, that's always been  
25 there.

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1 MR. SIEBER: Yes, but this didn't go off-  
2 site to the extent that they measured. They looked at  
3 it and said oh, dried up in the sun.

4 MR. CONATSER: Right. Now that would be -  
5 - that could be handled under the lines of abnormal  
6 type releases if they spilled something to the  
7 environment, it enters into the environment, and if  
8 they don't do any remediation at all, if this is on-  
9 site --

10 MR. SIEBER: It becomes a decommissioning  
11 issue.

12 MR. CONATSER: It could become a  
13 decommissioning issue, but what licensees need to  
14 understand and I think they obviously do, is that with  
15 time, with the passage of time, the groundwater  
16 movement may transport this stuff to an off-site  
17 environment. In that case, then it becomes an  
18 effluent and it falls under the existing guidance  
19 here. So the existing Reg. Guide would cover that in  
20 that respect.

21 MR. GARRY: Just to add to that, the Reg.  
22 Guide also asks under that circumstance that the  
23 licensee do an evaluation. The extent and the amount  
24 and the levels and determine if any timely remediation  
25 is appropriate. Now that's not an NRC requirement to

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1 do remediation, but it is something that in the Reg.  
2 Guide, and that was the original question, that we're  
3 saying they should do is when you have those  
4 circumstances you need to go and do an evaluation and  
5 see where you are, because the existing regulation is  
6 20.1501 for surveys, require a survey reasonable under  
7 the circumstances.

8 MR. SIEBER: Will this revision to the  
9 Reg. Guide apply to all current licensees?

10 MR. CONATSER: The way it works for Reg.  
11 Guides is --

12 MR. SIEBER: It's a suggested way?

13 MR. CONATSER: It's one way of conforming  
14 with the requirements. Licensees may choose to adopt  
15 this as a way to do it. If they do that then there  
16 will not be a lot of scrutiny because the NRC has  
17 already looked at it carefully, this method. They can  
18 also use other methods if they would so choose, as  
19 long as they can show that it meets the regulations.

20 CHAIR RYAN: Current licensees don't have  
21 to adopt this.

22 MR. CONATSER: They do not have to adopt  
23 this.

24 CHAIR RYAN: From previous comments I've  
25 heard it may apply to two applicants based on when

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1 their license applications are docketed.

2 I think we need to be crystal clear that  
3 the 107 plants don't necessarily have to adopt this.

4 MR. CONATSER: That's correct, they do not  
5 have to adopt it. That's the same for almost all Reg.  
6 Guides, they don't necessarily have to adopt it and I  
7 appreciate that point.

8 CHAIR RYAN: But just to be clear, this is  
9 no driving force to adopt this.

10 MR. GARRY: And there are statements in  
11 the Reg. Guide that say that.

12 CHAIR RYAN: Right, exactly.

13 MR. CONATSER: Now keep in mind, even  
14 though that is the case, if this is issued, which we  
15 would like it to be issued, when it is issued, then  
16 licensees will be reading this, the staff positions  
17 here and if they would have circumstances on their  
18 side where they might be able to use this, they  
19 obviously will be looking at this document carefully  
20 to see what the NRC would find as an acceptable  
21 method. So do they have to do that? No, they don't.

22 But will they be looking at it? I believe they  
23 certainly will.

24 MR. SIEBER: If I can restrain myself,  
25 I'll quit asking questions until you get through the

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1 introduction.

2 (Laughter.)

3 MR. CONATSER: We appreciate that.

4 MR. SIEBER: Well, there's always a chance  
5 and I may have to break that.

6 MR. CONATSER: Okay, we were at Lessons  
7 Learned Task Force Recommendation 5. And there's  
8 actually three parts to Recommendation 5. The first  
9 one we already talked about, defining magnitudes of  
10 spills and leaks to be documented. That's listed in  
11 the Reg. Guide. And by the way, it mentions 100  
12 gallons, the same as in the NEI initiative. That's in  
13 the document. I don't know if you want me to point to  
14 the page number or anything when we go over these.  
15 Okay. So it mentions that about documenting spills  
16 and leaks. If it's over 100 gallons, you really need  
17 to take a look at that.

18 It says here to define significant  
19 contamination, provide guidance for defining  
20 significant contamination and that definition appears  
21 in this document. Did not appear in Rev. 1. So  
22 that's kind of new.

23 Also, they said we need to provide  
24 guidance to include spills and leaks in the annual  
25 report and that's in this document. Now the spills

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1 and leaks on site which was Jack's question I believe  
2 earlier, due to the wording in Rev. 1, the way they  
3 define abnormal releases was a little bit different.  
4 So they could report it or they may not report it.  
5 There was some inconsistency there. The new Reg.  
6 Guide takes care of that and makes sure it's  
7 consistent across all licensees.

8 MEMBER POWERS: If nobody adopts it, or  
9 consistent now than it was before?

10 MR. CONATSER: That's exactly correct.  
11 Plants do not have to adopt it. That's correct.

12 MEMBER POWERS: If I wanted to look at  
13 trends in effluents from the plants, where would I go?

14 MR. CONATSER: Trends in effluents from  
15 the plants?

16 MEMBER POWERS: Yes.

17 MR. CONATSER: Well, we do keep -- the NRC  
18 maintains copies of all the reports, the annual  
19 reports from the licensees on our public webpage. You  
20 can go there and it will look at all of the effluents  
21 from the different licensees in detail.

22 MEMBER POWERS: Under NRR?

23 MR. CONATSER: It's on the public webpage.  
24 If you go to the public webpage, if you look on the  
25 lefthand side, you'll see a yellow and magenta tri-

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1 bladed symbol. Click on that. Then on the righthand  
2 side of the page it will say Treating Contamination.  
3 Click on that and you should find it.

4 CHAIR RYAN: The report, are you looking  
5 for the tritium test report?

6 MEMBER POWERS: I am looking for just  
7 effluents in general.

8 MR. GARRY: In addition to that, the  
9 Commission has authorized the funding for us to  
10 develop an annual summary of effluent and solid waste  
11 reports. And we have a contract that's developing  
12 that summary report now. Back in the '80s, I think it  
13 was 1980 until 1993 or 1994, there were 14 years of  
14 effluent and solid waste reports. It was discontinued  
15 in approximately '94. It's being reinstated now and  
16 it will catch up the data back a few years and be  
17 reinstated -- our first report is expected out this  
18 year.

19 CHAIR RYAN: Let me get back, if I could,  
20 Richard, to the number five bullet.

21 MR. CONATSER: Certainly.

22 CHAIR RYAN: In reading the significant  
23 contamination definition it's as used in 10 CFR 50.75,  
24 record keeping, a quantity or concentration of  
25 residual radioactivity that would require remediation

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1 during decommissioning in order to terminate the  
2 license by meeting the unrestricted use criteria in  
3 20.1402.

4 What if 20.1402 isn't the most restrictive  
5 requirement applied to that particular decommissioning  
6 which often is not? EPA standards or local  
7 groundwater requirements can overpower the  
8 decommissioning requirements. Then what?

9 MR. CONATSER: You mean like the four  
10 millirem EPA overpowering the 25 millirem --

11 CHAIR RYAN: EPA kind of relates to a four  
12 millirem number for dose calculation and local  
13 groundwater requirements could be more restrictive  
14 than that.

15 MR. CONATSER: Well, the significant  
16 contamination there, well, I'm not positive exactly --  
17 I would have to look that up for you, Mike.

18 CHAIR RYAN: The point I'm trying to make  
19 it is in a way arbitrary because in a consistent way  
20 and it's the NRC requirement it's speaking to, so I  
21 appreciate that. But that may not keep the licensee  
22 in good stead with his shareholders because he may end  
23 up with a whole lot more decommissioning than he might  
24 have thought he was going to have to do.

25 MR. CONATSER: It's going to be state by

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1 state on implementing the decommissioning.

2 CHAIR RYAN: County by county and all the  
3 rest.

4 MR. CONATSER: Right. So generally, it  
5 would be the 25 millirem in 14.02 and then whatever  
6 additional the state would tack on to that.

7 MR. GARRY: It would be nice to say that.

8 CHAIR RYAN: But it may not be true.

9 MR. GARRY: We can only write a Reg. Guide  
10 that addresses the NRC regulations. We can't go  
11 outside the bounds or scope of the NRC regulations.

12 CHAIR RYAN: Well, you wouldn't be if you  
13 just said make sure you look at any other requirements  
14 that may apply.

15 MR. GARRY: That would be suggestive  
16 advice, but it's really outside the scope of the NRC's  
17 jurisdiction to say that.

18 CHAIR RYAN: Well, the counter to that is  
19 that it could be the one thing that they can meet all  
20 the NRC requirements and still have a problem.

21 MR. GARRY: That's very true. And that's  
22 decommissioning experience that Jim will speak to  
23 later.

24 MR. CONATSER: Keep in mind, too, the  
25 scope of the Reg. Guides, this is the staff position

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1 on how to meet the NRC requirements. That's the  
2 purpose of a Reg. Guide. So we kind of limit our  
3 scope to that.

4 CHAIR RYAN: Well, the example I often use  
5 is the omelet chef on the Titanic had breakfast ready.

6 If something else happens, it's a force majeure to  
7 override the omelet chef, you know, where you end up  
8 at the end of the day. Say this is our niche and  
9 we're going to stick to it, I appreciate that  
10 perspective and that framework and it's a good one to  
11 start from, but it can't be considered in a vacuum  
12 against these other things that are pushing the same  
13 issues.

14 I wrestle with that myself and have as a  
15 licensee, so it can be a hard thing to do and I just  
16 wonder if there's a way for this Reg. Guide to reflect  
17 some guidance in that area.

18 MR. CONATSER: We had looked at that when  
19 we were preparing the document it was, because of such  
20 difference state-to-state issues, local issues, we  
21 chose -- it was just too difficult to bring that into  
22 this document we felt.

23 CHAIR RYAN: Okay, that made my point.  
24 Thanks.

25 MR. CONATSER: Okay, and moving on then to

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1 recommendation 7, provide guidance to address  
2 remediation. And remediation is addressed in the  
3 document and I guess I can turn to it here real quick  
4 and see kind of what we say.

5 Mike, I think you've got a copy there of  
6 Reg. Guide 1.21, but on page 12 --

7 CHAIR RYAN: Yes.

8 MR. CONATSER: It talks about remediation  
9 should be evaluated and implemented as appropriate.  
10 There's a paragraph that goes on there, talking about  
11 remediation.

12 CHAIR RYAN: Okay.

13 MR. CONATSER: And remediation is also  
14 talked about as well on pages 21, the first full  
15 paragraph at the top, so remediation is addressed in  
16 here. Now what we tried to do, there is a separate  
17 Reg. Guide on decommissioning for decommissioning  
18 funding, Reg. Guide 4.21 for new reactors and soon to  
19 be Reg. Guide 4.22, if we get the rulemaking on 10 CFR  
20 20.1406(c) come out.

21 But what we tried to do here was limit the  
22 amount of detail in this document on decommissioning,  
23 because really the brunt of the decommissioning  
24 guidance belongs in those guidance documents, not in  
25 this document, since this really relates to effluents

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1 from nuclear power plants.

2 Recommendation 8 says provide guidance to  
3 detect leaks and spills before they migrate offsite.  
4 That's also provided in this document. And that's on  
5 page 21. It says surveys, characterization  
6 activities, conceptual models, and groundwater efforts  
7 should be sufficient to provide advance indication of  
8 potential future discharges. And there's more, but I  
9 think that's the pertinent part of it right there for  
10 recommendation 8. And it goes on. There's more  
11 recommendations. This is the last page.

12 Recommendation 9 says provide guidance to  
13 survey and monitor groundwater and soil. And that's  
14 also provided in the document here. It's in Sections  
15 3.5 and 3.6 on page 20. It talks about what to do if  
16 you have a spill or a leak to the ground surface or a  
17 spill or a leak to groundwater.

18 Recommendation 10 says provide guidance  
19 for additional monitoring locations and capability to  
20 detect low-risk radionuclides. Now that issue is  
21 scattered out in multiple locations in the document.  
22 Different concepts such as things that talk about know  
23 your release points, know your significant release  
24 points, know the release points that are less  
25 significant and how you're going to deal with those.

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1 All that guidance is in this document.

2 CHAIR RYAN: What's a low-risk  
3 radionuclide?

4 MR. CONATSER: Well, low risk would be one  
5 that has limited dose significance, I guess would be a  
6 good way to put it, perhaps. If you have a site where  
7 they're discharging a multitude of radionuclides, and  
8 you look at that whole list of radionuclides and you  
9 say well, geez, this whole list, this one radionuclide  
10 contributes maybe .001 percent of the total, that  
11 would be one that doesn't contribute significantly to  
12 the total.

13 MR. GARRY: Those radionuclides are low-  
14 dose factors and low source terms or low risk.

15 MEMBER POWERS: Plutonium-238.

16 MR. SIEBER: And 13.

17 MR. CONATSER: If they were discharging  
18 that material, of course, plutonium would qualify,  
19 even from a chemical hazard perspective, plutonium has  
20 issues there. So yes, and this document provides that  
21 guidance. Rev. 1 does not really provide guidance on  
22 how to treat the low-level stuff, what you really need  
23 to do. It's really kind of silent. It doesn't  
24 address it one way or the other.

25 CHAIR RYAN: One of the things on this and

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1 a couple of the other ones when you take them together  
2 is -- and again, I appreciate the fact these focus on  
3 monitoring, but monitoring in the absence of having  
4 some sort of a model for what that monitoring tells  
5 you is weak. For example, you know, I would often be  
6 interested in very mobile, relatively innocuous  
7 radionuclides from a monitoring standpoint if I'm  
8 trying to understand the behavior of the system.  
9 Obviously, tritium is one of choice. Carbon might be  
10 another and others. So I might be interested from an  
11 understanding the system perspective in radionuclides  
12 that have no real dose consequence to anybody that  
13 might be using that environmental media.

14 On the other hand, there might be high-  
15 dose conversion factor radionuclides and I'm  
16 intentionally switching the words like plutonium or  
17 some of the others where you don't know if any of that  
18 is out there for any reason, other than fall out.

19 So I'm just thinking how do you tie the  
20 monitoring guidance to how do you use the monitoring  
21 guidance to understand the behavior of the system,  
22 because it's in the behavior of the system where you  
23 make important decisions that ultimately lead to easy  
24 and successful decommissioning. It's very difficult  
25 to complicate decommissioning and we've got some

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1 examples of both of those on the books.

2 That's the wrong question, but --

3 MR. CONATSER: Yes, I guess I see kind of  
4 a common theme there in that I think we started out  
5 with dose and low-dose significance and you said well,  
6 what if there is a nuclide of low-dose significance,  
7 but maybe it's got some other qualities that make it  
8 important.

9 CHAIR RYAN: The phrase I would rather see  
10 you use is risk-significant and risk-significant to  
11 some endpoint of interest, like environmental  
12 contamination or not meeting a groundwater requirement  
13 or something of that sort. So dose significance isn't  
14 important. Risk significance is a more important view  
15 I would think to take of it.

16 MR. CONATSER: Well, dose and risk, I  
17 think there's a relationship, obviously, there.

18 CHAIR RYAN: And it's not always linear.

19 MR. CONATSER: Right.

20 CHAIR RYAN: That's my point.

21 MR. CONATSER: Now in light of that for  
22 the Reg. Guide here, not only do we address dose when  
23 we talk about significance of nuclides, but we talk  
24 about the curie, the activity of the nuclides being  
25 discharged, so in the case of tritium, the dose may be

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1 very low, but the activity may be larger than a lot of  
2 the other nuclides.

3 So we say if it has dose significance or  
4 activity significance, then you need to be taking a  
5 look at that so we're more broad than just a dose-  
6 based approach. It tries to cover all the aspects  
7 there.

8 CHAIR RYAN: There's about four or five  
9 others I can think of in my head that could then get  
10 you to risk significant, and I think you're missing  
11 the boat if you don't get to the risk-significant  
12 thinking on this.

13 MR. CONATSER: I think the whole purpose  
14 of the Reg. Guide here now at Appendix I is to address  
15 that we have adequate protection of the public and  
16 that's what this Reg. Guide 1.21 is helpful for  
17 reporting radionuclides. The purpose here is to make  
18 sure that we're within the regulatory guidance and the  
19 regulatory requirements. And the regulatory  
20 requirements ensure adequate protection. So I think  
21 those are built in to the requirements themselves  
22 about the risk significance and we kind of rely on  
23 that.

24 When we look at this Reg. Guide, we say  
25 this is how you meet the Appendix I. Appendix I,

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1 that's as low as reasonably achievable and that's  
2 what we should be aiming for for risk significance. I  
3 think it kind of relates that way.

4 MR. GARRY: Can I add to that? In Section  
5 3.6, I didn't bring my glasses, we talk about more of  
6 a monitoring for groundwater leaks and the need to  
7 develop a site-conceptual model in a site  
8 hydrogeological study to know where it's going so you  
9 know where to monitor. And so there's guidance  
10 provided there in Section 3.6 on that.

11 MR. CONATSER: Does that help, Mike?

12 CHAIR RYAN: A little bit.

13 MR. CONATSER: Okay. I guess we're going  
14 to go on then.

15 CHAIR RYAN: Sure, please.

16 MR. CONATSER: Also another one of the  
17 Lessons Learned Task Force recommendation is for 23.  
18 It says to provide guidance for radionuclide transport  
19 and groundwater. And Steve had must mentioned that in  
20 Sections 3.5 and 3.6. It talks about dispersion and  
21 transporting groundwater. And that was not in Rev. 1  
22 of the Reg. Guide.

23 Recommendation 24 says to provide guidance  
24 for notification of public if there's general  
25 interest. Well, there are regulations on this that

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1 talk about if there's going to be public interest,  
2 then the licensees need to notify the NRC and we do  
3 put that guidance here in the document.

4 24, let me see where that's at. That is  
5 on page 12 at the top of the page there, the first  
6 full paragraph on page 12. It talks about if the  
7 licensee chooses to notify local authorities and then  
8 the paragraph goes on. There are things there that  
9 are of particular importance to the Commission and to  
10 the NRC. It even mentions one of the NUREGs, the  
11 NUREG/BR-0308 for effective risk communications. So  
12 we think we address that in the Reg. Guide, where that  
13 was absent again in the Rev. 1 of the Reg. Guide.

14 Number 25. The recommendation is to  
15 provide guidance to ensure event risk is provided in  
16 the appropriate context and that was what I just went  
17 over for the NUREG/BR-0308.

18 And those are the recommendations. It was  
19 kind of a long list. Once this came out, they said --  
20 the EDO came out and said you really need to revise  
21 these Reg. Guides to incorporate these comments and  
22 that was really a genesis for starting off these  
23 revisions to these Reg. Guides. Now here we are  
24 almost three years later talking here, trying to get  
25 these approved.

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1 MEMBER POWERS: I am still a little  
2 puzzled by 24.

3 MR. CONATSER: 24. Oh, okay.

4 MEMBER POWERS: If the local media whips  
5 up a rationale and technically-founded interest, then  
6 the licensee is bound to do something?

7 MR. CONATSER: I can't speak for the  
8 licensees on what they would do or what they would  
9 choose to do in that case, but of course, they would  
10 need to take a look and see from a corporate  
11 perspective what they would want to do.

12 MEMBER POWERS: It's still discretionary.

13 CHAIR RYAN: Yes, but I think that it  
14 would be better if somehow we could clarify what you  
15 really mean. Notification of the public if general  
16 interest. I don't understand exactly what those words  
17 mean, but if it's to make a public announcement about  
18 you've had a spill and you're investigating it and  
19 currently you see XYZ relative to public health and  
20 safety, and you're making some safety statement,  
21 that's one thing. You know, if you're assembling a  
22 community advisory committee and there's some routine  
23 report that's reporter, that's a different thing. So  
24 I think a little bit more definition to that would be  
25 helpful.

