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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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REGULATORY POLICY AND PRACTICES SUBCOMMITTEE

+ + + + +

WEDNESDAY

FEBRUARY 8, 2012

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Subcommittee convened at the Nuclear  
Regulatory Commission, Two White Flint North, Room  
T2B1, 11545 Rockville Pike, at 8:30 a.m., Harold B.  
Ray, Chairman, presiding.

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1        SUBCOMMITTEE MEMBERS PRESENT:

2        *HAROLD B. RAY, Chairman*

3        *SAID ABDEL-KHALIK*

4        *J. SAM ARMIJO*

5        *DENNIS C. BLEY*

6        *CHARLES H. BROWN, JR.*

7        *MICHAEL CORRADINI*

8        *DANA A. POWERS*

9        *MICHAEL T. RYAN*

10       *STEPHEN P. SCHULTZ*

11       WILLIAM J. SHACK

12       GORDON R. SKILLMAN

13       JOHN W. STETKAR

14

15       NRC STAFF PRESENT:

16       PETER WEN, Designated Federal Official

17       MARTIN MURPHY

18       GEORGE WILSON

19       DAN HOANG

20       MARK ORR

21       YONG LI

22       JUAN URIBE

23

24

25

## TABLE OF CONTENTS

<u>ITEM</u>	<u>PAGE</u>
Opening Remarks	4
NRC Staff Presentation RG 1.127 Rev. 2	11
Discussion	18
Committee Discussion	63

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

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

8:30 a.m.

CHAIR RAY: The meeting will now come to order.

This is a meeting of Advisory Committee on Reactor Safeguard Subcommittee of Regulatory Policies and Practices. I'm Harold Ray, Chairman of this Subcommittee.

ACRS Members in attendance are John Stetkar, Stephen Schultz, Dick Skillman, Dennis Bley, Sam Armijo, Mike Ryan, Said Abdel-Khalik, Charles Brown, Bill Shack and we believe we'll be joined by Mike Corradini.

I want to say -- oh, Peter Wen is the Designated Federal Official for this meeting.

I do appreciate very much, the response of Members to this meeting. My belief if it will not be a long meeting, at all, not even the times that's allocated to it, I would expect, and I'll discuss that in a moment, when I get on with the rest of the introduction here.

The purpose of this meeting is to review the proposed final draft Regulatory Guide 1.127, Inspection of Water-Cooled Structures Associated With Nuclear Power Plants -- water-

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1 controlled structures, excuse me, associated with  
2 nuclear power plants, Revision 2.

3 We will hear presentations from  
4 representatives of NRC staff.

5 The Subcommittee will gather  
6 information, analyze relevant issues and facts  
7 and formulate proposed position and action as  
8 appropriate, for deliberation by the full  
9 Committee.

10 The rules for participation at today's  
11 meeting have been announced as part of notice of  
12 this meeting, published in the Federal Register  
13 on January 18, 2012.

14 We've received no written comments or  
15 request for time to make oral statements from  
16 members of the public regarding today's meeting.

17 A transcript of the meeting is being  
18 kept, and will be made available, as stated in  
19 the Federal Register Notice. Therefore, we  
20 request that participants in this meeting use the  
21 microphones located throughout the meeting room,  
22 when addressing the Subcommittee.

23 The participants should first identify  
24 themselves and speak with sufficient clarity and  
25 volume, so that they may be readily heard.

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1 Please silence your cell phones during the  
2 meeting, and we'll now proceed with the meeting  
3 by my giving some additional background for it.

4 Revision 2 of this Regulatory Guide  
5 went out to public comment last year, I believe  
6 prior to Fukushima, and also prior to the  
7 flooding on the -- river flooding that affected  
8 one of our plants in this country, and also, some  
9 of us were engaged in the provisions for  
10 protecting the Watts Bar plant that we're  
11 considering from flooding, as well.

12 We're all therefore, we're mindful of  
13 the elevated, perhaps, attention that we would  
14 give to a Reg Guide, which includes protection  
15 against flooding, as one of its features, as well  
16 as protection of the ultimate heat sink.

17 And so, when this came as all Reg  
18 Guides do, that have gone out to public comment,  
19 and are ready for final issuance, come to us with  
20 a query as to whether or not we would wish to  
21 review it in its final form, although often, we  
22 do not do that.

23 In this case, it seemed appropriate  
24 for us to do so, and so, we did ask for this  
25 meeting.

1           Staff was good enough to seek a  
2 meeting with me and Girja, as it turned out in  
3 January, January 17<sup>th</sup>, I think, whenever it was,  
4 and so, we discussed what I've just said, and  
5 explored what the content of this Subcommittee  
6 meeting here would be today.

7           The objective of it is that we have  
8 time to identify any issues, which Members may  
9 have, and not be constrained by the necessarily  
10 limited time that's available at the full  
11 Committee, so that when this comes to a full  
12 Committee for review, or the action that we take  
13 is reviewed by the full Committee -- not action,  
14 I shouldn't have said that, the conclusions that  
15 we reach as a Subcommittee are reviewed at the  
16 full Committee, when that occurs, hopefully we  
17 will have identified all of the questions that  
18 Members would have, and have addressed them in  
19 this Subcommittee meeting, where there is more  
20 time available. So, that's why we're having this  
21 Subcommittee meeting.

22           It may seem a little odd, that we  
23 would do so for something like this, because I  
24 know that when we look at what are the changes  
25 that have been made, they will seem to be not

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1 that great.

2 Now, as we had this informal meeting,  
3 preparing for today's Subcommittee meeting, we  
4 explored some of the areas of interest, which  
5 I've shared with Members in an email  
6 subsequently.

7 And basically, for those of you who  
8 looked at the Reg Guide, you may have come to the  
9 conclusion I did anyway, going into that meeting  
10 I'm referring to, which is what does this refer  
11 to -- what does this apply to?

12 In one place, it seems very clearly to  
13 state that it applies to things that are  
14 constructed in connection with the plant itself,  
15 that would put it in space and time, in a pretty  
16 limited scope, in terms of, what are the  
17 structures of interest to this Reg Guide.

18 But in other places, and the Reg Guide  
19 is, I'll say quite anecdotal, if I may, Marty, in  
20 referring to many events that should be aware of,  
21 that don't involve structures in any way,  
22 connected with construction of the plant itself,  
23 and also, of course, because we are talking about  
24 the ultimate heat sink protection, among other  
25 things.

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1           It seemed clear enough, that this was  
2           applicable more broadly, than just things that  
3           were built as part of the plant construction, and  
4           so, we explore that some, and there is reference  
5           made, for example, in the Reg Guide, to the fact  
6           that other jurisdictions may have a  
7           responsibility for inspection or oversight of  
8           these other structures and so on.

9           So, we talked about that a while, and  
10          as I mentioned then and in my email, it seemed to  
11          have or imply, to me anyway, that somewhat the  
12          characteristics of emergency planning, which is  
13          that there are things that we rely on that aren't  
14          under the direct control of either the licensee  
15          or the agency, that we're talking about here.

16          And so, we discussed how is it that we  
17          take credit for those things, and how do we have  
18          the confidence that we need to have?

19          We had the benefit of NRC dam  
20          inspector. I didn't even know we had such a  
21          thing, but we do. They are talking about the  
22          role that the NRC does play in providing this  
23          assurance, and so, I learned quite a bit in this  
24          informal meeting, and at least I would like us  
25          all to share in that, here now.

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1           But again, I began with the question,  
2           what is it that this Reg Guide applies to? It  
3           seems more like an internal NRC document to  
4           guide, like a Standard Review Plan, than it is  
5           something you'd expect licensees to reference the  
6           way we do other Reg Guides that are referenced in  
7           the licensing basis.

8           So, that is the background for this.  
9           My surmise is that we will go through this, and  
10          there may be more questions than what I've  
11          suggested here, that -- but in any case, the  
12          purpose that we have to serve here today is to  
13          make sure that we don't impose on the full  
14          Committee agenda and calendar, whatever time it  
15          takes to satisfy the Members about this, given  
16          this background that I mention, in which flooding  
17          is more on our mind than it may have been.

18          So, with that, Marty, I'll turn it  
19          over to you, if I may.

20                 MR. MURPHY: Thank you very much. I'm  
21                 Marty Murphy. I'm the Branch Chief of the  
22                 Mechanical and Civil Structural Branch in NRR.  
23                 This is Juan Uribe. He is one of my technical  
24                 reviewers, and he's also a team member of the --  
25                 that performs the NRC's dam safety inspections.

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1 I've asked George Wilson, who is the  
2 NRC's Dam Safety Officer, to come and help us  
3 with any additional information.

4 This Reg Guide itself is not -- is for  
5 licensees and applicants, and is not specifically  
6 for the Dam Safety Program. So, I'd like to just  
7 start off with that. But George has a lot of  
8 knowledge that he can help impart to.

9 Dan Hoang is here, as well. He is  
10 also a technical reviewer in the Branch, and he  
11 also performs dam safety inspections.

12 CHAIR RAY: The Reg Guide does, as I  
13 say, at least in an anecdotal way, cite a lot of  
14 things that are in their purview, and so, one  
15 wonders what the licensee is suppose to take away  
16 from those citations and those references to  
17 experience with dams. So, please proceed.

18 MR. MURPHY: So, we're going to try to  
19 focused on the changes that were made to the Reg  
20 Guide, and then we'll open it up for questions,  
21 and hopefully, we can expand and provide you some  
22 insight.

23 We had a pretty limited amount of time  
24 to prepare for this. I've been Branch Chief for  
25 about a month. Juan is relatively new, and Dan

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1 has been doing this for a little of time, but we  
2 had a very senior individual who had done this  
3 for a long time, who has retired and so, we're  
4 trying to fill that gap at this point.

5 So, we hope we can answer a few  
6 questions.

7 MEMBER STETKAR: Marty, when is -- I  
8 kind of share some of Harold's concerns that he  
9 mentioned in his introduction, and I -- you know,  
10 not being party to that informal meeting that I  
11 guess you folks had, when is the appropriate time  
12 during this discussion, to talk about clarity and  
13 the scope of the Reg Guide?

14 Should we save that until the end or  
15 should we do it now, because I know you want to  
16 talk about details of the changes, but --

17 MR. MURPHY: I think we can do it any  
18 time. I think one of the things that we have in  
19 the handout is that, really there is no change to  
20 the scope or regulatory position within the Reg  
21 Guide itself. The vast majority of the changes  
22 were editorial in nature.

23 So, if you want to talk about the  
24 scope now, we can do that. George has a meeting  
25 around 10:30 a.m. So, he is going to have to

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1 leave.

2 MEMBER STETKAR: If we could, let's  
3 try to do it first, up front, because that kind  
4 of sets the context, and I guess I share some of  
5 Harold's concerns, as I read through it, because  
6 extracting portions of the text, it wasn't clear  
7 to me -- I had two concerns.

8 Number one, does it apply only to dams  
9 that retain water for the ultimate heat sink,  
10 which is a cooling water-retention function, or  
11 does it also apply to dams that are -- that  
12 provide flood protection for the plant, which is  
13 a different function?

14 MR. WILSON: Well, this is George  
15 Wilson, and as Marty said --

16 MR. MURPHY: Speak into the  
17 microphone.

18 MR. WILSON: This is George Wilson,  
19 and as Marty said, I'm the Dam Safety Officer.

20 We only have regulatory purview over  
21 the ultimate heat sinks, and only at specified  
22 dams.

23 So, I want to -- there was a bunch of  
24 different things that happened. There is a bunch  
25 of different -- there was a Federal Executive

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1 Order that says you will have an inter-agency  
2 committee on dam safety. So that was one thing,  
3 based on some of those dam failures that you had  
4 in West Virginia, that is mentioned in here.

5 So, that was one thing that's not part  
6 of the Reg Guide, but everyone needs to know, and  
7 that includes the NRC, the Bureau of Reclamation,  
8 the Federal Energy Regulatory Commission, TVA,  
9 the Army Corp of Engineers, Land Management  
10 Bureau.

11 So, any -- so, we -- I participate in  
12 that, and the reason that becomes relevant is  
13 because of how we do our dam inspections.

14 So, that's one part of it. The second  
15 part of it is, is how they broke dams down. Now,  
16 I can't -- there is no logical process, how the  
17 dams were broken among the different agencies or  
18 the different states, because there is dams that  
19 are close to nuclear power plants that are -- the  
20 state regulates, and then there is dams close to  
21 nuclear power plants that another agency  
22 regulates.

23 So, there really -- as I've talked to  
24 the different members of ICODS, there is no rhyme  
25 or reason, exactly how the dams were broken down.

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1           If it's a hydro-dam for hydro-power,  
2           the Federal Energy Regulatory Commission  
3           automatically regulates that. A lot of dams, the  
4           Army Corp of Engineers built, and then they no  
5           longer regulate them. They're turned over to the  
6           state.

7           The Army Corp of Engineers do regulate  
8           the dams that are on the Missouri River Basin and  
9           the Mississippi River Basin, all the levees. So,  
10          those are the dams that are upstream of Fort  
11          Calhoun and Cooper and Callaway.

12          So, it becomes relevant that way  
13          because when we do -- since there was a Federal  
14          Executive Order that required every Federal  
15          agency that regulate dams, to have a Dam Safety  
16          Program, and there is also the Federal Dam Safety  
17          Act, which requires you to have -- tells you how  
18          the dam program will be ran, and that actually  
19          allocates money to FEMA for the ICODS and the  
20          National Dam Safety Review Board.

21          MEMBER BLEY: I'm sorry, I don't know  
22          the acronym. What are ICODS?

23          MR. WILSON: ICODS is the Interagency  
24          Committee on Dam Safety.

25          MEMBER BLEY: Okay, I'm sorry.

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1 MR. WILSON: And that's where all the  
2 Federal agencies --

3 MEMBER BLEY: That's where you  
4 started?

5 MR. WILSON: Right.

6 MEMBER BLEY: That's good.

7 MR. WILSON: So, I go with the ICODS,  
8 which is all the Federal agencies, and there is  
9 a lot of the Federal agencies that don't regulate  
10 a lot of dams.

11 We have nine underneath our  
12 jurisdiction. The Boundary Waters has three.

13 MEMBER BLEY: Those are the --  
14 Boundary Waters?

15 MR. WILSON: Boundary Waters, those  
16 are the -- that is the international boundary  
17 borders.

18 MEMBER BLEY: Okay.

19 MR. WILSON: That is the Mexico -- the  
20 dams between Mexico and Canada. They only have  
21 three dams, but they're part of ICODS.

22 Now, the people that do dams --

23 MEMBER STETKAR: Between Mexico and  
24 Canada?

25 MR. WILSON: -- build them, regulate

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1       them, like they Army Corp of Engineers, the  
2       Federal Energy Regulatory Commission, the Bureau  
3       of Reclamation and the USDA, who actually builds  
4       more dams than anybody, for small retention  
5       ponds, for like farms, they're part of a bigger  
6       organization called the National Dam Safety  
7       Review Board, and that is where we get, as you're  
8       going to see -- the reason that becomes pertinent  
9       here is, the National Dam Safety Review Board is  
10      the big Federal agencies, plus the state  
11      agencies.

12                A lot of the states have their own  
13      state and dam officials, not everybody, but a lot  
14      of them do.

15                So, that organization is called the  
16      Association of State Dam Officials, ASDO.

17                So, along with that, there is also a  
18      Federal -- there is also a contractor that has to  
19      be present. So, they get a world renowned expert  
20      in dam construction and refurbishment, who is  
21      actually part of the National Dam Safety Review  
22      Board.