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1 MR. CONATSER: Well, here's what -- and  
2 that's a good point. I understand that and I  
3 certainly appreciate that.

4 One of the things we try to do in this  
5 document here, the NRC guidance, we provide the  
6 guidance for the requirements, the rules that we have,  
7 the regulations. Now there is guidance on that and  
8 it's in NEI 07-07. It talks very well to that aspect.

9 Now we could have lifted that out of 07-07 and put it  
10 into this document. As a matter of fact, originally,  
11 we had some stuff in this document and some of the  
12 public comments were it was too much duplication  
13 between this document and the NEI 07-07.

14 CHAIR RYAN: Make a reference.

15 MR. CONATSER: And we do have references,  
16 not here, but later on to the NEI 07-07.

17 CHAIR RYAN: That would be a good place to  
18 make a specific reference to what you thought was a  
19 good way to do it. There's nothing wrong with  
20 referencing somebody else and saying that's okay with  
21 us in this revision of this document.

22 MR. CONATSER: That's a fair comment.  
23 What we would have to think about there, to think it  
24 through thoroughly, the NEI document is very  
25 comprehensive on a lot of different issues. If we

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1 kept on referencing in here every section where it  
2 might be applicable, it would be all throughout this  
3 document referencing NEI 07-07. So there's a fine  
4 line you walk as to how often you want to reference it  
5 in the document.

6 CHAIR RYAN: Or if you get enough  
7 references, you can just endorse it and be done.

8 MR. CONATSER: And that's one option.

9 MR. GARRY: If it was comprehensive, yes.

10 CHAIR RYAN: But my point is that just  
11 because you reference it a number of times doesn't  
12 mean you shouldn't reference it. Just a thought.

13 MR. CONATSER: The NRC regulations, 10 CFR  
14 50.72, LERs and immediate notifications discuss when  
15 licensees need to report to the NRC under 50.72 events  
16 that would warrant notification of the NRC related to  
17 the public interest such as their reaction to a leak  
18 or a spill.

19 CHAIR RYAN: Oh sure, and I'm well aware  
20 of that connection, so I understand that, but again,  
21 this doesn't really tie in to those requirements  
22 either very clearly. So I'm just saying this is a  
23 little vague as to exactly what a notification of  
24 public, if general interest. It's not even a complete  
25 thought there exactly.

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1 MR. CONATSER: Where is the section?

2 MR. GARRY: It's on page 12, here.

3 CHAIR RYAN: Sorry, I didn't mean to  
4 attack.

5 MR. CONATSER: Yes. On this slide, yes --  
6 You have to excuse me --

7 CHAIR RYAN: I recognize the limitation.  
8 You can't fit it all on the slide.

9 MR. CONATSER: I was very brief, and I do  
10 abbreviate a lot in the slide, so I do apologize for  
11 that.

12 But the intent here of this paragraph is  
13 basically that 10 CFR 50.72 notification requirements,  
14 those are out there. Pay attention to those  
15 notification requirements. That was not listed in  
16 Rev. 1. I think just a pointer for licensees to say  
17 hey, this exists. It clues them in to hey, you know,  
18 there could be this issue that they need to explore if  
19 they have an incident at their site. I think that was  
20 the intent of this paragraph.

21 CHAIR RYAN: It calls out 50.72, 50.73 and  
22 specifically 50.72(b)(11). The references in the text  
23 are pretty clear.

24 MR. CONATSER: Yes.

25 CHAIR RYAN: There's a caveat. In

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1 general, licensees should notify the NRC if large  
2 leaks and spills or when significant public concern is  
3 raised, in accordance with. It doesn't say though  
4 shalt. It says in general.

5 MR. CONATSER: The public interest is an  
6 interesting one. There's different areas where  
7 there's more public interest in the country than other  
8 areas of the country. So it's really a regional type.  
9 It's difficult to address that type of thing where  
10 they're so -- it might be so locally influenced.

11 MR. GARRY: See, the NRC reporting  
12 requirement is kind of tied to the level of public  
13 interest. I think that's the point he's trying to get  
14 to here is that in general, the licensee should be  
15 notifying the NRC when there's significant public is  
16 raised. So he's trying to say like one size doesn't  
17 fit all. It depends on the local reaction to a leak  
18 of a spill, and therefore that's when notification of  
19 the NRC should be made.

20 CHAIR RYAN: I understand the point.

21 MEMBER POWERS: It eludes me a little bit.  
22 Why is the NRC tailoring things -- reporting  
23 requirements of requests of itself based on public  
24 interest, local public interest? That eludes me a  
25 bit.

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1 MR. GARRY: That's been on the books for a  
2 long time.

3 MEMBER POWERS: It sill eludes me.

4 (Laughter.)

5 I don't care if it's been there since the  
6 beginning of time.

7 MR. GARRY: In my opinion, the NRC should  
8 be aware when there's heightened public concern. I  
9 think that's appropriate.

10 CHAIR RYAN: It may be the issue have you  
11 met the regulatory requirements. Let's assume just  
12 for the sake of the argument the answer is yes. And  
13 this is somewhere below yes where there may be a need  
14 or other reasons beyond meeting a regulatory  
15 requirement for an exposure to a member of the public  
16 or a worker or something of that sort.

17 MR. GARRY: That's correct.

18 CHAIR RYAN: Where there is significant  
19 concern that needs attention, but radiological  
20 consequences are not part of the concern, are not  
21 substantiated concerns based on the facts at the time  
22 the discussion is going on, something of that sort.

23 MR. CONATSER: I think the intent is that  
24 if there's going to be an issue where it will enter  
25 into the public domain in a big way, newspapers or

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1 whatever, headlines, however you want to say that, the  
2 NRC needs to be prepared to address that type of an  
3 issue and it is incumbent on the licensees then to  
4 make sure the NRC would be notified so that everyone  
5 will be prepared to address those issues if they would  
6 come up. I think that's the intent.

7 MR. GARRY: More detail is provided in  
8 NUREG-1022 on meeting the 50.72 reporting  
9 requirements. There's a whole NUREG of I don't know  
10 50 or 70 pages that address specific situations on  
11 when events or situations should be reported to the  
12 NRC.

13 CHAIR RYAN: Have you referenced that?

14 MR. CONATSER: It's in here in this  
15 paragraph, by the way.

16 CHAIR RYAN: I'm sorry, you said NUREG,  
17 which one?

18 MR. GARRY: NUREG 1022.

19 CHAIR RYAN: Effective risk communication.

20 MR. CONATSER: Yes, it talks about -- the  
21 third sentence down in the second paragraph there, see  
22 where it says NUREG-1022, event reporting?

23 CHAIR RYAN: Yes.

24 MR. CONATSER: So I guess I should have  
25 read the whole paragraph. There's a lot of good

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1 information in here.

2 CHAIR RYAN: That's fine.

3 MR. CONATSER: So anyway, those were the  
4 recommendations from the Task Force. Any other  
5 questions on that?

6 CHAIR RYAN: No. Thank you.

7 MR. CONATSER: I'm going to move on  
8 quickly. Okay, major changes. What is being changed  
9 now? A lot of the changes are somewhat cosmetic.  
10 Some changes though were more than just cosmetic. I  
11 listed the ones here that I thought might be of  
12 interest. And when I go through these slides I have  
13 put some things in yellow text and you'll see those in  
14 your handouts as well.

15 The yellow means that something kind of  
16 changed since Rev. 1. So as you go through here, this  
17 presentation, you'll see some text in white, normal  
18 text. You'll also see some text in yellow. The  
19 yellow just indicates that hey, that's something that  
20 has changed from Rev. 1. It's just to draw your  
21 attention to that.

22 So for major changes in Reg. Guide 1.21,  
23 the effluents, we've always had to report effluents.  
24 No changes there. But groundwater, the specific  
25 mention of groundwater and to mention that that can be

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1 an effluent and that it would need to be reported,  
2 that's kind of a change since Rev. 1. That's kind of  
3 a major change.

4 Carbon-14. That is new, different on this  
5 implementation of the Reg. Guide. We are requesting  
6 that licensees take a look at carbon-14. In the past,  
7 carbon-14 may have been a small fraction of the total  
8 of the discharges from a nuclear power plant. Thirty-  
9 five years ago, there was a lot more failed fuel in  
10 the industry and effluents were quite a bit higher.  
11 Over the last 35 years, effluents have decreased  
12 significantly. As a result, carbon-14, if it's being  
13 released may constitute a larger fraction of that  
14 total.

15 MEMBER POWERS: If I take all of the paper  
16 files out of my offices, and ship them off to a  
17 landfill, I've got to report it to you? It's got  
18 carbon-14 in it.

19 MR. CONATSER: If that is significant,  
20 what we're saying is licensees should evaluate it for  
21 the significance relative to their total. If there's  
22 a dose, if there is a dose significance, curie  
23 significance, then they should be taking a look at  
24 that, exactly.

25 MR. GARRY: I don't think you understood

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1 his question correctly. He's saying natural carbon-14  
2 produced from atmospheric testing and from activation.

3 MR. CONATSER: I understand that, but I  
4 also took you to mean that it could have some plant-  
5 related carbon-14 in there as well. In the  
6 introduction to this, it talks about plant-related  
7 radionuclides. It excludes the background components.

8 CHAIR RYAN: So what used to be a small  
9 fraction of the effluents, was unimportant, is now a  
10 larger fraction. But let's assume for the sake of my  
11 point it's at the same absolute value. It's now  
12 important. That is a risk-informed approach.

13 MR. CONATSER: What we're saying is if it  
14 --

15 MR. SIEBER: It is cosmologically  
16 important.

17 CHAIR RYAN: Yes.

18 MR. CONATSER: If it constitutes a  
19 significant amount of the dose being generated from  
20 your site, then --

21 CHAIR RYAN: We'll accept my premise. My  
22 premise was it used to be a small fraction. Now it's  
23 a larger fraction, but it's the same absolute value,  
24 giving the same absolute dose when it was unimportant.

25 MR. CONATSER: That's correct.

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1 CHAIR RYAN: That's not a risk-informed  
2 view of it. I mean a risk-informed view, in my  
3 opinion, would take a more dose-impact view of what is  
4 important or not.

5 MR. GARRY: Actually, we had incorporated  
6 the risk-informed concept there. First of all, we're  
7 starting with the requirement of 10 CFR 50.36(a) to  
8 report principal radionuclides. And that's a major  
9 change in this regulation and that we define that  
10 principal --

11 CHAIR RYAN: Principal by what measure?

12 MR. GARRY: What the Reg. Guide defines.

13 MR. CONATSER: We find principal  
14 radionuclide as a radionuclide that constitutes either  
15 greater than one percent of the dose or greater than  
16 one percent of curies discharged and that's segregated  
17 by effluent type.

18 CHAIR RYAN: One is risk-informed, one is  
19 not.

20 MR. CONATSER: That's correct. The other  
21 question you had about dose or curies, dose is not the  
22 whole issue. It can migrate and have some  
23 significance in that respect to try to cover both of  
24 those issues.

25 CHAIR RYAN: KV would be a better

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1 parameter for mobility than activity.

2 MR. CONATSER: That would be another way  
3 to do it.

4 CHAIR RYAN: Anyway, go ahead. Sorry.

5 MR. CONATSER: Carbon-14, it could be more  
6 significant now and it kind of -- it wasn't really  
7 called out in particular in Rev. 1. We now call that  
8 out very particular in Rev. 2. So it's like hey, you  
9 should be taking a look at this. If it's significant  
10 at your site, then you should be accounting for it and  
11 reporting it.

12 CHAIR RYAN: Is this the result of  
13 monitoring data that says that's true?

14 MR. CONATSER: Oh yes. There's several  
15 studies out now and you probably have seen the ICRP 81  
16 report that talks about, that does the whole study on  
17 carbon-14. You've probably seen the IAEA Bulletin,  
18 the Publication 421. It talks about carbon-14 and the  
19 environment and what all the other international  
20 community is doing.

21 The international community doing quite a  
22 bit more, when you look through there and see what  
23 France is doing, Spain, and then you come to the  
24 United States. We're one of the few that was kind of  
25 silent on that issue. So all that stuff is new in the

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1 last 35 years. That wasn't there 35 years ago. So  
2 again, we're trying to bring the Reg. Guide, the  
3 guidance up to current industry standards, current,  
4 what's currently known about carbon-14 and there's  
5 lots of studies out there saying that carbon-14 can be  
6 a significant contributor.

7 MR. GARRY: And there's one, licensee at  
8 PWR that's reporting carbon-14 and it is a principal  
9 radionuclide for them.

10 CHAIR RYAN: Okay.

11 MR. CONATSER: Dose assessments. Some  
12 aspects of dose assessments have changed. They've  
13 always had to do dose assessments, obviously. Part  
14 20, the new Part 20 from 1991 --

15 CHAIR RYAN: That's not new.

16 MR. CONATSER: We still call it new in  
17 some respects. It's new in respect to these Reg.  
18 Guides which are 35 years old. So the new Part 20  
19 wasn't even out when these Reg. Guides were prepared.  
20 So that's changed.

21 CHAIR RYAN: You're using a dose system  
22 that's hard to find the documents to figure out how to  
23 calculate the stuff.

24 MR. CONATSER: That's correct. And also,  
25 the dose assessments for the EPA, the total dose

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1 assessment there, some of the things that had changed  
2 there, some of the ways the licensees now operate when  
3 they do their extended power uprates, when they do --  
4 they change their chemistry on site, there can be an  
5 impact on the shine from the site. So they are doing  
6 things more now than what they used to be doing and  
7 that can contribute to the direct radiation, so  
8 therefore there's guidance in this document. It talks  
9 about the EPA dose and the calculation of that and  
10 things to consider in that regard.

11 MR. GARRY: Just a point of clarification  
12 there. The Appendix significance, effluent controls  
13 on effluents and effluents only, excluding direct  
14 radiation. The EPA criteria for the unrestricted area  
15 includes direct radiation. And with the changes that  
16 have occurred in the last 10 to 15 years, we're now  
17 storing fuel on site in dry cask storage, reactor  
18 heads, steam generators, and power uprates. So we're  
19 pointing out in the document that the licensees need  
20 to evaluate whether they have an increased direct  
21 radiation component and ensure that that is factored  
22 into compliance with the EPA limits.

23 CHAIR RYAN: Just as a point of  
24 information, Steve, do you have any sense of which of  
25 those things you've listed are the more important

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1 contributors?

2 MR. GARRY: Well, I think the BWR shine  
3 for some of the older facilities has increased some.  
4 And some of the smaller sites with dry cask storage.

5 CHAIR RYAN: It's obviously very site  
6 size-specific.

7 MR. GARRY: Right.

8 CHAIR RYAN: And so forth. Thank you.

9 MR. SIEBER: You do not state specifically  
10 how licensees, what the recommended way of complying  
11 with Part 40 or Title 40 is?

12 MR. GARRY: We give some guidance on it.  
13 We give guidance on taking the direct radiation  
14 measurements, because most of the dose we're talking  
15 about is direct radiation. The effluents cause a very  
16 small portion of the dose. Obviously, they have to  
17 meet the Appendix I limits which are much lower. EPA  
18 is 25 millirem.

19 So if anybody is pushing the EPA limit,  
20 most of the dose is direct radiation. Okay, and so  
21 the guidance there is to take your direct radiation  
22 measuring devices, meaning the TLDs or the optically-  
23 stimulated devices or pressure ion chambers and  
24 subtract background, figure out where your resident  
25 is, because it's a dose calculation to an actual

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1 person to a real person, not to a fencepost, and we  
2 give that guidance in there.

3 MR. CONATSER: So it does have some  
4 general-type guidance like that.

5 MR. SIEBER: Could I conclude that EPA  
6 agrees with your recommendation?

7 MR. CONATSER: Yes, these are standard --  
8 I think we reference a lot of standard approaches in  
9 the references part of the document that talks about  
10 background subtraction, etcetera, so it's technically  
11 justified published information.

12 MR. SIEBER: You've not had an interaction  
13 with EPA when they said this looks --

14 MR. CONATSER: Not recently, but in the  
15 early days when EPA put into place their regulation  
16 they authorized NRC to be essentially the judge and  
17 evaluate and hold licensees responsible for compliance  
18 with the EPA standard.

19 MR. SIEBER: That was 30 years ago?

20 MEMBER POWERS: No, because EPA didn't  
21 exist 30 years ago.

22 MR. SIEBER: Right. Neither did the NRC,  
23 right?

24 (Laughter.)

25 MR. GARRY: EPA came into being in '75,

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1 right?

2 MR. SIEBER: Yes.

3 MR. GARRY: So that would be 32 years ago  
4 and EPA came in -- 40 CFR 190 standard, I'm not sure  
5 of the date of that. I believe it was late '70s, '78,  
6 '79.

7 MR. SIEBER: Okay, I'll quit asking.

8 MR. CONATSER: Does that help? No.

9 MR. SIEBER: Well, it does. It gives me  
10 an answer and the answer that I'm presuming is that  
11 NRC did not go to EPA and say we're writing a revised  
12 version of 1.21 that refers to one-year regulations.

13 MR. CONATSER: That is correct.

14 MR. SIEBER: Okay.

15 MR. CONATSER: I have not had that  
16 correspondence with them. I don't think any member of  
17 the team had that.

18 Okay, going on then to other major  
19 changes.

20 After dose assessments, we have solid radwaste. Of  
21 course, they've always had to report their solid  
22 radwaste. That's not a change.

23 Rev. 2 of the document, we say they need  
24 to segregate the Class A, B, and C type waste. That's  
25 kind of an issue now with the closures of the burial

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1 sites, etcetera. It's been a more significant issue,  
2 so that's listed in this document.

3 Also, we kind of hit principal  
4 radionuclides earlier. We defined what that was a few  
5 minutes ago. Principal radionuclide, that concept  
6 really wasn't in Rev. 1. The regulations say to  
7 report principal radionuclides, but it never was  
8 really defined in our guidance documents. Now this  
9 document does that. That's a change.

10 CHAIR RYAN: Just a quick clarification  
11 and you may have said it and I apologize if I didn't  
12 catch it, but this is on-site stored waste.

13 MR. GARRY: No, shift off-site for  
14 disposal.

15 CHAIR RYAN: Okay.

16 MR. GARRY: Processing and disposal.

17 CHAIR RYAN: Okay. And this actually --  
18 really then -- I'm am trying to think of the dates.  
19 This is the first time you've actually been -- it  
20 really doesn't have anything to do with anything other  
21 than Class A, B, and C came after the original version  
22 of this Reg. Guide.

23 So you're just adding the classification  
24 system.

25 MR. GARRY: Yes.

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1 CHAIR RYAN: Okay, that's fine. How about  
2 anything that's greater than Class C?

3 MR. CONATSER: You can't ship that, right?

4 MR. GARRY: Right, let's -- there's no  
5 place to ship it right now, so we did not include  
6 greater than Class C.

7 CHAIR RYAN: All right, that's fine.

8 MEMBER POWERS: Can I come back to the  
9 carbon-14 again? You indicated that one of the plants  
10 had said carbon-14 was really important. You also  
11 indicated that your motivation for including carbon-14  
12 here was based on European interest in this?

13 MR. CONATSER: There's a lot of different  
14 factors. I didn't go over all of them. I can go over  
15 them a little bit more if you'd like.

16 One of the impetuses was the foreign  
17 experience, in fact, it was one of the things we were  
18 looking at. Also, remember, back in 1974, 1975, the  
19 analytical capability wasn't necessarily what it is  
20 today. You've got much better analytical capability.

21 A lot of the techniques for detecting carbon-14 are  
22 now published in the IAEA Publication 421. So a lot  
23 of the guidance now is out there, whereas before, you  
24 know, the guidance wasn't really there.