23                So, out of that, we make the Federal  
24      guidelines. We make the dam inspection  
25      guidelines. All the FEMA guidelines, which the

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1 Federal agencies follow, are made from the  
2 Interagency Committee, but they're also approved  
3 by the National Dam Safety Review Board,  
4 including any research that needs to be done on  
5 concrete dams or if I'm putting a textile --  
6 stuff that we really don't get into, because they  
7 talk about some of the major dam ways.

8 Now, with that, and the reason I'm  
9 explaining how it works is, hopefully it will  
10 help explain.

11 Every two years, we're required to  
12 write a report of the Office of the President, on  
13 the biennial dam safety, everything that we've  
14 done in the NRC, when we go out and inspect the  
15 dams that we're responsible for.

16 So, every two years, we write a report  
17 and it goes in to Department of Homeland Safety,  
18 into FEMA and then FEMA sends it to the Office of  
19 the President.

20 They used to, in that report, they  
21 used to evaluate each one of the agencies dam  
22 programs. Based on a review by the ICODS members  
23 a long time ago, the NRC had major findings  
24 against their dam safety program.

25 So, the way it was resolved was, we

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1 signed an MOU with the Federal Energy Regulatory  
2 Commission, because they do dams for a living.

3 The findings had to do -- we didn't  
4 have our own dam safety training program. There  
5 is a bunch of little hoops that you had to go  
6 through.

7 So, for like an accreditation, we just  
8 -- so, we signed an MOU with FERC, and then the  
9 Federal Energy Regulatory Commission sends people  
10 with us and we go do our dam inspections.

11 So, we actually have somebody that  
12 does dam inspections for a living. That is all  
13 they do.

14 So, that is how our dam inspections  
15 are done at the nine dams that we're responsible  
16 for.

17 CHAIR RAY: George, that is very  
18 helpful. I'll come back to you in a second,  
19 John.

20 But I just want to read two sentences  
21 here, to try to help you guys understand, at  
22 least where I first began to go astray.

23 The two sentences are not changed, and  
24 they're out of the Regulatory Position.

25 The first one says, "This guide

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1 applies only to water-control structures, dams,  
2 reservoirs and conveyance facilities,  
3 specifically built for use in conjunction with a  
4 nuclear power plant and whose failure could  
5 trigger the failure of the plant's emergency  
6 cooling systems, thereby, endangering the plant."

7 The second sentence says, "The NRC  
8 staff may consider the recommendations of this  
9 guide fulfilled by the applicant or licensee if  
10 the structure is regulated by another agency or  
11 state that enforces a comparable inspection  
12 program, e.g., a hydro-electric pump storage  
13 project built as part of a nuclear power plant  
14 and regulated by the Federal Energy Regulatory  
15 Commission," I think we all know what that  
16 example refers to.

17 Anyway --

18 MEMBER STETKAR: Harold, before -- if  
19 I could just interrupt, since we're quoting out  
20 of that same paragraph.

21 I'm hung up on the first sentence you  
22 quoted. You skipped a sentence --

23 CHAIR RAY: Yes.

24 MEMBER STETKAR: -- that says, "Such  
25 structures may be located on site or off site,

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1 and may have been built, wholly or in part, for  
2 the purpose of controlling or conveying water for  
3 either normal and emergency cooling operation, or  
4 flood protection of the plant."

5 That is -- I just wanted to get that  
6 in because --

7 CHAIR RAY: Yes, that's quite right.

8 MEMBER STETKAR: Your two sentences  
9 led to my confusion, with the addition of the  
10 third sentence that I just quoted.

11 CHAIR RAY: Right, you're right, to do  
12 that, since I was interrupting you in the first  
13 place, I tried to keep it short.

14 But anyway, the point is, George gave  
15 us a good overview, and I think we want to keep  
16 that in mind, and go back to it, as appropriate.

17 But we're struggling with the seaming  
18 inconsistency between those sentences, and then  
19 what George talked about.

20 Now, the Reg Guide doesn't need to  
21 apply to everything he talked about, but at  
22 times, it does seem to apply to what he -- he's  
23 talking about, this broader field of interest,  
24 and at times, it doesn't.

25 So, that is -- I just want to make

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1 that point, but having done so, it's back to you.

2 MEMBER STETKAR: I want to ask,  
3 George, it might help me a little bit, you said  
4 that the agency is responsible for inspecting a  
5 total of nine dams in the country.

6 MR. WILSON: Yes.

7 MEMBER STETKAR: So, we can now talk  
8 about specifics, because it's not 900 dams.

9 What functions do those nine dams --

10 MR. WILSON: They're all ultimate heat  
11 sinks.

12 MEMBER STETKAR: They're all ultimate  
13 heat sink retentions?

14 MR. WILSON: That is correct.

15 MEMBER STETKAR: Okay, thanks. That  
16 helps a bit.

17 MR. WILSON: Except for the uranium  
18 mills, the tailing mill dams.

19 So, I don't -- we don't just do  
20 nuclear power plants --

21 MEMBER STETKAR: Yes.

22 MR. WILSON: The uranium tailing mill  
23 dams fall underneath us, also. So, that is not  
24 an ultimate heat sink.

25 Now, for the nuclear power plants

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1 themselves, they're all ultimate heat sinks.

2 MEMBER STETKAR: They're ultimate heat  
3 sink? So, in practice, they're ultimate heat  
4 sink protection?

5 MR. WILSON: That is correct.

6 CHAIR RAY: Now, is there a comparable  
7 entity, you or someone else, who looks at flood  
8 protection --

9 MR. WILSON: Yes.

10 CHAIR RAY: -- facilities?

11 MR. WILSON: Yes, in reactor --  
12 revised oversight process, there is actually  
13 flooding inspections that are done by the  
14 resident inspectors.

15 I used to be a resident -- senior  
16 resident, so, I've done those. You do not only  
17 external, but you also do internal flooding.

18 CHAIR RAY: Oh, sure.

19 MR. WILSON: So, you look at that.  
20 That is done yearly.

21 The ultimate heat sink itself has an  
22 additional inspection that are -- that is done by  
23 regional inspections every -- regional  
24 inspectors, every two years.

25 So, they actually go back and evaluate

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1 all the ultimate heat sinks at the plant, because  
2 we only regulate seven -- we only have seven of  
3 them underneath my purview for the dams that we  
4 actually go look at.

5 But regional inspectors look at any --  
6 there is actually an ultimate heat sink dam  
7 inspector, or an ultimate heat sink inspection  
8 that the regional inspectors do.

9 MEMBER STETKAR: So, guidance for that  
10 is under the inspection guide?

11 MR. WILSON: Yes, that's an ROP. I'm  
12 pretty sure it's 711 -- 71111-07A, but I haven't  
13 did that in six years, so don't quote me, okay.

14 MR. MURPHY: I believe in the Reg  
15 Guide, as well, it makes reference to flood  
16 control, the Reg Guides that are used for flood  
17 control.

18 CHAIR RAY: It does, but then the  
19 question is, whether or not that is dealing with  
20 inspection or some other attribute.

21 This Reg Guide deals with inspection,  
22 and so, the overlap between it and the ones that  
23 deal with what is required, for example, by way  
24 of protection, as opposed to what is required to  
25 inspect and verify that it's in place.

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1           So, you see some of the dilemma here.  
2           I think we should invite you to go ahead and  
3           explain --

4           MEMBER CORRADINI: Can I ask a  
5           clarifying question?

6           CHAIR RAY: Yes.

7           MEMBER CORRADINI: Since I've been  
8           watching you guys go at it.

9           So, let's say for example,  
10          prognosticate, that possibly, the Commission is  
11          going to ask licensees to go back and do external  
12          event individual plant examinations, and they do  
13          that, and they find out that some dam, that you  
14          don't inspect, or you don't control, whether it  
15          be ultimate heat sink or built by the licensee,  
16          has the dominant risk for that plant. Then what?

17          In other words, Cooper or Calhoun, as  
18          an example, or somewhere, Kewaunee, there is no  
19          flood there, but let's just use it as an example,  
20          finds out that something upstream could flood  
21          them, and it's not within your regulatory basis.

22          How do you take action to lower the  
23          frequency of that risk, given all these what, to  
24          me, are a very confusing set of inter-woven Reg  
25          Guides and things?

1 MR. WILSON: Well, I'll answer you  
2 questions in two ways.

3 We can -- I'll run you an example.  
4 Let's say that there is a dam, a hydro-dam that  
5 is upstream, and that upstream -- well --

6 MEMBER CORRADINI: And that turns out  
7 to be the dominant risk after they do an IPEEE.

8 MR. WILSON: Right, that dam is  
9 regulated by the Federal Energy Regulatory  
10 Commission, if it's a hydro-dam. They have their  
11 own Code of Federal Regulations. It's built to  
12 their standards. It's inspected to them. They  
13 do refurbishment.

14 The difference between the way that we  
15 regulate and the way that some of the -- what  
16 you'll be surprised at is, the dam industry as a  
17 whole, is actually going to risk.

18 There is new dam models that are being  
19 built all the time. Some of the -- the big  
20 agencies didn't want to do, because they say, you  
21 always have to assume of dam failures.

22 But now, they're actually going to  
23 risk, but for a different reason. There is only  
24 so much money.

25 So, I'm doing a risk assessment on the

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1 dam, because I have to prioritize which one I'm  
2 going to refurbish and I have to do that, based  
3 on a risk analysis.

4 So, they look at the people that are  
5 downstream of the dam. The hazard is based on,  
6 if I can kill people downstream, if there is  
7 lives that are lost, or overall things.

8 So, what could we go back and do?  
9 Well, one of the things I will tell you, that  
10 I've been -- it's been reiterated to me several  
11 times in the meetings, that regulatory agency  
12 will tell you what the failure of their dam is.

13 So, the Army Corp of Engineers has  
14 their own failure frequency for that dam. They  
15 know what the status of it is. They know what  
16 the refurbishment of it is.

17 If we started looking at the IPEEE,  
18 sometimes we take generic failure values for  
19 dams, when we start looking at stuff, and I think  
20 if we started to addressing it, because these  
21 dams are out of our regulatory purview, and the  
22 other agencies have told us that, that we would  
23 go with what that agency considered to be the  
24 failure risk for that dam, and then we'd have to  
25 incorporate that.

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1 MEMBER CORRADINI: And that could be  
2 higher or lower than what you were assuming from  
3 some generic value?

4 MR. WILSON: Right, but most of the --  
5 right, but what you end up getting is, you  
6 actually start looking at the status of that dam.

7 It could be lower, but I could all --  
8 most likely, unless the dam is in poor condition,  
9 it would be -- it wouldn't be higher. It would  
10 be lower.

11 MEMBER CORRADINI: Okay.

12 MR. WILSON: The frequency.

13 MEMBER CORRADINI: So, if I just --  
14 one follow up question.

15 MR. WILSON: All right.

16 MEMBER CORRADINI: But I guess I want  
17 to go to the next point, because you made an  
18 interesting point, is that their measure of worry  
19 is lives lost.

20 So, what if it's not lives lost? What  
21 if it's land contamination due to some industrial  
22 thing downstream of it, that would essentially  
23 cause the land to be not occupiable for a month,  
24 a few months, a year?

25 MR. WILSON: I don't --

1                   MEMBER CORRADINI: That is not  
2 considered in their risk model?

3                   MR. WILSON: Right now, when -- well,  
4 when they classify the dam as a high hazard/low  
5 hazard/medium hazard, they evaluate the loss of  
6 land and the loss of lives.

7                   I do not think they would look at to  
8 say that there is a nuclear -- and I could be  
9 wrong, but I'm just answering what I think right  
10 now.

11                   I don't think they say, "There is a  
12 nuclear power plant downstream of it. If there  
13 was an issue with that nuclear power plant, there  
14 would be a radioactive release, potentially, and  
15 it would contaminate things."

16                   I don't think that is taken into --

17                   MEMBER CORRADINI: Or an industrial  
18 plant, or anything.

19                   MR. WILSON: Right, I think they look  
20 at --

21                   MEMBER CORRADINI: I'm looking for a  
22 figure.

23                   MR. WILSON: -- just losing real  
24 estate --

25                   MEMBER CORRADINI: Okay, got it.

1 MR. WILSON: -- and taking away  
2 buildings.

3 MEMBER CORRADINI: Okay, thank you.

4 CHAIR RAY: Mike, I'm going to try and  
5 get back to Marty here, but again, we should look  
6 at this as an opportunity that is not constrained  
7 by time, at least for now.

8 But I think when you -- to your point,  
9 I would make this observation.

10 We're here talking about inspection.  
11 That is what George is talking about, but the  
12 risk that you presumed in your question could be  
13 due to design, rather than condition, which is  
14 what inspection looks at.

15 In other words, it may that -- a  
16 seismic event, the new central and eastern  
17 seismic hazard may create a risk.

18 MEMBER CORRADINI: Correct.

19 CHAIR RAY: The dam may be in perfect  
20 condition.

21 MEMBER CORRADINI: Understood.

22 CHAIR RAY: And found by the FERC, in  
23 this case, to be so, and therefore, the Guide  
24 would be fulfilled by the applicant, if the  
25 structure is regulated by another agency.

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1 MEMBER CORRADINI: Understood.

2 CHAIR RAY: The problem may be  
3 associated with the fact that the dam isn't  
4 designed for the hazard that exists, and of  
5 course, that is another issue outside this Reg  
6 Guide.

7 MEMBER CORRADINI: Well, I mean, that  
8 is a fair point, and this is pretty narrow in  
9 scope, and I understand that.

10 But since you appealed that we all be  
11 here, I'm looking to think broadly about this,  
12 because it seems to me, it's the interaction of  
13 one engineered structure with other engineered  
14 structure, given some sort of natural event, that  
15 if we consider all of the potential consequences,  
16 then might be a different way to look at things.  
17 That is, I guess, what I'm -- because I think  
18 that is why you wanted us all here, anyway.

19 MR. WILSON: Well, to help answer your  
20 question, this is George Wilson, again, that is  
21 taken into consideration, in a different way.

22 We look at dams upstream of the  
23 facility. So, let's say that there is three or  
24 four dams stacked on top of each other upstream  
25 of a facility.

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1           When we look at the original licensing  
2 of the dam, we start looking at two things that a  
3 dam has to pass.

4           One of them is a fragility or a  
5 seismic study. So, if the dam is built to  
6 seismic standards, that gets a checkmark, because  
7 that means it can handle a seismic event.

8           The other thing that you look at, at  
9 the dam, is it designed to handle a PMP, Probable  
10 Maximum Precipitation.

11           So, what that really -- really, what  
12 you're looking at with the dam is that, do they  
13 have spillway gates or spillway tunnels large  
14 enough to release the water before I would get up  
15 and overtop the dam?

16           I apologize if I'm -- that's how I've  
17 always -- I'm not trying to -- that's how I've  
18 always explained it to people.

19           So, if it passes those two check  
20 boxes, the way that we use to license facilities  
21 in the olden days, based -- starting back in the  
22 AEC, is that if it passed those two check blocks,  
23 then we did not -- we did not evaluate a  
24 cascading dam failures, which means that I would  
25 only go upstream to the closest dam, and I would

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1 do the flooding assessment on that power plant  
2 based on the closest dam.

3 If, for instance, some of the dams  
4 cannot handle a seismic evaluation, such as maybe  
5 the dams that are on the Tennessee River, then  
6 you do cascading dam failures.

7 So, then the natural disaster is  
8 worsened, because I have to assume one dam will  
9 cause another dam to fail, because it's not  
10 seismically stable.

11 So, that is addressed on the  
12 interaction, and that is the way that we've  
13 addressed it.

14 MEMBER CORRADINI: Okay, thank you.

15 CHAIR RAY: Okay, George, thank you.  
16 Let's get back to Marty here.

17 But bearing in mind, again, what John  
18 and I tried to emphasize, which is, as we read  
19 it, I would have thought this Reg Guide was  
20 narrow in one place that I read it, but broader  
21 in another place that I read it, and that is one  
22 of the things that we wanted to explore with you.