25 The analytical capability may not have

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1 been there, so there's advances in the state-of-the-  
2 art over the last 35 years and that's made it -- we  
3 have those techniques now. I mean why wouldn't the  
4 plants not be willing to take a look at those things  
5 as more of the train of logic there.

6 MR. GARRY: Some of the original  
7 justifications were --

8 MEMBER POWERS: To answer your question, I  
9 think I would respond with adequate protection. If  
10 they were adequate in 1974, provided adequate  
11 protection in 1974, then it's presumed they believe  
12 they provide adequate protection now, whether or not  
13 you've quantified a hazard.

14 MR. GARRY: That's very interesting. If  
15 it adequately protected them, they're adequately  
16 protected now. The numbers are well within the  
17 Appendix I.

18 MEMBER POWERS: They're cleaning out their  
19 file cabinets.

20 MR. GARRY: Again, 99 percent of the  
21 carbon-14 in the environment is not from nuclear power  
22 plants.

23 CHAIR RYAN: And that gets me back to my  
24 point. More important now on what risk-informed  
25 basis?

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1 MR. GARRY: Well, yes. It's not a risk-  
2 informed basis. It's a relative basis. You're  
3 absolutely right. It's a relative basis.

4 CHAIR RYAN: What do you mean by relative?  
5 relative is a word that --

6 MR. GARRY: Relative means that the  
7 carbon-14 has stayed the same, but the other  
8 radionuclides have gone done.

9 CHAIR RYAN: And my answer is so what?

10 MR. GARRY: Well --

11 CHAIR RYAN: So now I'm being penalized  
12 because I know all the other radionuclides, so now I  
13 have to spend money

14 (Simultaneous speakers.)

15 CHAIR RYAN: You see my point. I always  
16 try and reach for a risk-informed view of this and if  
17 I have reduced radionuclides that I can control and  
18 that have potential for dose, and now this one is  
19 absolutely at the absolutely same concentration, but  
20 is now a higher percentage, so it means I now have to  
21 turn resources to measure one that used to be  
22 unimportant, but now is a bigger percentage of the  
23 total.

24 Now, by bigger percentage of the total I  
25 don't mean a bigger risk.

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1 MR. GARRY: That's right.

2 CHAIR RYAN: I don't think that's very  
3 good guidance, frankly.

4 MR. CONATSER: There's a couple of things  
5 to think about. Let me chime in here real quick,  
6 Steve.

7 CHAIR RYAN: And by the way, international  
8 documents address lots of other issues besides carbon-  
9 14 in power plants. It's carbon and carbon cycles and  
10 all that kind of stuff.

11 MEMBER POWERS: I think I would have been  
12 much more excited about carbon-14 if we said we put  
13 that in because we know the pebble bed reactors are  
14 coming along and they're going to have a much bigger  
15 carbon-14 source. Then I would get excited, saying  
16 well, it's become more important relative to  
17 everything else or because the Europeans are  
18 interested in it. I mean they can be interested in  
19 lots of things, you know.

20 MR. SCHAFFER: Can I add something? This  
21 is Steve Schaffer from NRO.

22 CHAIR RYAN: Of course.

23 MR. SCHAFFER: From our new application  
24 perspectives, carbon-14 is -- when we look at Appendix  
25 I compliance, it's like 50 percent of the gaseous

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1 doses.

2 CHAIR RYAN: Those doses are what?

3 MR. SCHAFFER: And the doses are below the  
4 Appendix I limits, but not three orders of magnitude  
5 below. They're still within a factor of ten.

6 CHAIR RYAN: And they've always been  
7 within that same absolute value range?

8 MR. SCHAFFER: Yes, they've always been  
9 within that same absolute value range.

10 CHAIR RYAN: And so the importance today  
11 is just the same as the importance as it was in terms  
12 of a risk-informed view.

13 MR. SCHAFFER: Then all of Appendix I from  
14 risk-informed view could be eliminated. Is that what  
15 you're saying?

16 CHAIR RYAN: No, I'm simply saying that  
17 adding importance to something, is it the same  
18 absolute value of contribution to risk is -- could be  
19 kind of a mischaracterization of the current risk.

20 MR. SCHAFFER: But it also would be a  
21 mischaracterization of the current dose.

22 CHAIR RYAN: No, calculate the dose until  
23 your heart's content.

24 MR. SCHAFFER: How can you calculate the  
25 dose without part of your source term?

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1 CHAIR RYAN: Well, that's a discussion we  
2 had earlier about inventory of radionuclide by curie.  
3 They don't tell you much about risk.

4 It's not until you go through a process of  
5 calculating a risk-significant parameter like dose  
6 that you rank them on the basis of risk, not activity  
7 and it's concentration that tell you much about risk.  
8 Those are metrics that help you get to risk.

9 MR. SCHAFFER: And with carbon-14  
10 producing 50 percent of the gaseous doses, it becomes  
11 important.

12 CHAIR RYAN: The percentage of doses is  
13 important. The absolute dose is.

14 MR. CONATSER: Let me -- and I agree with  
15 Steve. Steve brought up a good point there and I was  
16 ready to chime with just a few minutes ago. Keep in  
17 mind here, the effluents from nuclear power plants as  
18 they've been bringing these down are the effluents  
19 from the power plants have been decreasing, there's  
20 really not a lot of risk involved with the effluents.

21 It's very low, below the 10 CFR 50 Appendix I values.  
22 But just because there may not be a significant risk  
23 there, the NRC shouldn't just throw their arms up and  
24 say you know what? There's not a risk there. Let's  
25 not do any monitoring.

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1 CHAIR RYAN: That's not my point at all.  
2 Putting on the slide that carbon-14 is more important  
3 now is just flat out wrong. It is a bigger  
4 contributor to the percentage of the total amount.  
5 That's true. But it's not necessarily any more  
6 important than it was 10 years ago.

7 MR. CONATSER: Guilty as charged.

8 CHAIR RYAN: Okay.

9 MR. CONATSER: My words here may not have  
10 been exactly --

11 CHAIR RYAN: If the document reflects that  
12 it's more important now, it shouldn't.

13 MR. CONATSER: As a relative significance,  
14 it is --

15 CHAIR RYAN: As a relative contributor to  
16 the total inventory of what's in the effluent, yes.  
17 But as a relative contributor to risk it may be no  
18 more important now as it was before.

19 MR. CHOEK: Let me chime in here. This is  
20 Mike Choek from NRR. I think you make a great point.  
21 It's no more important in the absolute sense. All  
22 they're trying to say here is that we should be  
23 cognizant of your major contributors and we should  
24 monitor what it's doing.

25 CHAIR RYAN: And the whole point there --

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1 that's a great way to say it. If I monitor my major  
2 contributors and theoretically everything is less and  
3 I know all of the contributors and I focus my  
4 monitoring on the major contributors, now I have the  
5 information I need to bracket risk and understand it.

6 That I agree with. But picking on carbon-14 doesn't  
7 get you there.

8 MR. CHEOK: We agree.

9 MR. CONATSER: Are we good there for the  
10 moment?

11 CHAIR RYAN: We might come back to that.  
12 We appreciate the nice discussion you're having with  
13 us. It's very helpful.

14 MR. CONATSER: Okay.

15 CHAIR RYAN: Thank you.

16 MR. CONATSER: That's good. So we just  
17 went over principal radionuclides and we backtracked  
18 to carbon-14 there for a moment. So the last major  
19 change, I believe is significant release point. I  
20 don't think we covered that one yet. But this  
21 document here does talk about your significant release  
22 points. It says know your significant release points  
23 from your site. If you've got your significant  
24 release points, they should be listed in your ODCM.  
25 If they're listed in your ODCM, obviously then you're

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1 going to have some procedures and ways to address all  
2 of the dose calculations, all of the monitoring,  
3 etcetera.

4 So you list those in your ODCM. It goes  
5 on to say even though you know your significant  
6 release points, you need to know what your less  
7 significant release points are as well, to the extent  
8 that you can know those and you should be aware of  
9 what those are, especially with respect to how  
10 operational occurrences might affect those less  
11 significant release points, such as a PWR, a  
12 pressurized-water reactor. We have primary and  
13 secondary leakage, things could change. Or if you  
14 have cross contamination in a system, things might  
15 change

16 So this document has a little bit of  
17 guidance that says hey, the licensee should be taking  
18 a look at that, preparing ahead, and listing those  
19 things that might be significant release points in  
20 their ODCM or if they can become significant,  
21 reasonably, those should be addressed as well. And  
22 that's different guidance than what was out there in  
23 Rev. 1.

24 And those are just the major changes to  
25 the document. I can't think of any others there

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1 immediately that would have changed. I guess we can  
2 move on.

3 Okay, table of contents. I've got like  
4 eight slides that cover eight different major sections  
5 of the document. And I'm just going to show them up  
6 here. I'm not going to read through these. But  
7 again, you can kind of see the items in yellow are  
8 things that have changed, like monitoring a  
9 significant release point. We talked about  
10 significant release points there, just a couple of  
11 minutes ago. That's listed in Section 1.3 for how to  
12 do effluent monitoring within Section 1.

13 Monitoring leaks and spills. There's a  
14 section on that. There's a section on carbon-14 that  
15 discusses that. Also a section on principal  
16 radionuclides. It defines it and goes into all the  
17 details.

18 Also, for Section 2, for sampling, none of  
19 these are in yellow so this was pretty much a cosmetic  
20 change for Section 2 for sampling.

21 Effluent dispersion, this section covers,  
22 once you have a discharge from the site whether it be  
23 to the atmosphere and then it gets dispersed in the  
24 winds, etcetera, whether it's discharged to the  
25 surface water or river and gets dispersed in the

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1 surface water. This section deals with that and the  
2 changes here are in sections 3.5 and 3.6 that deal  
3 with spills and leaks.

4 Question? No.

5 That's all I was going to say on Section  
6 3. Section 4, quality assurance, quality control, not  
7 a lot of changes there. Mostly cosmetic.

8 Section 5 on dose assessments to members  
9 of the public. Some new items there, Section 5.1  
10 talks about the bounding dose assessments, what  
11 licensees may be able to do to assess hazards or risks  
12 for spills and leaks on site. How would they assess a  
13 hazard to the member of the public if a leak is on  
14 site and there's no members of the public on site?  
15 You're in kind of like a Catch-22.

16 So this document provides some guidance to  
17 say you know what, in that case, with bounding dose  
18 assessment, put a member on side, figuratively, and do  
19 your calculations like that to see what the hazard  
20 assessment might show from that, so you can  
21 demonstrate to the NRC what is a bounding assessment  
22 for your leaks and spills on sites? We have that  
23 section.

24 We also have the sections we talked  
25 earlier about, the dose assessments for compliance

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1 with the 10 CFR 20 and the EPA.

2 CHAIR RYAN: Do you give any guidance on  
3 what happens if your bounding case becomes a  
4 nonbounding case somewhere down the line? Like people  
5 move to near your facility after 10 or 15 years?

6 MR. CONATSER: Now that, if we were  
7 looking at changes in land use surrounding the  
8 facility, that's really outside the guise of Reg.  
9 Guide 1.21. That's in your radiological environmental  
10 monitoring program which is Reg. Guide 4.1.

11 CHAIR RYAN: That's not my point. My  
12 point is if you put a person at your fence for  
13 whatever reason in a bounding analysis. Today it  
14 might be bounding, tomorrow it may not.

15 MR. CONATSER: Right.

16 MR. GARRY: I think the answer to your  
17 question is yes. We do provide guidance on that. We  
18 say that basically if a licensee chooses they can  
19 choose overly conservative assumptions and they may do  
20 their dose calculations, if they so choose, using  
21 those overly conservative assumptions.

22 If the dose were to get too high to meet  
23 the limits using those assumptions, then the licensees  
24 can use the real individual which is what the  
25 regulations are based on, the EPA dose and the

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1 Appendix I dose are to real individuals. So what  
2 we're doing is giving licensees flexibilities to prove  
3 let's say beyond a shadow of a doubt using  
4 conservative assumptions in hypothetical situations  
5 that even at those maximum locations, they would meet  
6 the limits. They're allowed to do that.

7 CHAIR RYAN: I would offer just a friendly  
8 amendment to the wording. Please call it a reference  
9 dose calculation or something else. Don't call it a  
10 bounding case, because you might have to eat the word  
11 "bounding" at some point, 20, 30, 50 years down the  
12 line if these plants operate for those kind of time  
13 frames.

14 I understand your point. They're at the  
15 fence line and there's nobody there and I assume  
16 somebody it is there. I'm good. I can make a  
17 calculation. I can demonstrate compliance, but  
18 there's no guarantee that is going to be a reference  
19 case that is satisfactory forever.

20 MR. GARRY: Yes, that's correct.

21 CHAIR RYAN: So then if you say yes, you  
22 want to allow them to switch to some other kind of a  
23 dose assessment method, fine and dandy. Just don't  
24 get stuck in the trap of calling it a bounding case.

25 MR. GARRY: Okay. I understand.

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1 MEMBER POWERS: Let me ask you, go back to  
2 the slide to the less significant release. The  
3 definition of less significant is something like one  
4 percent of the total or something like that. It says  
5 you should list those, but you really don't have to do  
6 very much with them until you reasonably assure that  
7 the plant makes some changes that's going to jack that  
8 number up.

9 MR. GARRY: We're basically saying being  
10 aware, be aware of your other release points or less  
11 significant release points. Have an evaluation  
12 showing that they're not significant release points.  
13 And be aware of the circumstances, operational  
14 occurrences that could occur and cause an  
15 unanticipated release through that release point.

16 MEMBER POWERS: I think I understood your  
17 language. It seems to me that you might want to look  
18 at that language a little bit because it defines less  
19 significant as something is one percent or less.

20 MR. CONATSER: Of the curies, right.

21 MEMBER POWERS: Of the activity, where the  
22 dose when both --

23 MR. CONATSER: Right.

24 MEMBER POWERS: This is written in both.  
25 And the trouble is that now there are a lot of  $10^{-8}$

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1 percent release points in the plant. You don't want  
2 them to list that or you're going to have an  
3 encyclopedia here.

4 MR. GARRY: Right.

5 MEMBER POWERS: In fact, when I look at  
6 your language, I concluded that the less significant  
7 release points that you're really worried about lie  
8 between one percent and a tenth of a percent of the  
9 total, because of your three-significant-figure limit  
10 that you have. You might want to put that lower limit  
11 down there so you give the guidance to the licensee.  
12 But then you want to change your text that says if you  
13 reasonably assure that you're going to increase the  
14 release from these less significant points or create a  
15 new -- that's missing from your language in there.

16 MR. CONATSER: Okay, we'll --

17 MEMBER POWERS: Give it some thought. I  
18 don't know that it is, but I think you need -- I  
19 definitely think you need a lower band, otherwise  
20 you're going to have everything in the plant listed.

21 MR. CONATSER: What we can't, of course,  
22 put in here is anything, any shade of below regulatory  
23 concern type of issue. We wouldn't want to say  
24 something is totally insignificant. What the document  
25 really says is if you detect it at your site, you need

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1 to report it.

2 MEMBER POWERS: And it says that right  
3 now.

4 MR. CONATSER: Yes.

5 MEMBER POWERS: It's just defining what  
6 you mean by less significant release points. And in  
7 fact, as you go through the paragraph, I think you  
8 need anything between one percent and tenth of the  
9 percent of the total is what you want listed.

10 MR. CONATSER: It leaves it open. It says  
11 less than one percent of the total curies. That's the  
12 definition of it.

13 MR. GARRY: That's his point is that you  
14 could go down to 1/100th or 1/1000th of that level.

15 MR. CONATSER: That's the thing we don't  
16 require the licensees to know all of the infinitesimal  
17 ones all the way down. I mean they should know the  
18 ones that could reasonably contribute and the ones  
19 that contribute even a slight amount for purposes of  
20 monitoring, evaluating, but how low you go to that,  
21 well, that's the risk base. Do we want them to spend  
22 50 percent of their time sorting through trash and  
23 doing analysis on trash? No, you don't want that.

24 We don't, I guess, provide a lot of  
25 guidance in that area. I guess that's your point for

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1 the ones that are very low.

2 MEMBER POWERS: In fact, you're coming  
3 back and saying if it's going to dial the number in  
4 the third significant figure, then I want to know  
5 about it. If it's not, then don't tell me about it.

6 MR. CONATSER: Now that's for recording  
7 now --

8 MEMBER POWERS: I understand.

9 MR. CONATSER: Okay. They would still  
10 need to monitor --

11 MEMBER POWERS: I also think that when you  
12 say well, if you reasonably expect you're going to  
13 increase the doses from one of these less significant,  
14 you will also need to know or create another one.

15 MR. CONATSER: That's correct.

16 CHAIR RYAN: I am going to guess that a  
17 lot of the worker dose, of course, is in handling  
18 waste, particularly low-level waste prepared for and  
19 transported off site. I don't know how you're going  
20 to account for outage doses and things of that sort.  
21 How does worker dose enter into any of this.

22 MR. GARRY: Well, it's clear that that's  
23 occupational dose outside of this. This is effluent  
24 and radwaste.

25 CHAIR RYAN: Refresh my memory, is that

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1 clearly stated in here somewhere? If it's not, it  
2 should be because I just don't want that to become  
3 blurry.

4 MR. CONATSER: I believe it is. Even in  
5 the title of the document.

6 CHAIR RYAN: Well, it says effluent.

7 MR. CONATSER: Gaseous effluent.

8 CHAIR RYAN: Yes, but it doesn't  
9 specifically address the issue of worker doses when  
10 they're handling effluents one of which is low-level  
11 waste in this or somewhere else.

12 MR. CONATSER: Or somewhere else, right.

13 CHAIR RYAN: Maybe we ought to -- maybe we  
14 should just explicitly make sure everybody is clear.

15 MR. CONATSER: Remember, this Reg. Guide  
16 that talks about measuring, evaluating, or reporting  
17 releases from the nuclear power plant, although there  
18 may be doses incurred in an occupational fashion from  
19 effluents, it may not impact the purpose of this Reg.  
20 Guide which is for measuring, evaluating, and  
21 reporting --

22 CHAIR RYAN: I'm with you 100 percent.  
23 I'm just asking for -- it may be embedded in here  
24 somewhere and I missed it, but being explicit about  
25 the fact workers are over here and this is for

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1 effluents and -- because some of the language people  
2 could blur it.

3 MR. GARRY: There's the old rule, state  
4 the obvious and maybe we missed that point for the  
5 occupational dose from handling radwaste.

6 MR. CONATSER: And I put that down here as  
7 a thing to look at, Mike.

8 CHAIR RYAN: Please do. If you're  
9 comfortable it's covered, okay.

10 MR. CONATSER: I think we've got that  
11 covered, but I'll take a second look.

12 CHAIR RYAN: Great.

13 MR. CONATSER: We were here on this slide.  
14 We've gone through this. We're going on through the  
15 table of contents here very quickly. Section 6.  
16 Again, this is for solid waste reporting and again,  
17 they've always had to report this. The one thing we  
18 had them do different in this Reg. Guide, this  
19 version, is to report their different classifications  
20 of waste, A, B, and C.

21 Section 7, this is a little bit different.

22 CHAIR RYAN: I want to back you up to 6.  
23 How about stuff that gets shipped off to a hazardous  
24 waste landfill that might be contaminated to an  
25 acceptable level at the landfill?

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1 MR. CONATSER: Do you want to take that  
2 one, Steve?

3 MR. GARRY: Well, you're talking about  
4 2002 disposals?

5 CHAIR RYAN: Yes.

6 MR. GARRY: That would still be radwaste  
7 shipped for disposal. Now what we had excluded -- the  
8 previous slide. What we have excluded are things like  
9 laundry, metal for decontamination, GIC, Green Is  
10 Clean waste, which is basically gloves or booties or  
11 whatever that surveyed is clean, using a rough survey  
12 technique, so to speak that need to be further  
13 surveyed before they're free released or handled  
14 appropriately. So we've excluded laundry, GIC, and  
15 metal for decon. But we've included the primary waste  
16 streams of resins, filters, DAW, irradiated  
17 components.

18 I'm not aware of -- I mean most plants  
19 that I've seen have not had a mixed waste stream,  
20 therefore, that would go to a RCRA facility. The  
21 plants have pretty well eliminated hazardous waste  
22 that's combined with radioactive waste. Obviously,  
23 there's still lightbulbs and mercury and some things  
24 like that, but all of the mixed waste has pretty much  
25 been eliminated from the plants.

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1 CHAIR RYAN: They've really done a nice  
2 job. If they do have haz stuff it's not mixed. It's  
3 just haz.

4 MR. GARRY: Right, so we're not asking  
5 them to report that.

6 CHAIR RYAN: Okay. And the laundry and  
7 the GIC and the metal for decon. basically puts  
8 whatever residual radioactivity is there with the  
9 vendor for those services.

10 MR. GARRY: Right.

11 MR. CONATSER: And that's covered in the  
12 document and Steve was the author of that portion,  
13 that's why I turned that one over to him.

14 CHAIR RYAN: Right, I'm with you on that.  
15 That's fine. Thank you.

16 MR. CONATSER: Section 7 is on reporting  
17 errors that have been reported in previous reports on  
18 how to address that. It's not really addressed in  
19 Rev. 1. It's now addressed in Rev. 2.

20 Also --

21 MEMBER POWERS: Yes, but mistakes happen.

22 MR. CONATSER: And what we've said, the  
23 small errors are reported in next year's report and  
24 the bigger ones, let us know now.

25 MEMBER POWERS: Yes. Which is as good as

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1 you can do.

2 MR. CONATSER: It doesn't say much more  
3 than that. It's very simple.

4 Section 8, and this is where the rubber  
5 meets the road here. Section 8 tells them what they  
6 have to report. They, of course, have to report their  
7 liquid and gaseous releases like always. They have to  
8 report their shipments, well, with the exception of  
9 segregating out the Class A, B, and C. They have to  
10 report that. That's all the same there.

11 Dose assessments. They have to do that.  
12 The thing here that really changed in the Section 8  
13 for reporting is the supplemental information. It has  
14 much more information about reporting abnormal  
15 releases, either on site or off site, and that's the  
16 distinction here, the change in the report for Section  
17 8. We asked them to report it and it's very similar  
18 to what is in the NEI groundwater protection  
19 initiative. That's the only change to that section.

20 Okay, that takes care of the broad outline  
21 of the document there, the different basic sections of  
22 the document. We have now ten slides that address  
23 some of the public comments.

24 CHAIR RYAN: You are golden.

25 MR. CONATSER: We have now been here for

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1 an hour and ten minutes or so. I'm not sure what you  
2 guys normally do for breaks, but we're --

3 CHAIR RYAN: We're scheduled for a break  
4 at 2:45.

5 MR. CONATSER: Excellent, that sounds like  
6 a perfect idea.

7 Let's continue on then. We've got ten  
8 slides and that will fill out just about perfectly.

9 CHAIR RYAN: This isn't our first meeting.  
10 It is just our first meeting today.

11 MR. CONATSER: I got you. Okay. Here are  
12 some of the public comments, by the way. Keep in  
13 mind, we got a lot of public comments thanks to the  
14 industry for providing those, and the public. We had  
15 a public meeting. Got a lot of good comments. We  
16 incorporated 85, 90, 95 percent of the public  
17 comments, so that went real well towards improving the  
18 document we feel. However, when we went through the  
19 public comments, as we sorted and sifted through  
20 these, we thought well, these might have interest to  
21 ACRS. So we put them in here. We have ten slides on  
22 that and we'll go through these kind of quickly here.

23 One of the public comments was why revise  
24 these now? Why not revise the Reg. Guides later? The  
25 NEI comment said to wait until NRC adopts ICRP-103,

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1 for example, which is a project about ten years, a  
2 decade out, perhaps, in the making now. Well, our  
3 response to that was it's not really dependent on the  
4 ICRP-103. We need to address all the operating  
5 experience over the last 30 plus years. We need to  
6 fill in all the operating experience. I used the  
7 words gaps in there. It's really more the recent  
8 experience that has come out in the last 35 years. We  
9 need to address that in a document and provide some  
10 guidance to the industry.

11 NEI has come out with some guidance on  
12 groundwater. The Electric Power Research Institute  
13 has come out with some guidance. The NRC is one of  
14 the few people that has not come out with anything  
15 particular on this with respect to reporting  
16 effluents. And the Lessons Learned Task Force said  
17 you need to come out with something on that.

18 So we didn't think it would be appropriate  
19 to wait another ten years to put out some guidance.  
20 We thought it would be good to have the staff position  
21 put out now and so that's how we responded.

22 CHAIR RYAN: This is an important point,  
23 Richard, so if I may I just want to ask you about -- I  
24 don't agree your first bullet, but I wouldn't say not  
25 dependent on ICRP. ICRP-103, when it's adopted by the

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1 Agency, because it's not a matter of if not, it's a  
2 matter of when, we'll change every dose calculation  
3 this manual requires.

4 MR. GARRY: If and when Appendix I is  
5 revised.

6 CHAIR RYAN: No, it's not an if. It's a  
7 matter of when. I mean you can't have ICRP  
8 calculating reactor stuff and have ICRP-103  
9 calculating everything else.

10 MR. GARRY: We've begun the path toward  
11 ICRP-103, but --

12 CHAIR RYAN: It is dependent on it. It  
13 might not be directly dependent on it today because  
14 that activity hasn't started, but they are inter-  
15 related and that's not going to change.

16 MR. GARRY: When ICRP-103 gets revised,  
17 you're correct. This will require revision.

18 CHAIR RYAN: It is dependent on ICRP-103.  
19 It just won't be for some period of time.

20 MR. GARRY: For the next ten years it  
21 won't be dependent on it.

22 CHAIR RYAN: I just want to be crystal  
23 clear on that fact. There is a dependency on this  
24 guidance document and the other one, for that matter,  
25 and ICRP-103.

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1 MR. CONATSER: A dependency in the future,  
2 let's be very clear, so a dependency in the future, a  
3 dependency on this revision of the Reg. Guide.

4 CHAIR RYAN: Okay.

5 MR. CONATSER: The next public comment  
6 they said it was a backfit. It imposes new  
7 requirements and we need to do a backfit analysis.  
8 And of course, the NRC response there was Reg. Guides  
9 are not regulations, it's just one way of  
10 implementing, one way of going about doing business.  
11 If you choose to do it this way, that's fine. If you  
12 want to do it a different way, that's fine too.  
13 They're not requirements, they're just acceptable  
14 methods. And licensees may continue to use the  
15 methods in Rev. 1. So there's no real backfit  
16 analysis required.

17 MR. SIEBER: And the regulations didn't  
18 change.

19 MR. CONATSER: And the regulations have  
20 not changed. That's exactly correct.

21 MR. GARRY: Now, just to add to that  
22 point. There is the proposed rulemaking on 20.1406(c)  
23 which will address existing groundwater and  
24 decommissioning planning for existing plants that will  
25 include groundwater monitoring.

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1 MR. CONATSER: The next public comment,  
2 they said there was duplicative guidance documents.  
3 They said there's many Reg. Guides and a potential for  
4 conflicts when you have many Reg. Guides covering  
5 similar type aspects like groundwater monitoring. The  
6 NRC response was basically yes, there are different  
7 Reg. Guides that are out there. We've got the Reg.  
8 Guide 1.21 that talks about monitoring, evaluating,  
9 and reporting effluents. You got Reg. Guide 4.1 that  
10 talks about environmental monitoring offsite. You've  
11 got Reg. Guide 4.21 that talks about decommissioning,  
12 focused on decommissioning and those type aspects.  
13 You've got the draft Reg. Guide 4.22 that Jim is  
14 writing here and that will come out with the new rule  
15 we just talked about, the 1406(c) and that will deal  
16 with existing reactors for decommissioning.

17 So there are different Reg. Guides out  
18 there, but each Reg. Guide has its own specific focus.

19 Each one may mention groundwater, but it's in the  
20 respect of either decommissioning for a new reactor,  
21 decommissioning for an existing reactor, reporting  
22 effluents. So there's different ways it focuses, it  
23 uses the words groundwater and how it impacts. So  
24 there may be guidance in the different documents, but  
25 I think the more important overriding thing here is to

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1 make sure we will have consistency between all these  
2 documents.

3           You're going to mention groundwater  
4 monitoring in several different documents. That's  
5 just the way it is. It touches on many different  
6 things. And that's kind of the way it is.

7           Principal radionuclides. One of the  
8 comments we got that there may only be one or two  
9 principal radionuclides and that other radionuclides  
10 may not even be analyzed or reported for. Well, the  
11 response there obviously was to the intent there for  
12 principal radionuclides is to focus the licensees'  
13 attention on the important radionuclides, to focus  
14 most of your efforts there. It doesn't say you don't  
15 have to analyze for the others. Yes, you do. You  
16 have to continue to do that. You must report all the  
17 nuclides that are detected. That's clearly stated in  
18 here.

19           It does set a risk-informed concept  
20 relative to your sensitivity levels or what we call  
21 LLDs, your lower limits of detection.

22           CHAIR RYAN: Tell me what that means.

23           MR. CONATSER: What that means is if a  
24 licensee is looking at their nuclides, their list of  
25 nuclides from the site and they've been looking at

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1 these nuclides for a long time. And they recognize  
2 that the total discharges of iron-55 -- I'm just  
3 picking one -- are very low. Very low dose  
4 significance, very low activity significance, less  
5 than the one percent. We're talking in the .00  
6 something, for example.

7 With that being the case, the concept is  
8 why would they want to spend a lot of time analyzing  
9 very long counts, spending a lot of time doing  
10 analysis for those when the contribution is very  
11 small. So we're saying take a look at that. If you  
12 have nuclides that are very low, you can take a look  
13 at what your sensitivity limits are for that and you  
14 can use guidance like in MARLAP, for example, the  
15 Multi-Agency Laboratory Analysis Protocol, and come up  
16 with perhaps better ways of setting those LLDs,  
17 because remember 35 years ago, when they set the LLDs,  
18 it was a whole different concept back then I think.

19 CHAIR RYAN: So basically, you're saying  
20 to set the LLD appropriately for the risk-informed  
21 view of a given radionuclide. You're not saying get  
22 it as low as reasonable. I just want to make sure  
23 people understand that.

24 MR. CONATSER: That's correct. That's  
25 right.

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1 CHAIR RYAN: Fair enough. That's good.

2 MR. CONATSER: And also, we say, you know  
3 what? You can use for principal radionuclide, you can  
4 use the concept that's in Rev. 1 or you can use the  
5 concept that's in Rev. 2. If you want to use Rev. 1  
6 and basically that means all radionuclides are  
7 principal radionuclides and you kind of go with the  
8 flow there and that's fine too.

9 Carbon-14. We went on about this quite a  
10 bit previously. They said carbon-14 is a new  
11 reporting requirements for 10 CFR 50.36(a). It says  
12 to report your principal radionuclides. So what we  
13 say there is determine if carbon-14 is a principal  
14 radionuclide, as defined in the document. If it is,  
15 estimate the quantities that you're releasing and then  
16 report it. And report it in the annual report.

17 Groundwater monitoring. The comment was  
18 there's too much emphasis on the on-site aspects of  
19 groundwater monitoring. And there were no instances  
20 when the NRC has looked at the instances of  
21 groundwater contamination in the industry. There were  
22 no instances where the public health or safety has  
23 been impacted. And in all fairness here, the original  
24 document, the original Reg. Guide that went out for  
25 public comment had a lot more information about on-

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1 site monitoring. We got a lot of comments back. We  
2 incorporated those comments and pared that down  
3 significantly. So that was a good comment with that  
4 respect.

5 But there are a couple of things as the  
6 NRC response here says that the document still focuses  
7 on report your abnormal releases and know that leaks  
8 and spills may become effluents from your site and  
9 know that you report those. Those are the important  
10 things to remember and we try to focus on that.

11 Another comment was that groundwater  
12 monitoring was unjustified. The requirements for on-  
13 site monitoring are not justified or are they risk-  
14 informed. The response there was the NRC does have  
15 survey requirements. You must do adequate surveys.  
16 10 CFR 20.1501 talks about adequate surveys and  
17 assessing the hazards. You must have records  
18 important for decommissioning. The records  
19 requirements are at 10 CFR 5075(g). There are  
20 requirements there. Those are reiterated in this  
21 document here.

22 And that we do also go over in this  
23 document that the surveys are dependent on the  
24 significance of what you find in your on-site  
25 monitoring. If there's two types of surveys there,

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1 scoping surveys which are more general in nature, and  
2 then more extensive surveys that may be required if  
3 you've got significant contamination on site. So  
4 there are guidance documents for that, regulations for  
5 that.

6 Abnormal releases. The comment was that  
7 abnormal releases is an attempt to codify groundwater  
8 monitoring on site. The NRC response was that  
9 abnormal releases, that concept is in the current  
10 version of Reg. Guide 1.21. It's always said to  
11 report your abnormal releases. What we've provided in  
12 this version of the Reg. Guide, Rev. 2 is just a  
13 clarification on that and saying it now addresses the  
14 on-site releases versus the off-site releases and goes  
15 into that in more detail.

16 Insignificance. There were several  
17 comments on this and these talk about the one percent  
18 rule that we've been talking about here about  
19 principal radionuclides and significant release points  
20 in Reg. Guide 1.21 versus the ten percent rule that's  
21 in Reg. Guide 1.109. They said that this Reg. Guide  
22 here is imposing new requirements and different and  
23 conflicting with the existing Reg. Guide 1.109.

24 The response there was the one percent  
25 rule that applies to determining whether you have

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1 principal radionuclides or significant release points  
2 really goes to whether or not -- on how you do your  
3 nuclide detection which are sensitivity limits will be  
4 and how often your analysis might be for your less  
5 significant release points. That's the one percent.  
6 That's defined in this document. The ten percent  
7 that's in Reg. Guide 1.109, that applies to dose  
8 calculations for exposure pathways. Different  
9 concepts and applied in different cases, though not  
10 really a duplication, not anything necessarily  
11 conflicting with previous guidance. It is just  
12 similar guidance for different concepts.

13 MR. GARRY: Let me add just a little bit  
14 to that just so we make sure everyone understands.  
15 Reg. Guide 1.09 is how to do dose calculations and it  
16 defines your exposure pathways. Primarily, it's  
17 direct radiation, inhalation, and ingestion. And it  
18 gives a bunch of equations on how to calculate it.  
19 Then it goes on to say if a licensee identifies other  
20 exposure pathways that contribute ten percent, include  
21 those also. So that's where that ten percent -- the  
22 ten percent rule is really look at the primary  
23 exposure pathways. I use the word primary wrong.  
24 Look at the exposure pathways that are identified,  
25 direct radiation, ingestion, inhalation, and the

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1 routes of exposure to get to those. And if you have  
2 something unique and extra on top of that, and it  
3 contributes ten percent or more, add it in.

4 CHAIR RYAN: How many plants have an extra  
5 pathway?

6 MR. GARRY: I don't know of any.

7 MR. CONATSER: It is difficult to think of  
8 an exposure pathway other than direct radiation,  
9 ingestion, or inhalation, if you think about it.

10 MR. GARRY: That's where the comment, the  
11 public comment was that this one percent rule is  
12 conflicting with the ten percent rule and that's not  
13 correct. The one percent rule, if there is -- just  
14 using the word rule as a descriptor -- applies to  
15 radionuclide detection and analysis frequencies. So  
16 that's planned to the source term.

17 CHAIR RYAN: The trouble is one is a risk-  
18 informed metric and the other is not. We're back to  
19 that again.

20 MR. GARRY: I agree that what you're  
21 saying is correct. Except that it's not a problem.  
22 We're saying look at your source training within one  
23 percent. Look at your --

24 CHAIR RYAN: It is a problem. I'll tell  
25 you why. If you tell somebody that one percent of

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1 something is important, you need to report it, measure  
2 it, whatever it is. It's important for whatever  
3 reason. But it turns out that it might not be at all  
4 important to risk, whereas if you've got a dose  
5 calculation, well, that's a metric that's risk-  
6 informed. So it is important and it miscommunicates  
7 the risk. That's the problem. And you'll continue to  
8 get comments that say they're out of whack.

9 I completely understand what you're  
10 saying, Steve, and agree with you from a technical  
11 perspective, what you're talking about. But it would  
12 just be nice to have a different way to characterize a  
13 metric that is a quantity metric versus a risk metric.

14 MR. GARRY: I think that's an excellent  
15 point that we need to factor into any revision to Part  
16 20 if we really want a risk-informed Part 20. That  
17 would be the way and time to do that.

18 CHAIR RYAN: And you know, getting a start  
19 with it in some of these guidance documents is not a  
20 bad thing. That would not be out of whack.

21 MR. CONATSER: And we agree with that, I  
22 think. But one of the concepts here we need to  
23 remember and we don't want to get away from this, this  
24 document here is for reporting the releases in  
25 effluents so there is part of this concept here, part

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1 of the mission here is to report your curies being  
2 discharged or becquerels, whatever you want to say, or  
3 units of curies. So you need to report your curies  
4 being discharged, so when you report your curies  
5 that's not really a risk-based quantity --

6 CHAIR RYAN: You are required to do risk  
7 calculations on those quantities, so you're taking the  
8 baby and splitting it down the middle for me. I don't  
9 see that being a wide gap between the two. I think  
10 they're very closely related and it really is  
11 incorrect to represent them as being on two different  
12 planets and far apart. They are very much linked and  
13 people link them in their heads. They measure the  
14 stuff and they calculate the quantities that are  
15 required. The fact it's in two different titles and  
16 two different Reg. Guide numbers really isn't that big  
17 of a deal to me.

18 MR. GARRY: If I understand you correctly,  
19 what you're really saying -- suggesting that we  
20 consider the word "principal" in 10 CFR 5036(a). It  
21 says report your principal radionuclides. What I  
22 understand you to say is that we should look at that  
23 word "principal" from a risk-informed perspective.

24 CHAIR RYAN: Yes. You know, if you want  
25 to use it as a quantity metric in one instance, be

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1 real crystal clear about it. And if you're using it  
2 as a risk-informed metric somewhere else, just be real  
3 clear about it. And tell people that over there we  
4 used it with a different context than we're using it  
5 here. Just explain what you mean. Back to your own  
6 advice which is state the obvious about risk versus  
7 quantity metrics and make that clear.

8 So it's just something to think about, but  
9 I -- well, it's backed a little bit against the fact  
10 that Reg. Guide and the other are, you know, far  
11 enough apart that they don't interact. They interact  
12 completely. That's the whole point. One feeds the  
13 other.

14 MR. CONATSER: They're interlocking.

15 CHAIR RYAN: They are. They are in a  
16 lock-step. Again, I think that's part of the  
17 confusion of where people can misunderstand one versus  
18 the other. They don't understand the subtlety of the  
19 quantity versus a risk-informed method.

20 MR. CONATSER: I think what I will say at  
21 this point is that that is one of the intents of the  
22 Reg. Guide here with this revision was to provide some  
23 clarification on that that indeed curies, when you  
24 report your activity being discharged you need to  
25 report your activity. You need to report your doses.

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1 Those are two key concepts, two key things you need  
2 to report. The quantity of curies may not be  
3 necessarily risk-significant in the absolute sense,  
4 but you have to go through dose conversions to get  
5 there. But you still need to report it.