23 But since it's not changed, I won't  
24 expect you to address it, in what you're going to  
25 present to us.

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1 MR. MURPHY: Okay, so, we'll go  
2 through -- getting back to Slide 2, we're going  
3 to talk basically, about the changes that were  
4 made to the Reg Guide from Rev 1 to Rev 2, and  
5 that is what we had hoped that we would stay  
6 focused on, understanding that there are  
7 questions regarding the scope.

8 In the limited time we had to put this  
9 together, we have not been able to delve into all  
10 of those, to any length or detail.

11 CHAIR RAY: Well, we'll press that  
12 further again.

13 MR. MURPHY: Right.

14 CHAIR RAY: But I want to make sure  
15 you get your presentation made, also.

16 MR. MURPHY: And we're looking for  
17 endorsement of Rev 2, obviously, from ACRS.

18 The summary of the changes, again,  
19 primarily, they were editorial. There was a lot  
20 of rewriting and editorializing. The Reg Guide  
21 was updated to include the updated safety laws  
22 from the dam laws.

23 There is an enhanced discussion  
24 section with information that points to the FEMA  
25 guidelines, additional guidance from other

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1 regulatory documents. There are updated  
2 appendices for the dam failures and the causes of  
3 those failures.

4 CHAIR RAY: Excuse me, if one imagined  
5 that you were only talking about structures  
6 specifically built in conjunction with a power  
7 plant, would you have included that?

8 MR. MURPHY: Well, I guess I can  
9 answer that in two ways.

10 I think we would want to learn as much  
11 as we can from those failures, to ensure that the  
12 inspection guidelines that we're using look for  
13 them and therefore, are applicable and  
14 encompasses as broad of an inspection and scope  
15 as we would want to.

16 So, I think from that standpoint, yes,  
17 we would want to include that.

18 CHAIR RAY: But all right, I keep  
19 coming back to this, and I apologize, but I'm  
20 still -- I don't see how we reconcile what this  
21 Reg Guide applies to, and if a licensee is in  
22 compliance with it, what it includes. That is  
23 still a mystery to me, I must say.

24 MR. MURPHY: With regard to whether or  
25 not the licensee conforms to the Reg Guide, if

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1 they've chosen to make it part of their licensing  
2 basis?

3 CHAIR RAY: Yes.

4 MR. MURPHY: That is where the  
5 regional inspectors would use the Reg Guide to --  
6 against the licensees program to see if --

7 CHAIR RAY: No, I know, but I am  
8 putting myself in the place of a licensee and  
9 saying, "What do I need to have done? Do I  
10 consider a water-control structure that was there  
11 before I built the plant, yes or no?"

12 I mean, there is just one way to  
13 answer that. I mean, there is two ways to answer  
14 it, but it's either yes or it's no.

15 MR. MURPHY: I think it's how they  
16 tied it in their licensing basis and whether it  
17 impacts their ECCS system. Do you agree, George,  
18 with that?

19 MR. WILSON: Well, the way that I read  
20 the Reg Guide and the way that we've done the Reg  
21 Guide since I've been doing the inspections, is  
22 the stuff that's in the licensee controlled area  
23 or the owner controlled area, what they're  
24 responsible for, we expect them to go do the  
25 inspections, including monument settlements,

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1 pedometer readings --

2 CHAIR RAY: Yes, no, that's right.

3 MR. WILSON: It's the same way as the  
4 -- I treat this as, I used run the electric  
5 branches the same way I treat off site power.

6 CHAIR RAY: George?

7 MR. WILSON: We expect the licensee to  
8 have off site power, but they're not responsible  
9 for the grid.

10 CHAIR RAY: George, what do you think  
11 the words 'specifically built for use in  
12 conjunction with a nuclear power plant' exclude?

13 MR. WILSON: I consider that to be the  
14 water source that they're using for cooling.

15 CHAIR RAY: Supposing it was built  
16 before the plant was even thought of?

17 MR. WILSON: Well, if it was built  
18 before the plant was thought of, they're still  
19 using -- if they're using it as their water  
20 source, then they should be aware of it.

21 CHAIR RAY: Well, okay, but what  
22 you're telling me is, the words 'specifically  
23 built for use in conjunction with a nuclear power  
24 plant' do not mean what I would have thought they  
25 meant. That's all I can conclude.

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1 MR. WILSON: Okay.

2 MEMBER CORRADINI: But so, if it's  
3 from a word standpoint, aren't you really trying  
4 to parse it to say 'specifically designed built  
5 for or used for'?

6 CHAIR RAY: Well, I would --

7 MEMBER CORRADINI: Right?

8 CHAIR RAY: That would be helpful,  
9 yes, of course, that's right.

10 MEMBER CORRADINI: Okay.

11 CHAIR RAY: And therefore, that is a  
12 logical, at this moment in time, comment I would  
13 make, is that it -- to me, those words are  
14 confusing, and they should be clarified.

15 If it's been in place for 100 years,  
16 but I'm going to use it and rely upon it, and  
17 take credit for it in my licensing basis, then  
18 it's included in the scope, here. That is what I  
19 think. But that is not what I read here.

20 MEMBER CORRADINI: Okay.

21 MEMBER SHACK: What fraction of plants  
22 actually are part of 1.127? I counted at least  
23 a dozen and --

24 CHAIR RAY: Nobody --

25 MR. MURPHY: We started to trying to

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1 dig into that, and we don't have those numbers.  
2 Dan could have --

3 MEMBER SHACK: They come in license  
4 renewals.

5 MR. MURPHY: They do come up in  
6 license renewals.

7 MEMBER SHACK: I'm checking them off  
8 there.

9 MR. MURPHY: And Dan has a list of  
10 those that -- from license renewal, but --

11 MR. HOANG: My name is Dan Hoang, and  
12 I've been checking, the total we have is 65  
13 sites, and right now, we have 54 sites who only  
14 put the application for license renewal in, and  
15 out of 54 sites, we have 24 out, but 54 have Reg  
16 Guide 1.127, they apply to it.

17 MEMBER SHACK: So, it's about half.

18 MR. HOANG: And many that relate to  
19 the heat sink structure area.

20 CHAIR RAY: When I said none, I meant  
21 in the original licensing. I wouldn't think of  
22 license renewal, but yes.

23 MR. MURPHY: But so, we are trying to  
24 get our hands around that information a little  
25 bit better, as well.

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1           MEMBER SHACK: One other thing I found  
2           curious too is that since this -- the ultimate  
3           heat sink seems to be the -- one of the true  
4           structures that is involved here.

5           This is not mentioned in the SRP, on  
6           the ultimate heat sink. It was referenced in one  
7           of the drafts of the section of the SRP on the  
8           ultimate heat sink, but it disappeared from the  
9           final version, and I was just curious as to why  
10          that would happen.

11          It would seem to me that the SRP would  
12          be very interested in the inspection of the  
13          ultimate heat sink.

14          MR. MURPHY: I cannot shed any light  
15          on that.

16          MEMBER SHACK: I guess that's not your  
17          problem, but --

18          MR. WILSON: It's verbatim in an  
19          inspection procedure, exactly how you're going to  
20          do it, and that inspection procedure goes back  
21          and looked at them.

22          So, I don't know why it was taken out,  
23          but I will tell you that the inspection  
24          procedures covers it in detail, on what you have  
25          to do.

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1           In fact, a lot of the places have  
2           tried to start doing it, in conjunction with --  
3           when I -- when we -- when I would go out to do  
4           our inspections, we're starting to train -- we  
5           were using that time to use knowledge transfer,  
6           to actually train some of the regional inspectors  
7           on how we looked at dams, and how FERC looked at  
8           dams, to get some more expertise in that area.

9           CHAIR RAY: Juan, if you're taking  
10          notes from this, for your guys purposes, would  
11          you take note of what Dr. Shack just pointed out  
12          and see if we can run it to ground?