6 CHAIR RYAN: I'm not arguing they're  
7 reporting the requirement. I'm just arguing the  
8 characterization of what I'm reporting in terms of  
9 quantity significance and risk significance are two  
10 different --

11 MR. CONATSER: We agree with that. I  
12 thought this slide would be a difficult one to go  
13 through and I was right. One percent and ten percent.

14 MR. GARRY: I think they have a good  
15 understanding of the difference on this. But one is  
16 talking source term and one is talking dose.

17 CHAIR RYAN: I understand the difference.  
18 I'm just saying it doesn't come across as to how you  
19 communicate those differences clearly and effectively.

20 MR. CONATSER: Okay, another comment about  
21 dose calculations and EPA. The EPA 40 CFR 190, this  
22 is the 25 millirem whole body, 75 millirem thyroid,  
23 and 25 millirem to any other organ.

24 CHAIR RYAN: That's ICRP-2.

25 MR. CONATSER: Right. It says compliance.

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1 MR. GARRY: Which is the way Appendix I is  
2 written.

3 MR. CONATSER: Right.

4 MR. GARRY: And the way EPA 40 CFR 190 is  
5 written. It doesn't use effective dose.

6 CHAIR RYAN: Have you ever worked through  
7 the inter-agency working group on dose calculations to  
8 see if this can be addressed?

9 MR. GARRY: Yes, we have. Don is our  
10 ISCOR member. Roger Pedersen is the backup and I  
11 think Jean-Claude is on that too.

12 CHAIR RYAN: He left. He knew this was  
13 coming.

14 MS. PERIN: He told me he was going to be  
15 here.

16 MR. CONATSER: But were you guys finished?

17 CHAIR RYAN: I struggle again. This is a  
18 perpetuation of a problem.

19 MR. CONATSER: This is the regulation, so  
20 we have to put out guidance on the regulations. So I  
21 need to make that real clear. We can't put out  
22 guidance on regulations that aren't there.

23 CHAIR RYAN: You're quite right to point  
24 out, you don't have authority to change EPA  
25 regulations. I hear you.

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1 MR. CONATSER: But the comment here is  
2 that it says compliance with the EPA requirements are  
3 required for the licensees only if their effluent  
4 doses exceed twice their Appendix I, twice the  
5 Appendix I limits, twice the Appendix I design  
6 objectives I guess I should say. And that's  
7 absolutely correct.

8 If you look at the licensees' technical  
9 specifications or they may have moved them to their  
10 off-site dose calculation manual, that's the wording  
11 that's in there. Our response was, you know, that is  
12 the wording that came out of the NRC NUREG- 1301/1302.

13 They adopted it in their tech specs. And it says you  
14 don't have to do that survey, do that calculation.  
15 That is absolutely correct. However, what it also  
16 says in there if you look at the basis, it says that's  
17 generally applicable as long as there's no significant  
18 direct radiation component.

19 The problem now is with people going to  
20 different chemistries at the nuclear power plants,  
21 with them storing radwaste along the site, reactor  
22 vessel heads, steam generators, ISFSIs, the direct  
23 shine is becoming a higher component so although the  
24 surveillance and tech specs may be the same, and they  
25 may not have to do that calculation, they do need to

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1 be aware that this EPA 40 CFR 190, that 25, 75, 25  
2 millirem, that would still be applicable, whether they  
3 would do that calculation or not. So that's basically  
4 the way we handle that comment. And the Reg. Guide  
5 addresses that and says yes, you need to take a look  
6 at that to make sure that you're not exceeded these  
7 requirements.

8 Well, this is the point where we were  
9 going to finish up in Reg. Guide 1.21 and switch over  
10 to Reg. Guide 4.1, but before we do that and I know we  
11 have two and a half minutes until our break, are there  
12 any other questions that you have on Reg. Guide 1.21  
13 before we switch over to Reg. Guide 4.1 after the  
14 break?

15 MR. SIEBER: No.

16 CHAIR RYAN: Dana stepped out, so -- I'll  
17 tell you what let's do. Let's go ahead and take our  
18 break now and maybe come back a couple of extra  
19 minutes. Hopefully, Dana will be back and we can let  
20 him, see if he's got any final questions on this  
21 slide. And if not, we'll move right into 4.1.

22 MR. CONATSER: That's sounds fair. How  
23 much time do you want to give to the break?

24 CHAIR RYAN: A 15-minute break.

25 MR. CONATSER: Fifteen minutes.

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1 CHAIR RYAN: A couple minutes ahead of 3  
2 will be fine. Anything within three or four minutes  
3 is a win.

4 (Laughter.)

5 (Whereupon, the above-entitled matter went  
6 off the record at 2:43 p.m. and resumed at 3:00 p.m.)

7 CHAIR RYAN: Okay, we'll come to order,  
8 please. And we're back on the record.

9 Gentlemen, thank you for an interesting  
10 first half of the meeting. I really appreciate the  
11 good dialogue and the exchange. I think we'll all  
12 benefit for sharing our ideas and thoughts and I hope  
13 you feel the same way.

14 So with that said, we'll move on to Reg.  
15 Guide 4.1.

16 Richard, it's all yours.

17 MR. CONATSER: Thank you, Mike. Reg.  
18 Guide 1.21 that we covered this morning or this  
19 afternoon, earlier this afternoon, that was 25 slides.

20 So I think there are eight slides left for Reg. Guide  
21 4.1, just to give you an idea. I generally go a  
22 couple minutes per slide so that gives you an idea  
23 where we're going here. There may be questions as we  
24 go through this, but there were much less changes to  
25 Reg. Guide 4.1. The initial Reg. Guide, the Rev. 1 of

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1 this Reg. Guide, I think it was four pages. We're now  
2 up to like 18 pages or something. So it's still not -  
3 - the heft test doesn't really have that. So this  
4 will go a lot shorter here.

5 So Reg. Guide 4.1 is radiological  
6 environmental monitoring for nuclear power plant.  
7 This is really the monitoring. They generally think  
8 of this as monitoring outside the fence, although  
9 that's not totally correct, but sometimes they think  
10 of it that way.

11 This guidance is 35 years old for Rev. 1.  
12 That's the guidance we currently have out there.  
13 It's like two pages, three pages long.

14 When the Lessons Learned Task Force came  
15 along, they came out with some additional  
16 recommendations for updating things in Reg. Guide 4.1  
17 and okay, great. Here were some of the Lessons  
18 Learned Task Force recommendations for Reg. Guide 4.1.

19 It said to provide guidance and their recommendation  
20 two was for evaluating and monitoring releases from  
21 unmonitored pathways. Well, we didn't have guidance  
22 in Reg. Guide 4.1 on that. It says you know what? If  
23 you have a spill or a leak, take a look at that  
24 because it could impact some of your radiological  
25 environmental monitoring samples where sample points

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1 or receptors or receptor locations. So it has that  
2 type of guidance in Reg. Guide 4.1. That wasn't there  
3 previously.

4 Lessons Learned Task Force said to provide  
5 guidance consistent with current industry standards  
6 and we brought up, I think, Reg. Guide 4.1 to current  
7 industry standards, notice throughout the entire  
8 document. It said to provide guidance to limit the  
9 flexibility in deleting program components.

10 I think there was a lot of flexibility in  
11 the previous Reg. Guide on licensees deleting certain  
12 aspects of their programs and I think when the Lessons  
13 Learned Task Force looked at the incidents in the  
14 industry, they were saying hey, you know, these power  
15 plants have cut back on things perhaps they shouldn't  
16 have done. They said to make that -- put some limits  
17 on that to hold them back from that.

18 So basically Reg. Guide 4.1 says make sure  
19 you look at your pathways for exposure. Make sure you  
20 look at your routes of exposure. If there is sample  
21 media that exists at your site, you should be taking a  
22 look at that. For example, if deer meat is a  
23 significant exposure pathway for ingesting at your  
24 site, you need to be taking a look at that. That  
25 sample media there would be deer meat. So it provides

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1 that type of guidance that really wasn't there before.

2 It also says to provide guidance for  
3 program expansion, when you need to expand your  
4 program. And that guidance is here as well. It says  
5 take a look around your site when you do your land use  
6 census, do your land use census and you come up with  
7 samples that show an increase over what you have  
8 currently been calculating for doses. You need to add  
9 that to your program. And that's specified in here.

10 It also says to provide guidance and this  
11 is the last one. Provide guidance to use historical  
12 information and the decommissioning files in 10 CFR  
13 5575(g) in planning surveys and monitoring. And this  
14 does talk about doing an environmental assessment. In  
15 the back of the document it says that periodically you  
16 need to do an environmental assessment and look  
17 through your decommissioning files and records to see  
18 what's out there and see if there's any impact on your  
19 environmental program. And those were the Lessons  
20 Learned Task Force recommendations with regard to Reg.  
21 Guide 4.1. And that's why we're changing the Reg.  
22 Guide, by the way, for that Lessons Learned Task Force  
23 and those recommendations.

24 Some of the major changes, a lot fewer  
25 here in Reg. Guide 4.1. We say that leaks and spills

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1 may affect the radiological environmental monitoring  
2 program. If you spill something on site, be aware  
3 that can affect your different pathways and do an  
4 evaluation of that. That's new, that's different.  
5 That's why it's in yellow on text here.

6 Also another major change, we list some  
7 terminology there regarding routes of exposure and I  
8 think that may be an old HP-type term, routes of  
9 exposure. That's how the radionuclide goes through  
10 the environment and into man. We talk about that as a  
11 route of exposure and I think that's something that  
12 people have been talking about for a long time. But  
13 we incorporated that terminology into this document  
14 and I think that was a change from the previous. It  
15 was silent on that.

16 And the last major change in Reg. Guide  
17 4.1, it says to do an Environmental Program Review and  
18 it really doesn't have a set frequency or periodicity  
19 for this. It just says, you know what, occasionally  
20 do an Environmental Program Review where you look at  
21 the overall picture to see if you need to expand your  
22 program or what you need to do. And those are the  
23 major changes. Not a whole lot of changes in this  
24 document.

25 But there were some public comments and I

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1 think I've got four of them here and I think we can  
2 then wrap it up. The first comment was that -- we got  
3 a lot of comments, by the way, the same thing applies  
4 to what I said with Reg. Guide 1.21. We got a lot of  
5 comments from the public and the industry. Thanks  
6 again for those comments. We incorporated 90 percent  
7 of these comments, but as we went through those there  
8 were a few that I thought would be good to bring up to  
9 the Committee and these are the ones here.

10 One of the comments was that the guidance  
11 here is duplicative with what's in currently NUREG-  
12 1301/1302. Our response was that is correct. There  
13 is some duplication there and that's not  
14 inappropriate. That helps to ensure some consistency.  
15 And keep in mind, too, the NUREGs, those are  
16 information documents. They're not guidance  
17 documents. They're information documents. So what  
18 we're issuing here is a guidance document and there's  
19 something things we want to bring up from the  
20 information world into guidance and that's the purpose  
21 for that.

22 And some licensees have changed their  
23 ODCMs and changed what was there previously.

24 You know, Steve, I can't recall exactly  
25 why we put this in there. Do you want to chime in on

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1 this?

2 MR. GARRY: Yes. The NUREGs, you know, it  
3 kind of goes back to the way the original regulations  
4 and tech specs were structured. Originally, the  
5 effluent and environmental tech specs were in tech  
6 specs. And they got taken out with Generic Letter 89-  
7 01 and put under the control of the licensees for  
8 changes. And that they were allowed to change them  
9 through their Plant Review Committees. They could  
10 make the changes down in the chemistry staff, so to  
11 speak, but they had to be approved up through the ODC,  
12 up through the Plant Review Committee.

13 But through the years then the licensees  
14 have gone and changed some of the original proposed or  
15 tech specs to something that was more suitable for  
16 them. And so that's the point there is that licensees  
17 have -- the NUREGs laid some stuff out, but that got  
18 them implemented in the ODCMs. And then the licensees  
19 were allowed under controls to change those ODCMs to a  
20 site-specific ODCM.

21 CHAIR RYAN: Did they do anything in those  
22 ODCM changes, Steve, that updated the dosimetry  
23 techniques?

24 MR. GARRY: No, not that I'm aware of.

25 CHAIR RYAN: What were the nature of those

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1 updates that they did?

2 MR. GARRY: Maybe, for example, the ODCM  
3 had originally a semi-annual effluent, a semi-annual  
4 environmental report. That got changed to an annual.

5 CHAIR RYAN: Because the regulation says  
6 annual and so forth.

7 MR. GARRY: Right. And there used to be  
8 an inter-laboratory comparison program that was laid  
9 out.

10 CHAIR RYAN: Right.

11 MR. GARRY: That got eliminated. So it's  
12 still, if you pick up NUREG-1301 or 2 now, it's still  
13 in there. But if you pick up an ODCM it's not in  
14 there. So they made some changes like that. They may  
15 have reduced the number of air samplers in the  
16 environmental program from four to three, saying that  
17 the third one, they got a history of ten years never  
18 showing anything. It's not really in a predominant  
19 wind direction. It's never detected anything. It's  
20 not needed any more, so they've reduced the program,  
21 with an evaluation and a bases.

22 CHAIR RYAN: So 1301 and 1302 are really  
23 out of whack now.

24 MR. GARRY: Yes.

25 MEMBER POWERS: Do you still have to have

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1 a certified lab to make comparisons for the certified  
2 lab, right?

3 MR. CONATSER: Yes. You still have to  
4 have an inter-laboratory comparison program, that's  
5 correct.

6 MR. GARRY: And that's mostly for Part 61  
7 analyses, rather than for environmental monitoring.

8 MEMBER POWERS: But you're doing  
9 everything in the lab anyway.

10 MR. GARRY: Right.

11 CHAIR RYAN: But that in a comparison  
12 can't cover the environmental sample analysis as well,  
13 right?

14 MR. CONATSER: There is a requirement for  
15 the environmental, radiological environment monitoring  
16 program that you have an inter-laboratory comparison  
17 program and if you send out so many samples, lists,  
18 etcetera, to an independent laboratory and get the  
19 results back and make sure you have agreement. And if  
20 you look at anybody's, any licensee's annual  
21 radiological environmental operating report, it will  
22 have a section in there for quality assurance, quality  
23 control that lists that inter-laboratory comparison  
24 program and how well they did.

25 CHAIR RYAN: That's fine.

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1 MR. CONATSER: We got through this one.  
2 Thanks, Steve, for chiming in on that.

3 Applicability. One of the NEI comments  
4 was is this applicable to the existing plants? And in  
5 the original draft guide that got submitted for public  
6 comment when we looked back through it there was a lot  
7 of merit to this comment about applicability and we  
8 did make some changes as a result of this. We said  
9 existing plants can use the new guidance or they can  
10 use the previous guidance. It's stated right in  
11 there. So that was a good comment.

12 Public comment. Another one said no  
13 requirements for groundwater monitoring, that there  
14 are no existing requirements for groundwater  
15 monitoring for on-site and the response was surveys  
16 are required once a leak or once leaks are detected.  
17 Of course, that's pretty much addressed in Reg. Guide  
18 1.21. And you have to do a hazard assessment by 10  
19 CFRT 20.1501. You have to do a hazard assessment when  
20 you do your surveys and find plant-related radioactive  
21 material.

22 But what we do say in this Reg. Guide is  
23 that hey, if you do have a spill on site, be aware  
24 that could affect your radiological environmental  
25 monitoring program through what you do for your land

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1 use census and if you look through the requirements  
2 for a land use census, there's two conditions in there  
3 that say if you're doing your land use census and you  
4 find some pathways that are giving a higher dose in  
5 which you had seen previously, you need to put that  
6 into your radiological environmental monitoring  
7 program. So we spelled that out very clearly in this  
8 update to the Reg. Guide.

9 Another comment said there was too much  
10 emphasis on groundwater monitoring and that it was not  
11 justified. And again, this was a good comment. On  
12 the original draft guide of Reg. Guide 4.1 that was  
13 cut out, there was quite a bit of stuff on on-site  
14 monitoring and it really strayed into Reg. Guide 1.21  
15 space. We looked at it a second time and we pared it  
16 down to what we really needed for environmental  
17 monitoring program, again to eliminate that  
18 duplication that you don't really need.

19 But we do stress that monitoring  
20 groundwater and drinking water is required if they're  
21 likely to be affected. That's listed right in the  
22 NUREGs, NUREG-1301 and 1302 and that's what all the  
23 tech specs were based on.

24 MR. SIEBER: What does "more than likely"  
25 mean?

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1 MR. CONATSER: If you have an effluent and  
2 it's going through a pathway through your  
3 hydrogeology, your hydrogeologic pathway there, and  
4 you know it's going to like a surface water body, like  
5 a river, or an underground groundwater, if you know  
6 it's likely to get there, it's likely to be affected,  
7 then you need to take a look at that.

8 MR. SIEBER: Yes, but the best way to take  
9 a look at it is to monitor it.

10 MR. GARRY: To do an evaluation. That's  
11 right, which can include either a mathematical, a site  
12 hydrogeology or sampling and analysis, but you have to  
13 evaluate.

14 MR. SIEBER: Yes, but I have more faith in  
15 sampling than I in hydrogeology.

16 MR. GARRY: Sampling is good.

17 MEMBER POWERS: You are a skeptic.

18 MR. SIEBER: Pardon?

19 MEMBER POWERS: You're a skeptic.

20 CHAIR RYAN: The first rule of  
21 geohydrology is let's drill one more well.

22 (Laughter.)

23 I'm a little bit, and help me out, I can't  
24 recall where in the document we really talk about  
25 groundwater versus drinking water and let me tell you

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1 why I'm asking. Groundwater is an environmental  
2 media. Drinking water is a dose quantity deliverable  
3 kind of thing. So we're talking about a physical and  
4 environmental understanding versus --

5 MR. GARRY: We have defined groundwater as  
6 any water in the ground.

7 CHAIR RYAN: Not on the surface of the  
8 ground.

9 MR. GARRY: A leak or a spill into soil,  
10 that fluid becomes groundwater, whether you can sample  
11 it as water or not, whether you drill a hole and can  
12 withdraw water from the well or where you had to take  
13 the soil and dry it and catch the moisture. Either of  
14 those would be groundwater. Any water in the ground  
15 is groundwater.

16 CHAIR RYAN: Okay. Tell me what drinking  
17 water means then?

18 MR. GARRY: Drinking water is water that's  
19 suitable for drinking, potable water that can be  
20 consumed.

21 MR. SIEBER: It's groundwater that you  
22 capture.

23 MR. GARRY: And it has to be suitable for  
24 drinking. Drinking water has to be suitable for  
25 drinking.

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1 CHAIR RYAN: By what measure?

2 MR. GARRY: By the commonly used  
3 application of drinking water which is -- well, you  
4 have to have a well, if you can provide water from  
5 that well for public consumption or from a plant, it  
6 has to meet EPA drinking water standards.

7 MR. GARRY: It has to be a permitted  
8 source. That's the secret. And do you say that?

9 MR. CONATSER: We actually have a  
10 definition in glossary.

11 CHAIR RYAN: All right, let's have it.

12 MR. CONATSER: Drinking water: water that  
13 does not contain an objectionable pollutant -- easy  
14 for me to say -- contamination, minerals, or infective  
15 agent and is considered satisfactory for domestic  
16 consumption.

17 CHAIR RYAN: I think -- I can't tell you,  
18 maybe I'm wrong and I stand to be corrected if I am,  
19 the idea that a drinking water source is a permitted  
20 source I think might be something of interest.