13          The Reg Guide and the inspection  
14          procedure seem to call out ultimate heat sink,  
15          but somehow, the standard review plan doesn't.

16          MR. MURPHY: I think I was at the --  
17          so, as we discussed, there is no changes to this  
18          in Rev 2, to the scope or the regulatory  
19          position, and the draft Reg Guide was put out for  
20          public comment, about a year ago, and we received  
21          three public comments, and they all came from  
22          NEI.

23          They were all essentially editorial in  
24          nature, and dealt with the -- I believe it was  
25          the wording associated with the failure of the

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1 ECCS system.

2 CHAIR RAY: Yes, let me make a  
3 prediction. If you would have written -- made  
4 the word change that we just talked about, and  
5 what you said, instead of 'specifically built for  
6 use', you would have included the phrase 'or  
7 taking credit for', you would have gotten a heck  
8 of a lot of comments. That is my prediction.

9 MR. MURPHY: All right, so, overview  
10 of the Reg Guide, it was first issued in March  
11 1978. It's -- and it was in response to the  
12 National Dam Inspection Act, which was, I think,  
13 issued in 1972, and it -- the Reg Guide is  
14 focused on inspection and coming up with an  
15 acceptable inspection program for licensees and  
16 applicants to use, to ensure that dams remain  
17 functional and they meet their intended purpose.

18 CHAIR RAY: And how about when you say  
19 'the dams', how about this cascading phenomenon  
20 that George talked about?

21 In other words, how are 'the dams'  
22 defined? Is it just the first upstream dam that  
23 was taken credit for, or in the case of ultimate  
24 heat sink, it has to include the downstream dam,  
25 that maintains the availability of the ultimate

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1 heat sink, I would guess.

2 But there must be some process, again,  
3 I guess you would refer to the licensing basis,  
4 as to what 'the dams' are?

5 MR. MURPHY: That is my understanding  
6 is, you would have to go to the licensing basis,  
7 understand what the plant has taken credit for  
8 and then --

9 CHAIR RAY: Yes.

10 MR. MURPHY: -- use this to the -- to  
11 inspect those and --

12 CHAIR RAY: Well, I think that is  
13 logical, it's just, I wouldn't be led to that  
14 conclusion, necessarily, by the Reg Guide, but  
15 okay.

16 MR. MURPHY: So, well, let me -- so,  
17 to recapture, you believe it would be an  
18 enhancement to make it clear that it's within the  
19 licensing basis, the scope, as --

20 CHAIR RAY: Yes.

21 MR. MURPHY: Okay.

22 CHAIR RAY: I mean, I'm looking at  
23 this from a licensee standpoint, and I'm saying,  
24 if I build it, I'm responsible for it. I  
25 understand that, but nothing else, and yet, I

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1 don't think that is the way we're looking at it,  
2 and that is not the impression I get, after  
3 talking to everybody.

4 MR. MURPHY: Okay.

5 MEMBER CORRADINI: Your impression is  
6 that if they use it, they're responsible for it?

7 CHAIR RAY: Well, yes, as --

8 MEMBER CORRADINI: They take credit  
9 for it.

10 CHAIR RAY: It makes sense that if you  
11 take credit for it, but I mean, if you're going  
12 to build a plant on the Tennessee River, like  
13 Watts Bar, I mean, what am I taking credit for  
14 here? I'm not sure.

15 MR. MURPHY: The Regulatory Position,  
16 as we have gone through a little bit already, is  
17 it's applicable only to water-controlled  
18 structures, specifically built for use in  
19 conjunction with a nuclear power plant, and whose  
20 failure could trigger the failure of emergency --

21 CHAIR RAY: Wrong, wrong, wrong.

22 MR. MURPHY: Yes, I mean, I don't need  
23 to read the entire --

24 CHAIR RAY: We've got it.

25 MR. MURPHY: Right?

1 CHAIR RAY: We've got it.

2 MR. MURPHY: Okay, and so, to touch  
3 base, basically, on the -- what we would consider  
4 the significant changes to the Reg Guide itself  
5 was, there was a tie to Part 52, so that new  
6 reactors would be tied to this Reg Guide.

7 We added a reference to Reg Guide  
8 3.11, which is the Design, Construction,  
9 Inspection of Embankment Retention Systems at  
10 Uranium Recovery Facilities.

11 Reference was added for a NUREG 0800,  
12 the standard review of Safety Analysis Reports of  
13 Nuclear Power Plants, and we added the FEMA  
14 guidelines on dam safety.

15 We also added an additional -- or  
16 expanded discussion on the Dam Safety Program  
17 Act, and the NRC's involvement in the ICODS,  
18 which is the Interagency Committee On Dam Safety,  
19 just to review that.

20 We added a noted on special  
21 inspections, requiring an evaluation after a  
22 significant event, such a flood or an earthquake.  
23 There was also a note added for the technical  
24 evaluation of the dam, to consider liquefaction  
25 after a seismic event, and then there was a

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1 distinction made regarding the inspections in  
2 this Reg Guide and the inspections that occur by  
3 the NRC's Dam Safety Program.

4 CHAIR RAY: On that, let's just take  
5 the liquefaction after a seismic event.

6 How is that -- again, let's think  
7 about a dam that I didn't build at the plant,  
8 obviously, I have to take consideration of  
9 whatever phenomenon are applicable.

10 But you mean to tell me if I commit to  
11 this Reg Guide, you want me to go out and analyze  
12 the effect of liquefaction on a dam that was  
13 built 60 years ago, that maybe is -- I'm relying  
14 on for ultimate heat sink or flood protection?

15 MR. MURPHY: Well, I think the way I  
16 understand the Reg Guide, it is that if there a  
17 seismic event, it's something you should inspect  
18 for, to see if there is tell-tale signs of it,  
19 and obviously, consider it in that subsequent  
20 analysis of the dam, not necessarily as you put  
21 it.

22 CHAIR RAY: Okay, so, it's only a  
23 post-event -- this is an inspection guide --

24 MR. MURPHY: Right.

25 CHAIR RAY: -- I appreciate that,

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1       although I forget that, sometimes.

2                   But it's -- I guess it was the word  
3       'technical evaluation section' that I was -- took  
4       me back to the design basis of the dam. Okay, go  
5       ahead.

6                   MR. MURPHY: Okay.

7                   MR. WILSON: But once again, this is  
8       George Wilson again. That would have been looked  
9       at when we licensed the plant.

10                   There was two characteristics that if  
11       -- that we, for fact, have to look at, with over-  
12       topping and fragility study, which is  
13       liquefaction.

14                   So, that would -- if you were taking  
15       credit for a dam, then you would have had to give  
16       us -- and it was upstream, and we were looking at  
17       it, you'd have had to look at the liquefaction of  
18       the fragility and the seismic capability of the  
19       dam and whether or not you would have to increase  
20       your external event analysis of that dam.

21                   CHAIR RAY: Yes.

22                   MR. WILSON: So, that would have had  
23       to have been done.

24                   CHAIR RAY: When the plant was  
25       licensed?



1 MR. WILSON: That would have applied  
2 when we licensed that plant.

3 CHAIR RAY: Yes, I wonder if you  
4 commit to the Reg Guide on license renewal, I  
5 guess it's still -- it would only apply to the  
6 post-event evaluation that you do, not to go back  
7 and revisit the -- what George referred to, okay.

8 MEMBER SHACK: Just on the license  
9 renewal, I have found at least -- I've looked at  
10 maybe one dozen license renewal applications. I  
11 didn't find anybody committing to the Reg Guide  
12 as part of the license renewal.

13 In the license renewal, they're sort  
14 of asked whether they commit to it or not, and  
15 so, that is what I did find, is that some people  
16 had apparently committed somewhere along the way,  
17 and some people hadn't.

18 CHAIR RAY: And if they hadn't, they  
19 didn't do it as a --

20 MEMBER SHACK: If they hadn't, they  
21 didn't do it, right.

22 CHAIR RAY: As part of the license  
23 renewal. Well, that is a prudent step, I think,  
24 okay.

25 MEMBER SHACK: Whatever argument they

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1 used for not committing and then somehow, you  
2 know, have got it in their licensing basis, they  
3 continued with that.