21 MR. CONATSER: I'm not finished yet.

22 CHAIR RYAN: Okay, sorry.

23 MR. SIEBER: Excuse me, as opposed to  
24 lapping out of a stream?

25 CHAIR RYAN: Yes.

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1 MR. CONATSER: This is sometimes called  
2 potable water. Potable water is water that is safe  
3 and satisfactory for drinking and cooking. Although  
4 EPA regulations only apply to public drinking water  
5 sources supplying 25 or more people, refer to EPA for  
6 more information. For purposes of effluent and  
7 environmental monitoring programs, the term drinking  
8 water includes water from single use residential  
9 drinking wells. So that's the definition.

10 CHAIR RYAN: Great. That's real helpful.  
11 Because it clarifies what you mean.

12 MR. CONATSER: Right.

13 MR. CONATSER: That is changed from  
14 previous and there's a lot of discussion over what is  
15 drinking water. I tried to clarify that.

16 CHAIR RYAN: Different jurisdictions,  
17 whether a single house is actually permitted in some  
18 way or not, I'm sure there's debate about that.

19 MR. CONATSER: Now remember, the 10 CFR  
20 50, Appendix I talks about to the maximum exposed  
21 individual. It talks about individual receptors, so  
22 therefore you almost have to go to single drinking  
23 water wells. That's the way that the guidance  
24 supports the regulation. Does that help?

25 CHAIR RYAN: Until you get to that maximum

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1 exposed individual.

2 MR. CONATSER: I know I shouldn't have  
3 said that.

4 CHAIR RYAN: Those are concepts that --  
5 significantly exposed, fine, but you cannot prove  
6 maximum.

7 MR. CONATSER: Now that's in radionuclide  
8 1.109 and is not part of Reg. Guide 1.21. I want to  
9 say that's out of the scope.

10 CHAIR RYAN: I'll give you a pass on that  
11 one. It's the same kind of general problem that we're  
12 talking about.

13 MR. CONATSER: And I'll continue here with  
14 the NRC response. It does say to evaluate the impact  
15 of spills and leaks on your radiological environmental  
16 monitoring program. And that seems appropriate.

17 And with that, that's really all I had to  
18 say for Reg. Guide 4.1 and we'll open it up at this  
19 time to any additional questions.

20 CHAIR RYAN: Do members of the  
21 Subcommittee have any additional questions?

22 Dana?

23 MEMBER POWERS: You've caught me flat-  
24 footed.

25 CHAIR RYAN: Jack, you want to go first?

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1 No. Well, let you think a minute.

2 Why would -- I've been -- I struggle a lot  
3 with and I've talked to our decommissioning colleagues  
4 and others about over the many months and years of  
5 thinking about this as how do we somehow integrate  
6 modeling and monitoring a little bit better in all of  
7 this? Where is your view of that reflected in these  
8 two Reg. Guides?

9 MR. CONATSER: That is different.  
10 Monitoring and modeling are two different things.

11 CHAIR RYAN: No, they are not. That's the  
12 point I want to leave you with, just to think about.  
13 They really are two components of the same thing.

14 MR. CONATSER: You can monitor with  
15 modeling.

16 CHAIR RYAN: Let me finish. If you -- you  
17 can monitor something and get a big number and it be  
18 not important. And you can get a little number and it  
19 can be important. The way I sort that out is some  
20 understanding of the behavior of the system.

21 Modeling is what I use to describe the  
22 behavior of the system. So just say that I've gone to  
23 the fenceline and I monitor at the fenceline. There's  
24 a creek that runs through a corner of my property and  
25 I monitor the creek and I do all those things that are

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1 called out, doesn't necessarily mean I'm effectively  
2 monitoring the environment until I understand the  
3 behavior of the system.

4 It might be much more important in some  
5 settings for me to put a well that is in a place where  
6 all the surface of my site drains. One well could  
7 substitute for 15 different locations if I know what  
8 the behavior is. So I'm just looking for a little bit  
9 more sophistication after four years of doing  
10 radiological monitoring of the environment. How do we  
11 get there?

12 That gets to the decommissioning question.

13 If I do that a little bit better, I might avoid some  
14 of these large excavations and train loads going West  
15 with very slightly contaminated bulk material.

16 MR. GARRY: Well, we pick that up more in  
17 the Reg. Guide 1.21 which is under the effluent  
18 monitoring which is basically, we defined effluent  
19 releases and effluent discharges. And effluent  
20 releases, radioactive material that would be released  
21 say from either normal or abnormal release, but to the  
22 site versus a discharge would go off-site.

23 Now the REMP program basically picks it up  
24 once it goes off-site. So if you had a source of  
25 effluent, let's say a liquid effluent goes into a

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1 river or lake and then you have drinking wells either  
2 downstream on the river, then those wells could likely  
3 be affected. We need to evaluate, the licensees need  
4 to evaluate and determine which wells are more likely  
5 to be affected and do some sampling and analysis  
6 there.

7 CHAIR RYAN: If you go to the Exelon  
8 website, you'll find a Tritium Task Force-type  
9 groundwater analysis report for each of those  
10 reactors. That was a response to an issue.

11 Now the information that are in those  
12 reports seem to be a big step up in terms of the  
13 quality of the information and the understanding you  
14 get about the environment of that plant as a result of  
15 that information.

16 MR. SIEBER: Which plant is that?

17 CHAIR RYAN: All the Exelon plants, TMI  
18 and the other ones. So they are real interesting  
19 reads and it struck me that boy, if they had this  
20 report a priori, you know, it would have made the job  
21 so much easier. And maybe not to the extent that they  
22 did it in a retro, a responsive kind of analysis, but  
23 I'm just thinking out loud with you about how do we  
24 get people to not separate monitoring and modeling  
25 into two separate offices or two separate bins,

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1 because they're really part of the same analysis.

2 MR. GARRY: I think they are. I think the  
3 NEI initiative has identified that, saying that the  
4 first thing they wanted to do is a site hydrogeology  
5 study that would indicate based on the geological  
6 features which way the water is going to drain and  
7 what characteristics is it going down? Is it hitting  
8 bedrock. Is it hitting fracture bedrock? The  
9 different rock formations and where is it going.

10 CHAIR RYAN: One thing to remember is make  
11 sure you have an updated model after you build the  
12 plant because that's going to change the geology.

13 MR. GARRY: That's right. Sure it is.  
14 All your backfill and so forth is going to be totally  
15 different than the original land, right.

16 CHAIR RYAN: Oh yes. They do it for that  
17 purpose.

18 MR. GARRY: Some plants have had to blast  
19 rock in order to build a base to build on and you  
20 know, that's affected the geology. So in Reg. Guide  
21 1.21, we kind of make that progression and talk about  
22 starting with site hydrogeology studies where the  
23 water is going and then monitoring wells and then  
24 modeling. And that's discussed in Reg. Guide 1.21 for  
25 groundwater.

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1 MR. CONATSER: It's in Section 3.6. It  
2 talks about site should perform basic site  
3 hydrogeologic characterization in advance of leaks and  
4 spills to be prepared to evaluate potential leaks and  
5 spills. This is on the bottom of page 20. It goes on  
6 multiple paragraphs on to page 21 and then it talks  
7 about the site conceptual model together with a  
8 strategic and carefully-planned monitoring program can  
9 ensure that the necessary and reasonable surveys are  
10 performed.

11 So we do hit on those issues, I think, in  
12 some regard.

13 MR. GARRY: We go on from that, Richard.  
14 We talk about very simple site models can be used  
15 using scoping surveys and bounding assumptions and the  
16 complexity of the models should increase as more  
17 knowledge is obtained about the system under  
18 evaluation, the source of the leak, the plume size,  
19 the concentration, nuclides and site characteristics;  
20 and two, the dose estimates as they rise above  
21 significant residual radioactivity levels which are  
22 the levels that would need to be remediated at the  
23 time of decommissioning.

24 So we've put it into take a look at your  
25 site geology. Take a look at what you have for

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1 releases. Do some scoping surveys. If you have  
2 indications of a more serious situation where you need  
3 to pay more attention, then you should be doing more  
4 extensive evaluations and more modeling.

5 CHAIR RYAN: One of the examples I give  
6 you where a deeper and perhaps a more sophisticated  
7 understanding of the geohydrologic modeling might have  
8 been helpful is some of the plants where the Committee  
9 has considered the underground high-voltage cables and  
10 the integrity of the cases.

11 MR. GARRY: Yes.

12 CHAIR RYAN: I ask simple questions. Are  
13 you sure the water is coming in from rain? Or is it  
14 coming up from groundwater or both?

15 MR. GARRY: I might have a recent instance  
16 where it's coming up from groundwater.

17 CHAIR RYAN: But my point is that if the  
18 knowledge of the site geohydrology is just a little  
19 bit better, you can get ahead of some of those other  
20 kinds of questions, as long as the radiological  
21 monitoring and what's going where and how much.

22 MR. CONATSER: And we do kind of address  
23 that in here earlier on page 20. It talks about a  
24 groundwater site conceptual model should be developed  
25 to predict the surface water flow to include direction

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1 and rate of flow to be used as a basis for estimating  
2 dispersion of abnormal releases of liquid effluents  
3 into groundwater. References that can be used include  
4 the following and it lists several references. So we  
5 don't want to duplicate a lot of stuff in this --

6 CHAIR RYAN: No, no, no. I'm not asking  
7 you to do that, but I guess what I'm reaching for is  
8 when will I know I've kind of met your intent of this  
9 Reg. Guide in the modeling and monitoring interaction?

10 MR. CONATSER: We kind of summarize that  
11 on page 21.

12 CHAIR RYAN: All right.

13 MR. CONATSER: Let me read what it says.

14 CHAIR RYAN: All right.

15 MR. CONATSER: It says, after all of this  
16 discussion, multi-page here, talks about groundwater  
17 modeling, site characterization, you know, scoping  
18 surveys. It says then "all the licensees may conduct  
19 a groundwater monitoring effort for different reasons  
20 and for purpose of this Regulatory Guide the surveys'  
21 characterization activities, conceptual models, and  
22 other components of any groundwater monitoring effort  
23 should be sufficient to do the following: (1)  
24 appropriately report for purposes of accountability  
25 effluents discharged to unrestricted areas; (2)

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1 document information in a format consistent with  
2 Regulatory Position 8.5 of this document; (3) provide  
3 advance indication of potential future discharges to  
4 unrestricted areas; (4) demonstrate that significant  
5 residual radioactivity has not migrated off-site; and  
6 (5) communicate pertinent information to the NRC."

7 So we tried to summarize it there.

8 CHAIR RYAN: The third one is the only one  
9 that's related to the modeling aspect. The rest are  
10 monitoring. There's only one in there that has to do  
11 with modeling. Would you read three again, just so we  
12 get the words again?

13 MR. CONATSER: Three was "provide advance  
14 indication of potential future discharges to  
15 unrestricted areas to ensure releases are planned and  
16 monitored before discharge."

17 CHAIR RYAN: That's the modeling result.  
18 The rest are more on what are monitored to demonstrate  
19 compliance of something today. It doesn't talk about  
20 tomorrow. So I say one improvement would be to maybe  
21 expand your thinking a little bit on that and talk a  
22 little bit more about what that means and how to get  
23 there.

24 The ultimate goal, of course, is right,  
25 but again, I took the reading of all of those reports

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1 that Exelon had on their website for each plant as  
2 examples where they tried to do that in a big hurry,  
3 but they now have an understanding of here's the  
4 groundwater table. Here are the flow directions.  
5 Here's how things are behaving and we need to make  
6 sure we're monitoring over here now and they did all  
7 that catching up in a pretty quick way for a number of  
8 different geohydrologic environments. And I think if  
9 we can somehow capture a little bit of that thinking  
10 here, that would be a real --

11 MR. CONATSER: Keep in mind, when I just  
12 listed those five bullet points, those are a summary  
13 of what's been listed on the several pages of this  
14 document, so we do list in other portions of the  
15 document about how -- what that means about advance  
16 indication of what you need to be doing. So it's not  
17 just --

18 CHAIR RYAN: It doesn't tell you how to  
19 get that model to do that for you. That's my point.

20 MR. GARRY: You know, we have the  
21 references that are here, the NUREG, I think it's 8249  
22 or whatever the number is, a two-volume set that  
23 Research put together on groundwater monitoring and  
24 modeling.

25 CHAIR RYAN: Right.

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1 MR. GARRY: That provide a lot of  
2 information on different techniques that can be used.

3 CHAIR RYAN: Sure.

4 MR. GARRY: We didn't repeat that here and  
5 what we -- the emphasis that we tried to put in here  
6 was more of a -- it's a risk-informed, but more of a  
7 do a scoping survey, see what you have. As the  
8 problem gets bigger, you need to be, you're expected  
9 to do more. You're expected to be more thorough and  
10 to do more monitoring and modeling to ensure that you  
11 are providing adequate protection.

12 CHAIR RYAN: Okay. Well, I made my point.  
13 I think it could be strengthened a little bit to give  
14 a little specificity to what you mean.

15 MR. GARRY: Okay.

16 CHAIR RYAN: And what's a good thing to do  
17 and what might not be. It's helpful for some of the  
18 other choices you might offer for insight. And again,  
19 they're not requiring it. It's simply things that the  
20 Agency as a whole has in their toolbox to help folks  
21 do a better job.

22 MR. GARRY: Understood.

23 CHAIR RYAN: Other comments?

24 MR. OLIVER: Where do you want me?

25 CHAIR RYAN: Wherever is comfortable.

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1 There's microphones and just grab a chair.

2 And if you, just for the record and  
3 recorder, introduce yourself and your organization,  
4 sir.

5 MR. OLIVER: I'm George Oliver. I'm with  
6 the Nuclear Energy Institute and I know most of the  
7 people in the room already. Most people know me as  
8 well. We really appreciate the opportunity to be here  
9 today.

10 This effort has stirred a lot of interest  
11 within the industry. I'm going to give you my sad  
12 story as it relates to this. I had comments from 30  
13 plus individuals in the industry. I initially had  
14 probably 150 plus pages of detailed technical comments  
15 which these gentlemen certainly appreciate the volume  
16 of what I had as well.

17 There were many, I would say very detailed  
18 technical comments that involved our relationship with  
19 the Commission staff and both productive and  
20 professional in this effort. And we put in our  
21 comments February 3rd. We had 78 comments on DG-1186  
22 and 49 comments on 4013 on some 15 pages, 24 pages on  
23 DG-1186.

24 I'm not even going to begin to go into the  
25 technical details. I'm going to stay pretty much at

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1 the high level here.

2 I believe the staff has addressed a number  
3 of the comments that we have provided. The comments  
4 we provided really that you see on the slides up here  
5 predate the January 15th public meeting, so this is  
6 really where the staff is at right now is two  
7 iterations beyond those comments at this point in  
8 time.

9 So we very definitely appreciate the  
10 clarifications offered at the December 15th meeting  
11 and some of the additional clarifications offered here  
12 today.

13 We have probably less background than most  
14 of the people in the room as to what the actual draft  
15 Reg. Guides actually say right now. This is basically  
16 based on what we understand the content to be.

17 One of the things that we took into  
18 consideration in our comments was the emergence of the  
19 SECY 08-0197 which is the effort to revise Commission  
20 regulations, to evaluate -- to modernize its  
21 regulations potentially up to and including ICRP-103.

22 We very definitely support those efforts  
23 that are being undertaken by the Commission. Ralph  
24 Anderson made comments at a recent ACRS in that regard  
25 also.

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1           We very definitely support the gathering  
2 of stakeholder input. That's both necessary and  
3 warranted, to gather the information that's going to  
4 be necessary to do the kind of rulemaking that will be  
5 ultimately needed and revising all the technical  
6 guidance.

7           In the SECY paper it identified some 40  
8 guidance documents that would be impacted which  
9 included these two Regulatory Guides. And Mike, I  
10 very definitely agree with your comment too. It's not  
11 so much that 103 drives you to be different here, but  
12 it's the integrated nature of the regulations in the  
13 composite regulatory guidance that the Commission has  
14 and that all has to be consistent at the end of the  
15 day.

16           We definitely believe that an integrated  
17 approach is needed and we understand that these two  
18 Reg. Guides got started before the SECY paper really  
19 came in the public view and at this point we know that  
20 there's been a lot of work put in and the staff is not  
21 likely to stop its efforts in terms of these two Reg.  
22 Guides at this point. But on a going-forward basis,  
23 we think that there needs to be integration and this  
24 will add to the efficient utilization of resources,  
25 both of the Commission staff as well as the industry

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1 to do -- to undertake the changes that are going to be  
2 needed to implement these new regulations. It's going  
3 to be very intensive of staff as well as industry  
4 resources to make this a success. And we don't need  
5 the diversions. And this one may not be a diversion  
6 at this point. It's almost completed work at this  
7 point in time, but we need an integrated approach to  
8 the whole effort.

9           There's been some made here of duplicative  
10 and inconsistent other guidance. There's a necessary  
11 sequence when you undertake something like that and  
12 there's going to be some duplication and some conflict  
13 because you can't -- the guidance is so intertwined  
14 that you can avoid duplication and conflict at some  
15 point. You've got to start somewhere, but there is  
16 still some, at least on my last view there was still  
17 some duplication and conflict in there. I can give  
18 you examples of those, if you need those.

19           One of the other things we would note is  
20 on groundwater. There is -- everybody has got  
21 groundwater guidance, so we've done groundwater  
22 guidance in the industry. We've done NEI 07-07.  
23 We've got the EPRI guidance which is a companion  
24 document to that that gives you the technical tool  
25 chest to go do an effective groundwater monitoring

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1 program.

2 Quite honestly, we're reasonably proud of  
3 the industry accomplishments in doing that. Indeed,  
4 we've been working with the Office of New Reactors in  
5 their implementation of Reg. Guide 2.1 which there's  
6 going to be a follow-on document of NEI 08-08. We  
7 seem to like numbers that repeat. I think we're  
8 nearing completion on that and I understand the ACRS  
9 would be briefed on a future meeting on the contents  
10 of that document.

11 That largely takes 07-07 which is not  
12 necessarily intended to be a regulatory document from  
13 its conceptualization and development, but it really  
14 for new plants it's basically taking 07-07, augmenting  
15 it, and it would be part of the licensing basis for  
16 new plants, if you look at it in that way, because the  
17 new plants are referencing NEI 08-08 as part of their  
18 program.

19 We have a significant number of efforts  
20 underway on groundwater monitoring and assessment  
21 guidance. There is some benefit to consolidated  
22 guidance, particularly in the Commission putting all  
23 these pieces together in one coherent set of  
24 information. If you have it fragmented and I know the  
25 fragments all have different purposes, but they need

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1 to all come together and they need to fit in a  
2 coherent set of requirements or guidance for the  
3 industry.

4 I would further submit that the SECY 08-  
5 0197 almost offers a unique opportunity to accomplish  
6 some of the things that I'm talking about that sets  
7 the stage that we can play the overhaul of our  
8 guidance documents, not just these pieces, but across  
9 the board, because we've got a tremendous amount of  
10 guidance out there right now. And quite honestly, not  
11 all of it is consistent with all of the other pieces.

12 So we have a very unique opportunity to clean up, to  
13 make life better for the Commission's staff as well as  
14 for the industry.

15 CHAIR RYAN: Just one example, if I may,  
16 George, to make your point, a long-lived radionuclide,  
17 pick any one you like, on one case I calculate an  
18 intake and I assign the dose that occurs in that year  
19 to that year.

20 MR. OLIVER: Right.

21 CHAIR RYAN: For a different -- in the  
22 current dose calculation system, I take an intake for  
23 a year. I calculate the 50-year committed dose from  
24 that intake and assign that to that year of practice.

25 So for a lot of radionuclides that are

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1 short-lived in the body, the difference is small, but  
2 for some radionuclides it grows and grows and grows to  
3 where it can be a factor of 50 different, very long-  
4 lived radionuclides. So those are the kind of things  
5 where there are very real consequences to not paying  
6 attention to these differences in just the dose  
7 calculation.

8 MR. OLIVER: Right. And that actually was  
9 one of the issues that we talked about in the workshop  
10 at some length. I agree with the opportunity as  
11 you're laying it out there.

12 The applicability, it's easy to say slash  
13 backfit all of the other arguments here, but it really  
14 boils down to applicability. The licensing basis for  
15 existing plants is the licensing basis that they have  
16 right now. And it does not include these two  
17 Regulatory Guides in these versions.

18 The Part 52 applicants, the Reg. Guide is  
19 issued six months prior to the filing of the  
20 application. So your observation is there will be  
21 very few plants that this will be part of their  
22 licensing basis. I think that's well founded. And  
23 the staff has told us that the existing guidance will  
24 remain applicable. That deals with a number of issues  
25 and I think it's the right posture for the Commission

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1 to take.

2 MR. SIEBER: Can I conclude from that that  
3 in your opinion it makes no difference whether they  
4 issue it or not?

5 MR. OLIVER: That's straight to the point,  
6 isn't it?

7 MR. SIEBER: Yes. That way I only have to  
8 ask one question.

9 (Laughter.)

10 MR. OLIVER: I think on a licensing basis,  
11 I don't think it makes much difference.

12 MR. SIEBER: For existing plants.

13 MR. OLIVER: For existing plants, so on a  
14 licensing basis, it really doesn't make much  
15 difference. There is technical merit for what's being  
16 done here. There are good practices.

17 MR. SIEBER: I agree with that.

18 MR. OLIVER: The licensees probably should  
19 look at this guidance and take it to heart because  
20 there are some flexibilities being added with this.

21 MR. SIEBER: And there's issues that are  
22 now covered by NEI guidance and task force reports  
23 that are somehow mingled into this.

24 MR. OLIVER: Yes.

25 MR. SIEBER: You know, in a way you're

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1 committed or licensees are committed maybe by saying I  
2 do at some NEI meeting to following the task force  
3 recommendations, but I think this helps codify what  
4 those recommendations are and how they can be applied  
5 to achieve their goals.

6 MR. OLIVER: Yes, sir.

7 MR. SIEBER: And it's not mandatory.

8 MR. OLIVER: I think the applicability  
9 statements are very good from the following  
10 standpoint, too, because the inspection and  
11 enforcement staff really, their job is to go out and  
12 make sure that the Commission requirements are being  
13 implemented and if not, duly cite the facility. And  
14 with this applicability being laid out very cleanly  
15 here, that will avoid a lot of future debates and  
16 uncertainty as well. I think it's a good thing to lay  
17 out the applicability. Because in the absence of  
18 doing that will create opportunities and inspection  
19 and enforcement. And this was discussed also at the  
20 public meeting.

21 I close with some opportunities and I  
22 believe many of these have been covered by the staff  
23 here today, but the clarification of solid waste  
24 reporting, I think NEI initially used the DOE report.  
25 Avoid duplicate reporting, if possible. The

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1 underlying principle there is what's the definition --  
2 what waste is to be reported? Is it waste for  
3 disposal? Is it waste for treatment? Is it waste  
4 that's like the laundry shipments? I believe the  
5 staff has adequately defined those situations.

6 I think the elimination of the on-site  
7 radiological monitoring programs, as we've heard  
8 today, that's a positive development also because we  
9 had --

10 CHAIR RYAN: Just to be show, you said  
11 illumination as opposed to elimination.

12 MR. OLIVER: Elimination.

13 CHAIR RYAN: You said elimination?

14 MR. OLIVER: Elimination.

15 CHAIR RYAN: Elimination. Okay.

16 MR. OLIVER: As it was described by the  
17 staff here today, I think is a good thing because the  
18 way the original Reg. Guides were written, as we had  
19 various programmatic Reg. Guides that were -- we were  
20 bleeding them together and quite honestly in  
21 implementation at plant, some of them are implemented  
22 by the RP staff, some of them are implemented by the  
23 environmental staff. Some of them are implemented by  
24 the chemistry staff. And when we started bleeding the  
25 programs together, that creates opportunities in the

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1 implementation. And I believe the position of the  
2 staff as described is a step in the right direction.

3 The flexibility, I think, which is one of  
4 the things that staff is trying to adhere to is to  
5 make sure that quality work is done, but allow  
6 sufficient flexibility in its execution in the plants.

7 I believe is a worthy goal also. We've had some  
8 discussion here on C-14 monitoring, etcetera. The  
9 ability to calculate the emissions of C-14 is a piece  
10 of flexibility I personally find valuable. Monitoring  
11 of C-14 is actually reasonably difficult and has a  
12 number of technical challenges associated with it.

13 I might also note that we're not going to  
14 impose any requirements for environmental media  
15 testing for C-14 in these two Reg. Guides. What we're  
16 talking about are the effluent monitoring piece and  
17 that's a wise division because funding power plant C-  
18 14 and the environment is darn near an impossible task  
19 to distinguish from all of the other sources of C-14.

20 CHAIR RYAN: From background.

21 MR. OLIVER: In effluents, it can be  
22 detected, though I think the discretionary use of  
23 MARLAP and setting LLDs and counting times is an  
24 option that some of the plants are going to find  
25 beneficial and some will actually go out and partake

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1 of those flexibilities. So I think that's a positive  
2 also.

3 But again, the relationship with the staff  
4 has been very professional and productive through this  
5 process. So I would like to commend the staff for the  
6 way they have approached the issues.

7 CHAIR RYAN: Thank you, George. That's  
8 very helpful. I appreciate your insights.

9 Just looking ahead to the full Committee  
10 briefing that the Subcommittee will give, do I  
11 understand correctly that NEI will make comments to  
12 the full Committee as well?

13 MR. OLIVER: That is correct.

14 CHAIR RYAN: Great.

15 MR. OLIVER: Ralph Anderson will probably  
16 make those, at least that's the current plan.

17 CHAIR RYAN: Okay, that's the current  
18 plant. Okay, that's great.

19 Any other comments from anyone?

20 MEMBER POWERS: I am just still concerned  
21 about inconsistencies in guidance. It seems to me to  
22 be the difficulty that we have here.

23 CHAIR RYAN: I think George characterized  
24 part of that as that problem isn't going to go away  
25 until we begin to cut out the apples and make apple

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1 pie here. And I guess -- I appreciate the fact that  
2 you've got to refer to a dose standard, but how you  
3 calculate that dose is going to change once the 103  
4 crew gets going on those regulation changes.

5 MEMBER POWERS: I'm just thinking about  
6 the presentation before the full Committee and that  
7 issue has to be confronted fairly explicitly up front  
8 in the staff presentations. They can say yes, we'll  
9 have consistencies until we do X, Y, or Z or something  
10 happens because otherwise the Committee will just go  
11 crazy over that.

12 CHAIR RYAN: Oh yes.

13 MR. CONATSER: We will have to get more  
14 information on the inconsistencies. Right now, I'm  
15 not sure that I'm aware of inconsistencies. We have  
16 specifics on some of those, I guess.

17 MR. OLIVER: A lot of those that we saw  
18 were between NUREG-1301/1302 and some of which you  
19 illustrated there. We changed the standards over  
20 time, but the regulatory guidance, what was it, 1301  
21 and 1302 are still calling for some annual reports.

22 CHAIR RYAN: And I guess I tried to  
23 outline today in all our discussions that these issues  
24 of whether you're looking at risk-informed metric or a  
25 concentration-driven metric or a quantity-driven

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1 metric is from I think the full Committee's  
2 perspective three different metrics of which one will  
3 be pleasing and two will not.

4 I understand that there's a basis and a  
5 history of why you look at concentrations or you  
6 estimate quantities released and percentages of totals  
7 and all that, but in our explaining at least how that  
8 looks further to some integration that ends up with a  
9 risk-informed view at the end of the day, that's maybe  
10 the point Dana's trying to illustrate.

11 MEMBER POWERS: And there may be a great  
12 deal of rationality in it. It may be just time heals  
13 all wounds.

14 CHAIR RYAN: I don't know if it actually  
15 heals actually.

16 MEMBER POWERS: I mean -- I'm just  
17 thinking about the Committee dynamics and if it  
18 emerges that there's an inconsistency that hasn't been  
19 explicitly addressed up front, then I mean you know  
20 personalities.

21 CHAIR RYAN: I think most of what falls  
22 out of that observation which I agree with 100 percent  
23 is just right up front. You need to say this is the  
24 first step in a long journey and try to get new advice  
25 and make consolidated guidance and look down the road

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1 to the next generation of license applications. I  
2 think it's important for the full Committee to hear  
3 what we've heard today and any conversations in  
4 preparing for this meeting that industry folks have  
5 been involved and it has been positive dialogue and  
6 all of that and we'll have presentation on that as  
7 well for the full Committee. That's an important  
8 preamble to jumping into the slides and the two Reg.  
9 Guides.

10 Yes.

11 MR. SIEBER: Part of the inconsistencies  
12 that we are talking about though are administrative  
13 inconsistencies between a NUREG and a Reg. Guide,  
14 neither one of which are regulations, but a Reg. Guide  
15 has more impact in terms of regulations than a NUREG  
16 does. A NUREG is like going to Barnes & Noble or  
17 Borders and buying a book.

18 MEMBER POWERS: It depends on what the  
19 NUREG, what its status is. There are NUREGs that are,  
20 in fact, referenced in Reg. Guide and they become --

21 MR. SIEBER: They do. They can be  
22 referenced by it, on the other hand lacking that  
23 reference the Reg. Guide is one acceptable way to  
24 comply with regulations. You don't have to do that  
25 either. One can take exception to it. But I don't

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1 consider it an inconsistency to have some  
2 administrative suggestion in a NUREG inconsistent with  
3 something that's in a Reg. Guide.

4 On the other hand, there's some  
5 inconsistencies between those documents that require  
6 some thought.

7 CHAIR RYAN: I think that's one aspect of  
8 it that I agree. The other aspect to me, is I think a  
9 question for the full Committee is that when you do  
10 the numbers it doesn't apply unless they want it to,  
11 to existing plants. There's maybe a couple of  
12 applications where it would apply and that's it. So  
13 why are you doing this?

14 MR. SIEBER: On the other hand, there's  
15 things in the Reg. Guide that are not in the current  
16 version, for example.

17 CHAIR RYAN: And I think that's got to be  
18 --

19 MR. SIEBER: -- Lessons Learned Task  
20 Force.

21 CHAIR RYAN: -- an emphasis that you're  
22 doing this for those kind of reasons to get out better  
23 technical bases for what's coming in the Reg. Guides.

24 MR. SIEBER: And the timing is not ideal.  
25 This Reg. Guide, work on this started years ago.

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1 MR. GARRY: Two and a quarter years ago.

2 MR. SIEBER: A lot has happened since  
3 then, including Part 52.

4 CHAIR RYAN: And including the SRM-103  
5 which sill change the dosimetry calculations in both  
6 of them, stem to stern.

7 MR. SIEBER: If you're trying to update  
8 your approach to an existing regulation, every 30  
9 years is not a bad timing where you are right now. So  
10 the decision to do that was made before some of these  
11 other issues emerged. So I'm sort of torn. You can  
12 say on the one hand you really don't need to do this.  
13 You can do it later on. And it only applies strictly  
14 to Part 52 plants.

15 On the other hand, Part 50 plants might  
16 find it useful to use part or all of it and if they do  
17 that cuts the review time for the staff because if  
18 they use an accepted method, then the staff doesn't  
19 have to go and justify some other method to say that  
20 the submittals are okay.

21 So I'm sort of torn. I could go either  
22 way. I don't find anything technically wrong with  
23 what the staff has done.

24 CHAIR RYAN: I second George's point  
25 because we haven't studied it in as great a detail as

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1 NEI has, but you've done an awful lot of good work to  
2 get it in the shape it's in and to address it. Our  
3 questions are not in any way should be taken as any  
4 criticism. It's just three new faces and three new  
5 folks giving you all the help you need. So I think  
6 that's certainly true.

7 Dana, I don't know if we've answered your  
8 challenge yet or not.

9 MEMBER POWERS: Well, I think the guidance  
10 might provoke the Committee by ending up with the  
11 presentation by NEI that says there are  
12 inconsistencies that the Committee is not aware of up  
13 front. Because they'll go crazy over that.

14 MR. GARRY: I would like to get a list of  
15 the inconsistencies.

16 MEMBER POWERS: Yes, I don't know that  
17 it's explicitly necessary. I think to have -- I mean  
18 I think you ought to get as much as you can on that.

19 MR. GARRY: Right.

20 MEMBER POWERS: But the guidance that you  
21 got that said okay, this is the first step in an on-  
22 going process. It's going to reveal things and so  
23 you'll identify things that appears to be  
24 inconsistencies or incompatibilities and things like  
25 that, if it's going to happen, is the kind of key to

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1 making it explicit because otherwise if they get hit  
2 with gee, we think they're inconsistent, that's what  
3 the letter is going to say. It's not going to be very  
4 useful to you.

5 MR. GARRY: Right.

6 MEMBER POWERS: And that's all I'm trying  
7 to avoid is a misunderstanding based on the Committee  
8 gets a snapshot.

9 MR. GARRY: I would hate to see it get a  
10 label of inconsistencies without having anything  
11 tangible saying well, let's talk about what we're  
12 talking about here. Let's have some specifics. Give  
13 us a problem we can go solve. But not let's label it  
14 inconsistent.

15 MEMBER POWERS: You're right, Steve,  
16 that's exactly what we're trying to avoid here and I'm  
17 telling you the Committee dynamics, it's easy for the  
18 Committee to make a mistake and start labeling things  
19 and once you're tarred that tar doesn't come off ever.

20 (Laughter.)

21 MR. CONATSER: And keep in mind too on  
22 this when George mentions that there's some  
23 inconsistencies, his perspective there, he hasn't seen  
24 the predecisional version here of the Reg. Guides.

25 MEMBER POWERS: And even he acknowledges

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1 that.

2 MR. CONATSER: He's still going off the  
3 older versions and there were some things in there  
4 that were not exactly right and we've corrected those  
5 things, so it would be good to get a better idea now.

6 Of course, we can give these to George as still  
7 predecisional. So that's the dilemma that we'll have  
8 to come up against.

9 CHAIR RYAN: Will they be passed that step  
10 by the meeting, next month?

11 MR. GARRY: Only if they're issued. Maybe  
12 we can ask Ed to explain that to us. Ed O'Donnell.

13 MR. O'DONNELL: Unfortunately, the  
14 Committee actually has to review it. So we're kind of  
15 stuck.

16 CHAIR RYAN: Okay, that's fine. I just  
17 wanted to -- did you guys have a meeting and discuss  
18 it, anything about how you should have corrected it?

19 MR. CONATSER: Not the new version, it's  
20 predecisional.

21 MEMBER POWERS: George has said he has  
22 examples and I'm sure that he's willing to share them  
23 with the principals here and -- but I think  
24 inconsistencies I'm most concerned about are those  
25 that are perceived and not real, the ones that kick

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1 out because they're the things that are going to get  
2 changed. Those are the things I'm most concerned  
3 about.

4 MR. OLIVER: And it's not just the  
5 inconsistencies with these new rules and many of the  
6 issues that we identified may have been addressed.  
7 But it's solving inconsistencies and the general  
8 regulatory guidance, whether it's 1301, 1302 and these  
9 two, this process that's out in front that leaves an  
10 opportunity to go through and remove a lot of the  
11 supposed inconsistency in our Regulatory Guides.

12 CHAIR RYAN: So this -- could I summarize  
13 it, you're characterizing this as a first step and a  
14 good process to make things more consistent?

15 MR. OLIVER: Yes.

16 CHAIR RYAN: That might be a good phrase  
17 to start off with, something along those lines and  
18 explain that a little bit.

19 And I take Dana's point too, that we will  
20 wrestle with some time yet to come as well, ICRP-103's  
21 implementation, and that has more fingers than these  
22 two Reg. Guides by a long shot. It may even touch on  
23 medical and other areas. So that's going to happen  
24 and we can't say I hear your point that being opposed  
25 to these going forward shouldn't necessarily hang on

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1 that point alone.

2 MR. GARRY: You know, the ICRP 103, the  
3 Commission has given us direction to begin work on it,  
4 to engage stakeholders and identify issues and  
5 concerns to the stakeholders such that a path can be  
6 developed toward a new regulation. It's not like  
7 we've been given direction to go out and adopt ICRP  
8 103 in its entirety. Our direction has been to engage  
9 stakeholders and identify impacts.

10 CHAIR RYAN: Oh sure, and I appreciate all  
11 of that in all its dimensions, but it's still a big  
12 step from ICRP 2.

13 MR. GARRY: Yes.

14 CHAIR RYAN: We're going from 1959 to  
15 2009. That's a 60-year leap in science, technology,  
16 and understanding of the metabolism of dosimetry and  
17 radioactive material.

18 MR. GARRY: And I think sometimes ICRP 2  
19 gets too much credit because the current dose  
20 assessment techniques and models are not strictly ICRP  
21 2. Some of the modeling is based on ICRP 2, but the  
22 dose commitment, the way we implement Appendix I right  
23 now is on a 50-year dose commitment. It's labeled in  
24 a footnote in Reg. Guide 1.109 that it's a 50-year  
25 dose commitment versus ICRP 2 which is like you said,

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1 it's a one-year delivered dose.

2 CHAIR RYAN: Right.

3 MR. GARRY: We're implementing the 50-year

4 --

5 CHAIR RYAN: And the models are often  
6 based on ten people being exposed.

7 MR. GARRY: There's a lot of room for  
8 improvement in the modeling, as I understand. I  
9 haven't --

10 CHAIR RYAN: I think the point to make,  
11 Steve, and you and I would probably agree to this is  
12 however you end up calculating a dose, that's sort of  
13 the wagon on the end of the train.

14 MR. GARRY: Right.

15 CHAIR RYAN: To get to where you're going  
16 to calculate a dose is really what this whole front  
17 end is all about and how you make sure that when you  
18 do calculate a dose, it represents your best estimated  
19 reality. That's really what you guys are trying to  
20 accomplish here as a first step.

21 And I think if you agree with me, this is  
22 a point that I think the full Committee would benefit  
23 from, even though this 103 process, which as you know,  
24 the Committee heard an information briefing and then  
25 was given the plan and the result of the Commission in

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1 considering our letter which they caught in the SRM is  
2 go forth and proceed with this process. So everybody  
3 is up to speak on that, I think on the Committee, but  
4 it's to say something along the lines that this is not  
5 -- going forward with this, and I think I'm  
6 representing you correctly is not on inconsistent with  
7 having a parallel activity on ICRP going forward, and  
8 perhaps even parallel activities on other activities  
9 going forward.

10 So that's the point that you're not --  
11 it's not in series that things happening in parallel  
12 is not a bad thing from your perspective. And it  
13 might be good to have examples of why that's true from  
14 your point of view.

15 Okay, anything else?

16 MR. GARRY: No, sir.

17 CHAIR RYAN: George, thank you very much  
18 for your time and your insights. We really appreciate  
19 your being with us and we'll appreciate Ralph being  
20 here next month.

21 MR. OLIVER: Thank you.

22 CHAIR RYAN: Any other comments,  
23 suggestions, clarifications? Votes to adjourn?

24 Dana?

25 MEMBER POWERS: No comments.

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1 CHAIR RYAN: Okay, with that, having no  
2 other comments, Steve --

3 MR. GARRY: I just want to express thanks  
4 to Research and NRO and FSME who have also worked with  
5 us on the decommissioning aspects, the new reactors  
6 aspects of it and the groundwater monitoring from  
7 Research. They've been a big part of our Reg. Guides  
8 and we've worked as a team and I want to give them  
9 credit for their technical input.

10 CHAIR RYAN: Thank you very much for  
11 letting us know that and we appreciate their  
12 contributions as well. Thank you very much.