4 CHAIR RAY: Okay.

5 MEMBER SHACK: At least, that is what  
6 I found. You know, maybe there are some.

7 CHAIR RAY: All right.

8 MEMBER SHACK: I certainly didn't look  
9 at every license renewal application.

10 MR. HOANG: Yes, this is Dan Haong,  
11 again. For license renewal, they have a program,  
12 IC1-S7 for water-controlled structure, if they  
13 decided they have an intake structure or area  
14 that have an unfilled embankment, that they use  
15 them. Otherwise, they do not.

16 But however, in some sites, they have  
17 a concrete embankment for the intake structure,  
18 and they use structure as part of their program,  
19 to do inspection then.

20 MEMBER SHACK: Okay, I mean, they  
21 cover it somehow?

22 MR. HOANG: Yes.

23 MEMBER SHACK: Okay.

24 MR. MURPHY: So, I think the next  
25 slide, we talked about inspection periodicity

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1 because I think when -- our pre-meeting, we had a  
2 question about inspection periodicity come up.

3 The normal inspection periodicity is  
4 not to exceed five years. The Reg Guide  
5 inspections are in addition to the biannual  
6 inspections the NRC Dam Safety Program does, and  
7 the Dam Safety Program is based upon SECY-91-193,  
8 just for reference, when it was created.

9 CHAIR RAY: And the inspection we're  
10 talking about here every five years is done by  
11 the licensee or they can take credit for somebody  
12 else doing it?

13 MR. MURPHY: That is correct, and  
14 again, the Reg Guide also talks about special  
15 inspections after events such as seismic or  
16 flooding.

17 Again, there were three public  
18 comments that were received. They were all  
19 editorial in nature and they were addressed and  
20 incorporated into the Reg Guide itself, and they  
21 call came from NEI, and they essentially focused  
22 on the definition of the failure of the ECCS  
23 system.

24 MEMBER ABDEL-KHALIK: If the wording  
25 of the scope were to be changed, per the earlier

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1 discussion, to eliminate or to expand the words  
2 'specifically built', would that constitute the  
3 substantial change that would require that the  
4 Reg Guide be re-issued for public comment?

5 MR. MURPHY: Mark, can you?

6 MR. ORR: That's your call, as far as  
7 that goes.

8 MEMBER STETKAR: You have to go to the  
9 microphone and get on the record.

10 MR. ORR: Mark Orr from Research, and  
11 the substantial change call is based a technical  
12 lead.

13 So, if Marty wants to send it out for  
14 comment again, we'll do so, but it's -- if you're  
15 recommendation is that it goes out for public  
16 comment, then we'll of course, consider that.

17 MEMBER ABDEL-KHALIK: I mean, the  
18 comment was made that maybe you didn't get a lot  
19 of public comments, just because of the  
20 narrowness of the scope, as perceived by the  
21 people who reviewed this, and if you were to  
22 expand or clarify the scope, you may have gotten  
23 a lot more comments, and to me, that means that  
24 you need to reissue it for public comment.

25 MR. ORR: If that is part of your

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1 recommendation, then we'll take that into  
2 consideration and make that --

3 MR. MURPHY: Well, I certainly agree  
4 with you. If we change the scope, I think it  
5 only makes sense that we would go out for public  
6 comment, again.

7 CHAIR RAY: Yes, and of course, we  
8 don't think we're changing the scope. We think  
9 we're just taking that -- you're just clarifying  
10 the --

11 MR. MURPHY: You clarify the scope,  
12 let me be clear on the --

13 CHAIR RAY: Other people would  
14 reasonably think we've changed the scope, yes.

15 MR. MURPHY: But to be more specific  
16 or clear on my wording.

17 MEMBER SHACK: I think we changed the  
18 scope.

19 MR. MURPHY: Correct, correct, but I  
20 think -- I do -- from my standpoint, I think it  
21 only will build a better product if we were to  
22 put it out again for public comment, if we were  
23 to reword the scope and regulatory position.

24 CHAIR RAY: All right.

25 MEMBER SKILLMAN: I'd like to ask a

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1 question, please.

2 Back in August, we had this Mineral,  
3 Virginia earthquake and the ground motion found  
4 its way north into Pennsylvania, so it affected  
5 the Ohio River Valley, the Susquehanna River  
6 Valley, we got Beaver Valley, TMI, Peach Bottom.  
7 It was felt over to the east at Limerick.

8 You mentioned that one of inspections  
9 that will be conducted is after a seismic event.  
10 The dams will be inspected.

11 What follow up was done on the dams  
12 that are upstream of those plants, or the  
13 structures associated with those plants, that may  
14 have been built in accordance with this Reg Guide  
15 wording?

16 MR. MURPHY: Yong, do you know?

17 MR. LI: This is regarding, sorry?  
18 This is regarding the plant in the north, Ohio  
19 somewhere? Is that what you're saying?

20 MEMBER SKILLMAN: There was an  
21 earthquake in August, the Mineral, Virginia  
22 earthquake.

23 MR. LI: I know that. I was actually  
24 involved in the AIT work.

25 MEMBER SKILLMAN: So, I was wondering

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1 --

2 MR. LI: Yes.

3 MEMBER SKILLMAN: Okay, what did you  
4 do relative to this Reg Guide, for those plants  
5 that felt that earth motion?

6 MR. LI: Well, the ground motion level  
7 at those places, I mean, far away from where  
8 Mineral is, is going to be very -- is small, very  
9 small. Even the plant, you know, the seismometer  
10 located at the plant did not even detect the  
11 motion which exceeded the OBE.

12 So, the level, I will say the ground  
13 motion level is very small, you know, to cause  
14 some problem with the dam stability issue.

15 MEMBER STETKAR: Let me see if I can  
16 kind of clarify.

17 You mentioned that this Reg Guide  
18 effectively covers nine dams in the United  
19 States, is that right?

20 MR. WILSON: Yes, and one of them is,  
21 actually, North Anna.

22 So, what we did with North Anna is, we  
23 inspected North Anna. We had inspectors out  
24 there. The licensee had to go do an additional  
25 inspection.

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1           Really, what you look for is seepage,  
2           and at the North Anna Dam, we had actually  
3           addressed that. We had actually identified an  
4           issue that they had done to the dam, so that we  
5           knew that they had looked at the fragility, just  
6           a couple of years ago, because they were trying  
7           to dig into the toe, when we went out there --  
8           when I went out there and did an inspection, and  
9           I said, "What are you doing," because you can't  
10          do that, without doing extra evaluations of the  
11          dam.

12                 So, you look for seepage, and this  
13          year, we go back out in March, with -- March or  
14          April, we'll go back out with the FERC  
15          inspectors, but FERC also looks at the North Anna  
16          Dam, the big North Anna Dam, where North Anna  
17          sits. It's out -- that is a hydro-dam, so that  
18          we know, you know, FERC looked at that one after  
19          the seismic event.

20                 So, specifically, since the issue  
21          happened to Mineral, there were lots of follow up  
22          done on the ultimate heat sink at North Anna,  
23          which is an embankment dam that's underneath my  
24          regulatory purview.

25                 MEMBER STETKAR: Were there dams at



1 any other sites -- any of the other eight dams,  
2 now, located at sites that experienced any  
3 measurable ground motion from the --

4 MR. WILSON: Not in the northeast.

5 MEMBER STETKAR: Okay.

6 MR. WILSON: The highest we go is  
7 North Anna, and then the rest of them are down  
8 south.

9 MEMBER STETKAR: Okay, thank you.

10 MEMBER SHACK: It is interesting,  
11 though, that the Reg Guides on the sort of post-  
12 earthquake actions don't seem to call out  
13 anything specific to dams.

14 MR. WILSON: Well, other Federal  
15 agencies have requirements. We were in contact  
16 on --

17 MEMBER SHACK: But you would think  
18 that the Reg Guide might suggest that you go look  
19 at the dam, or have somebody look at it.