13 MR. CHEOK: Thanks to all the  
14 Subcommittees for all your comments today.

15 CHAIR RYAN: I hope it's been a good  
16 dialogue.

17 MR. CHEOK: It has been a great dialogue.  
18 We got a lot of good points.

19 CHAIR RYAN: We've had a frank exchange  
20 and hopefully make it better as a result. Thank you  
21 all very much.

22 With that we'll adjourn and close the  
23 record for the day.

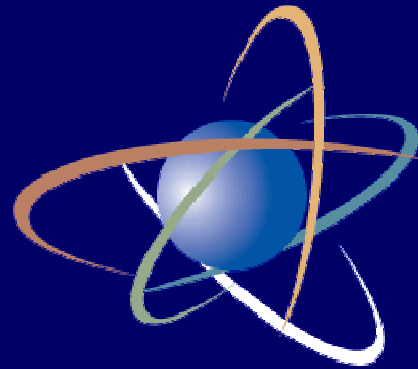
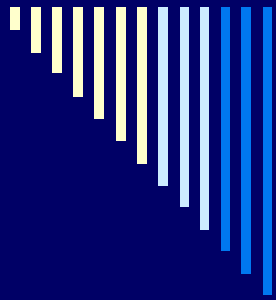
24 (Whereupon, at 4:05 p.m., the meeting was concluded.)  
25

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UNITED STATES NUCLEAR REGULATORY COMMISSION

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## **Revision of RG 1.21 (Effluents) and RG 4.1 (Environmental Monitoring)**

Presented to:

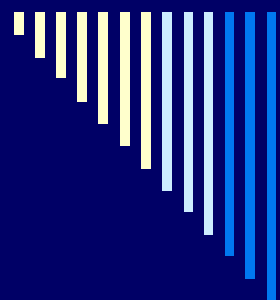
**ACRS Subcommittee**

**Radiation Protection and Nuclear Materials**

May 5, 2009

**Richard Conatser & Steve Garry**

**NRR Div. Inspection & Regional Support**



# Outline

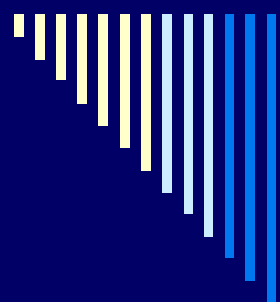
- We'll cover each RG separately
  - RG 1.21 (Effluents)
  - RG 4.1 (Environmental)
- Why RGs were revised
- Major changes
- Table of Contents
- Public Comments



---

# Why Revise RGs?

- RG 1.21 (1974) Effluents
- RG 4.1 (1975) Env. Monitoring
- Incorporate OE & Lessons Learned
- Lessons Learned Task Force

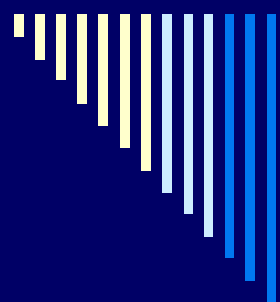


# LLTF Recommendations

## Provide Guidance:

- ❑ (2) for detecting, evaluating, and monitoring releases from unmonitored pathways
- ❑ (3) consistent with current industry standards
- ❑ (5) to define magnitude of spills & leaks to be documented
- ❑ (5) to define “significant contamination”
- ❑ (5) to include spills & leaks in ARERR
- ❑ (7) to address remediation
- ❑ (8) to detect leaks & spills before migrate offsite





# LLTF Recommendations

(Cont'd) Provide Guidance:

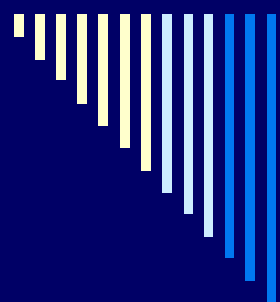
- (9) to survey and monitor GW and soil
- (10) for additional monitoring locations and capability to detect low-risk nuclides
- (23) for radionuclide transport in GW
- (24) for notification of public if general interest
- (25) to ensure event risk is provided in the appropriate context (NUREG/BR-0308)



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# Major Changes in RG 1.21

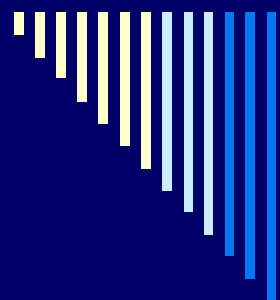
- Effluents (Ground Water)
- C-14 (more important now)
- Dose assessments (Part 20, EPA)
- Solid radwaste (Class A, B, C)
- Principal nuclides
- Significant release points



# RG 1.21 Table of Contents

## Section 1. Effluent Monitoring

- 1.1 Guidance for Effluent Monitoring
- 1.2 Release Points for Effluent Monitoring
- 1.3 Monitoring a Significant Release Point
- 1.4 Monitoring a Less-Significant Release Point
- 1.5 Monitoring Leaks and Spills
- 1.6 Monitoring Continuous Releases
- 1.7 Monitoring Batch Releases
- 1.8 Principal Radionuclides
- 1.9 Carbon-14
- 1.10 Abnormal Releases



# RG 1.21 TOC

## Section 2. Effluent Sampling

2.1 Representative Sampling

2.2 Sampling Liquid Radioactive Waste

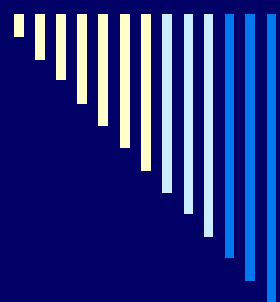
2.3 Sampling Gaseous Radioactive Waste

2.4 Sampling Bias

2.5 Composite Sampling

2.6 Sample Preparation and Preservation

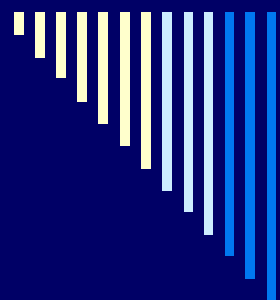
2.7 Short-Lived Nuclides



# RG 1.21 TOC

## Section 3. Effluent Dispersion

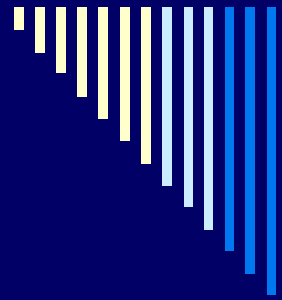
- 3.1 Meteorological Data
- 3.2 Atmospheric Transport and Diffusion
- 3.3 Release Height
- 3.4 Aquatic Dispersion (Surface Waters)
- 3.5 Spills & Leaks to Ground Surface
- 3.6 Spills & Leaks to Ground Water



# RG 1.21 TOC

## Section 4. Quality Assurance

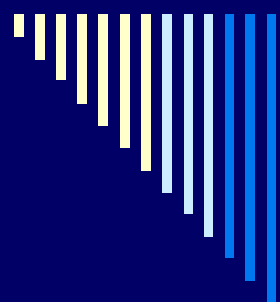
- 4.1 Regulatory Guidance
- 4.2 Quality Control Checks
- 4.3 Functional Checks
- 4.4 Procedures
- 4.5 Calibration of Lab Equip & Rad Monitors
- 4.6 Calibration of Measuring and Test Equip
- 4.7 Calibration Frequency
- 4.8 Measurement Uncertainty



# RG 1.21 TOC

## Section 5. Dose Assessment MOP

- 5.1 **Bounding Dose Assessments**
- 5.2 Members of the Public
- 5.3 Occupancy Factors
- 5.4 10 CFR Part 50, Appendix I
- 5.5 **NRC Dose**
- 5.6 **EPA Dose**
- 5.7 Dose Assessments for Appendix I
- 5.8 Dose Assessments for EPA
- 5.9 Dose Calculations

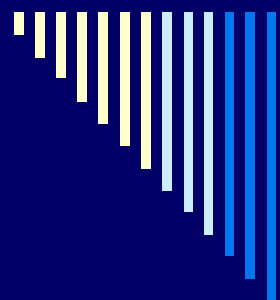


# RG 1.21 TOC

## Section 6. Solid Radioactive Waste

- Report volume & activity shipped
- Separate by waste streams
  - Resins & filters
  - DAW
  - Irradiated components
  - Other
- Report by Class A, B, C
- Not report laundry, GIC, metal for decon





# RG 1.21 TOC

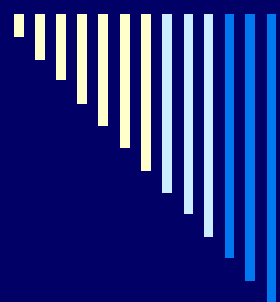
## Section 7. Reporting Errata

7.1 Examples of Small Errors

7.2 Reporting Small Errors

7.3 Examples of Large Errors

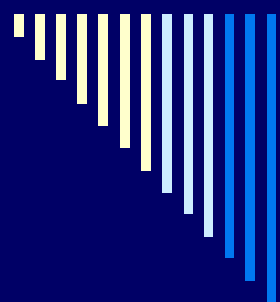
7.4 Reporting Large Errors



# RG 1.21 TOC

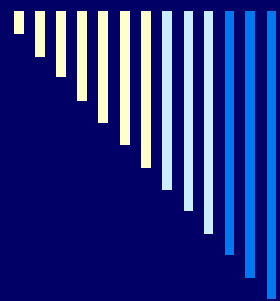
## Section 8. Annual Effluent Report

- 8.1 Gaseous Effluent
- 8.2 Liquid Effluents
- 8.3 Solid Waste Shipments
- 8.4 Dose Assessments
- 8.5 **Supplemental Information**



# Public Comments “Revise RGs Later”

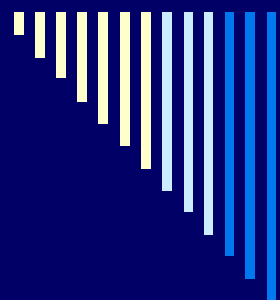
- NEI Comment #1, #30
  - Wait until NRC adopts ICRP-103
- NRC Response:
  - Not dependent on ICRP-103
  - Address OE over last 30+ years
  - Need to fill “gaps” in guidance
  - Address current industry practices



# Public Comments

## “Back – fit”

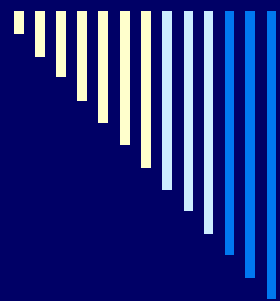
- NEI Comment #2, 8, 10, 31, 52, 78
  - Imposes new requirements
  - Do back-fit analysis before proceeding
- NRC Response:
  - RGs are not regulations
  - Describe acceptable methods
  - Licensees may continue to use Rev. 1



# Public Comments

## “Duplicative Guidance Documents”

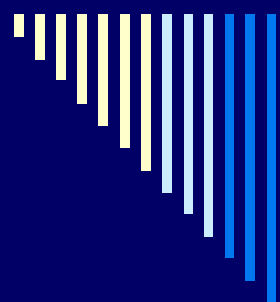
- NEI comment # 20
  - many RGs & potential for conflicts
- NRC Response
  - Each RG - different scope and applicability
  - RG 4.21, RG 4.22, RG 4.1, RG 1.21
  - **Consistency** is very important



# Public Comments

## “Principal Radionuclides”

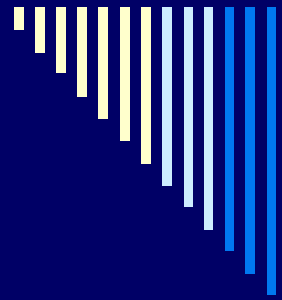
- NEI Comment # 13:
  - May have only 1 or 2 “principal” nuclides
  - Other nuclides not analyzed or reported
- NRC Response:
  - Focus attention on important nuclides
  - Must report all nuclides detected
  - Risk-informed concept to set LLDs
  - Can use RG 1.21 Rev 1 or Rev 2 method



# Public Comments

## “Carbon-14”

- NEI comment # 14:
  - C-14 is a new reporting requirement
- NRC Response:
  - 10 CFR 36a - report all principal nuclides
  - Determine if C-14 is a principal nuclide
  - If so, estimate quantity (measure or scale)
  - Report in the Annual Report



# Public Comments

## “Ground-water Monitoring”

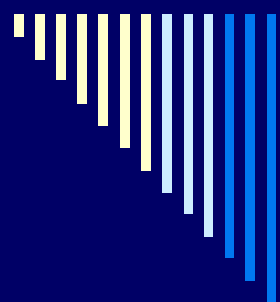
### □ NEI comments #19

- Too much emphasis on on-site groundwater monitoring
- No instances where the health of the public was impacted

### □ NRC Response

- Report “abnormal releases”
- Leaks may impact reporting of effluents

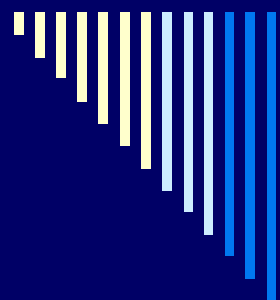




# Public Comments

## “Ground-water Monitoring Unjustified”

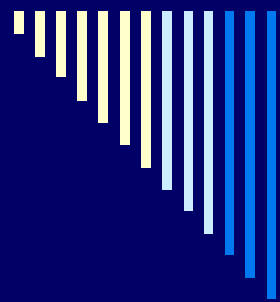
- NEI comment # 22
  - Requirement for on-site monitoring not justified or risk-informed
- NRC Response:
  - Survey requirements - 10 CFR 20.1501
  - Records requirements -10 CFR 50.75(g)
  - Surveys dependent on the significance
    - Scoping surveys
    - More extensive surveys



# Public Comments

## “Abnormal Releases”

- NEI comment # 49
  - Attempt to codify GW monitoring
- NRC Response
  - Abnormal releases are in RG 1.21 Rev 1
  - Clarification of guidance



# Public Comments

## “Significance – 1% vs 10%”

### □ NEI comment #10

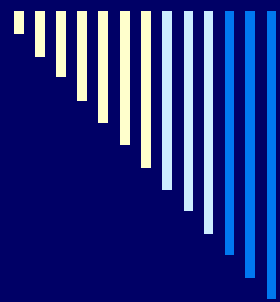
- New 1% threshold for “significant”

### □ NRC Response

- 1% “rule” applies to:

- Nuclide detection
- Analysis frequency

- 10% “rule” applies to dose calculations for exposure pathways



# Public Comments

## “Dose Calcs - EPA 40 CFR 190”

- NEI comments # 4, # 8:
  - Compliance with EPA is required only if effluent dose exceeds twice App I
- Response:
  - Generally applicable if there is not a direct radiation component
  - Exceptions for direct radiation components (ISFSI, Radwaste Storage, EPU...)



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# ACRS Break

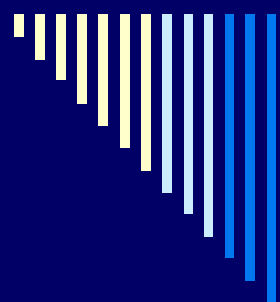
- After break, we will proceed to RG 4.1



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# Why Revise RG 4.1 ?

- Radiological Environmental Monitoring For Nuclear Power Plants
- 35 years old
- Lessons Learned Task Force Report



# LLTF Recommendations

## Provide Guidance:

- (2) for evaluating and monitoring releases from unmonitored pathways
- (3) consistent with current industry standards
- (4) to limit flexibility in deleting program components
- (4) to provide for program expansion
- (5) to use historical info & 50.75(g) files in planning surveys and monitoring

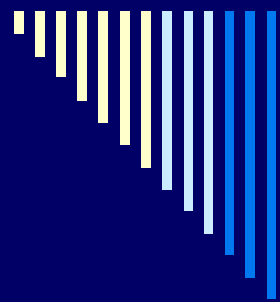


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# Major Changes in RG 4.1

- Leaks and spills may affect REMP
- Routes of exposure (terminology)
- Environmental Program Review

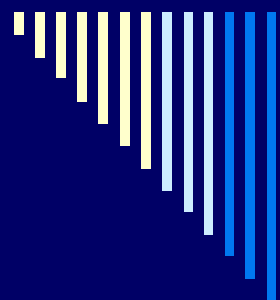




# Public Comments – RG 4.1

## “Duplicative Guidance”

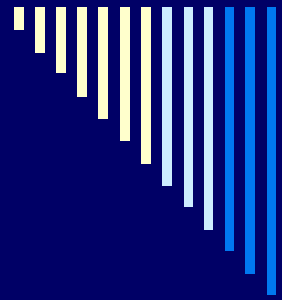
- NEI comment #1
  - Duplicative with NUREG-1301/1302
- NRC Response
  - Some duplication (consistency) necessary
  - RG’s are guidance documents
  - NUREGs are for information
  - Licensees have changed ODCMs



# Public Comments (Cont'd)

## “Applicability”

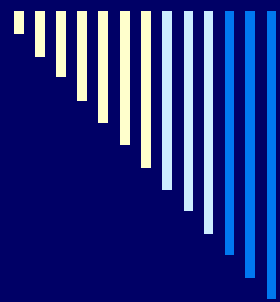
- NEI Comment #3
  - Applicable to existing plants?
- NRC Response
  - Existing plants can use the new guidance, or use the previous guidance.



# Public Comments (Cont'd)

## “No Requirement for GW Monitoring”

- NEI Comment #9
  - No requirement for onsite GW monitoring
- NRC Response
  - Surveys are required once leaks are detected (addressed in RG 1.21)
  - Include a “hazard” assessment
  - Could affect REMP Land Use Census



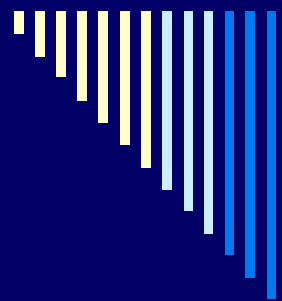
## Public Comments (Cont'd) “Emphasis on GW Monitoring”

### □ NEI Comment #10

- Emphasis on ground water monitoring is not justified.

### □ NRC Response

- Monitor ground water and drinking water if they are likely to be affected (NUREG-1301/1302)
- Evaluate impact of spills and leaks on REMP



# Questions

?

# DG-1186 & DG-4013 Issues

George Oliver  
May 2009  
ACRS

# DG-1186 & DG-4013 Issues Industry & Staff Efforts

- **Industry Contribution From 30+ Individuals**
- **Many Detailed Technical Comments**
- **Professional & Productive Relationship With Staff**
- **January 15, 2009 Workshop Productive**
  - **Clarifications**

# DG-1186 & DG-4013 Issues Need For Integrated Approach

- **Emergence Of SECY 08-0197**
  - **NEI/Industry Supports The Approach Taken By The Commission**
  - **Gather Stakeholder Input**
  - **Approximately 40 Guidance Documents Impacted**
    - **Including Regulatory Guides 1.21 & 4.1**
  - **An Integrated Approach Is Needed**
  - **Supports Efficient Resource Utilization**



# DG-1186 & DG-4013 Issues Need For Integrated Approach

- **DG-1186 & DG-4013 Duplicate & Inconsistent With Other Guidance (NUREG 1301 & 1302)**
- **Several Guidance Documents Related To Groundwater**
- **Benefits Of Consolidated Guidance**
- **SECY 08-0197 Offers A Real Opportunity**

# DG-1186 & DG-4013 Issues Applicability

- **Neither Regulatory Guide Would Not Be Included In The Licensing Basis For:**
  - Existing Licensees
  - Part 52 License Applications – 6 Months Prior To Application
- **The Existing Guidance Should Remain Applicable**
- **Inspection & Enforcement Impacts**

# DG-1186 & DG-4013 Opportunities

- **Clarification Of Solid Radioactive Waste Reporting**
- **Elimination of On Site Radiological Monitoring Programs From DG-4014**
- **Additional Flexibility**
  - **Calculate C-14 Effluents**