20 MR. WILSON: I understand.

21 MEMBER STETKAR: Harold?

22 CHAIR RAY: Yes, sir.

23 MEMBER STETKAR: Can I ask a question?  
24 This is -- it's in the Reg Guide, but it's  
25 completely different topic.

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1 Under the operations and maintenance  
2 feature section of onsite inspection program,  
3 there is a sentence that says, "The following  
4 operation and maintenance features should be  
5 examined, reservoir regulation plant."

6 "The actual practices in regulating  
7 the reservoir and discharges under normal and  
8 emergency conditions should be examined to  
9 determine if these practices comply with the  
10 designed reservoir regulation plan," and the  
11 question I had, George mentioned something  
12 earlier, that kind of struck a cord with me, and  
13 that is the analogy of an integrated water-  
14 control system being somewhat similar to an  
15 integrated electrical grid.

16 For the off-site electric power  
17 supplies, the agency has recently -- well, is in  
18 the process of implementing guidance that  
19 requires nuclear power plant operators to have  
20 formal lines of communications with grid  
21 operators, such that they keep each other  
22 informed through communications protocols,  
23 regarding emergency conditions.

24 That could be contingencies, in terms  
25 of operation of the grid, where the grid might be

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1 under degraded operating conditions, where the  
2 likelihood of losing offsite power is greater, or  
3 contingencies at the plant that might affect  
4 plant operations, which could in turn, affect the  
5 grid.

6 So, that has been implemented, or it's  
7 in the process of being implemented, through NRC  
8 Reg Guides.

9 Is there a similar program for water  
10 management systems, where the owners and  
11 operators of -- you know --

12 MR. WILSON: Well, the formal --

13 MEMBER STETKAR: Let's use TVA as an  
14 example.

15 MR. WILSON: Right, well, actually, I  
16 ran electrical, when we ran -- wrote a Generic  
17 Letter 2006-02, and required -- I was actually  
18 one that required this form of communications.

19 The water system is a little bit  
20 different. TVA owns the dams. TVA regulates the  
21 dam.

22 MEMBER STETKAR: Okay.

23 MR. WILSON: That is part of them,  
24 just like -- so, they control the water way in a  
25 different way.

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1 MEMBER STETKAR: All right.

2 MR. WILSON: Because they control --  
3 they release water, so cold water hits Watts Bar,  
4 Sequoyah and Browns Ferry in the summer, so they  
5 stay up.

6 So, yes, they know that. The Army  
7 Corp of Engineers contacted Fort Calhoun and  
8 Cooper. They knew that they were releasing water  
9 -- they were going to release water from the  
10 dams.

11 Do I know if that happens everywhere?  
12 The sites around them knows what the level of the  
13 dams are. One of the things that we look at,  
14 when you were saying actual practice.

15 One of the things we actually inspect,  
16 has the spillways actually been used? Were they  
17 at the normal operating pool? Did they get above  
18 the normal operating pool? Did they release  
19 water, and then we go look to see if there was -  
20 what happened to the spillways during our  
21 inspection.

22 So, there is communications, but the  
23 formalized answer is no.

24 MEMBER STETKAR: Okay.

25 MR. WILSON: Not that I am aware of.

1 MEMBER STETKAR: Okay, that is what I  
2 was asking about.

3 MR. WILSON: But there is --

4 MEMBER STETKAR: If you were aware of  
5 --

6 MR. WILSON: We verified them, but  
7 we've never come out and said, make it formal.

8 MEMBER STETKAR: I'm aware of at least  
9 one country, where there are communications  
10 protocols that -- for -- you know, the entire  
11 watershed system, where if you're going to have a  
12 large release from a dam, could be, you know, 200  
13 miles away, you let downstream people know.

14 MR. WILSON: But one of the things  
15 that I will give you is that we're in contact  
16 with NOAA.

17 So, we actually get the weather  
18 forecast, the amount of snow melt that is going  
19 to happen, the rain forecast. We look at what  
20 the river levels are, take into consideration of  
21 that.

22 So, we get those forecasts sent to us  
23 now, and we updated that after Fort Calhoun. So,  
24 we got that information coming, and we actually  
25 start getting it sent -- we can get -- they get

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1 it sent in March. So, we can look at what the  
2 forecasts are, so, we'll better understand where  
3 the different river basins are and what the  
4 effects will be.

5 I don't have anything, if there is a  
6 major antecedent storm that is going to come into  
7 that area, but we're following that also, on the  
8 major river basins.

9 MEMBER STETKAR: I am just thinking  
10 about, you know, pre-emptive planning.

11 If you want to do a pre-emptive draw  
12 down of your reservoir, at your plant, I mean,  
13 that might be good for flood control. It might  
14 not be so good for ultimate heat sink.

15 MR. WILSON: But because that is what  
16 we're -- yes, that's what we're starting to look  
17 at.

18 MEMBER STETKAR: For example --

19 MR. WILSON: The amount of water that  
20 is anticipated to come into the river basin, and  
21 what they're doing with it.

22 So, that is something that we're  
23 starting to get a lot more information on.

24 MEMBER STETKAR: Okay, but as -- the  
25 summary is, there is no --

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1 MR. WILSON: No formal communications  
2 are required.

3 MEMBER STETKAR: Okay, all right.

4 MEMBER SHACK: Just to correct a  
5 statement I made, I looked at EPRI-NP-6695, which  
6 covers the earthquake recovery, and you are, you  
7 -- it does call for an expanded inspection of the  
8 dam reservoir if needed to preclude unacceptable  
9 flooding or loss of ultimate heat sink.

10 So, it is covered under that --

11 MR. WILSON: But we did our own  
12 independent inspection of those, also.

13 MEMBER SHACK: Yes, all right.

14 MR. MURPHY: And that is endorsed by?

15 MEMBER SHACK: That is endorsed by the  
16 Reg Guide.

17 MR. MURPHY: The 167?

18 MEMBER SHACK: Right.

19 MR. MURPHY: Okay.

20 MEMBER SHACK: It's just not  
21 specifically mentioned in the Reg Guide itself,  
22 but it carries over from the endorsement.

23 MR. MURPHY: Okay, that essentially  
24 concludes the presentation.

25 CHAIR RAY: All right, you've gotten

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1 a sense then, of why we wanted to hold this  
2 meeting, and we've given you some questions.

3 You're going to now ask us for anymore  
4 that we have, and so, I invite Members to  
5 continue what they've been doing, and that is,  
6 raise questions if they have any.

7 MEMBER ABDEL-KHALIK: I think if this  
8 is going to go back out for public comment, it  
9 should not come to the full Committee, until it  
10 comes back from the public evaluation.

11 CHAIR RAY: Well, I think they will be  
12 looking to us, will they not, Said, for a letter  
13 that would motivate them to do that.

14 So, I --

15 MEMBER ABDEL-KHALIK: But I mean,  
16 isn't this communication sufficient?

17 MEMBER SHACK: This is fairly close to  
18 a full Committee, but I guess we're not speaking  
19 with a formal voice yet.

20 CHAIR RAY: Well, and we haven't heard  
21 any dissenters that may occur or exist, so, then  
22 it's possible.

23 MEMBER SHACK: Right.

24 CHAIR RAY: I guess, Marty, how we  
25 handle it as part of our sausage-making, but is

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1 it correct to assume that you would want us to  
2 provide a comment, if we feel that there should  
3 be this clarification made in the scope, so that  
4 you can then respond to that?

5 MR. MURPHY: It certainly helps. I  
6 don't know that we need it. I think we can -- we  
7 understand the issue at hand.

8 CHAIR RAY: You can certainly tell us,  
9 we don't need to give you a letter. That is  
10 something you're invited to do at any time.

11 MR. MURPHY: I'm more than happy to  
12 take this back and work through our process  
13 without a letter from you, to --

14 CHAIR RAY: Okay.

15 MR. MURPHY: -- to put it back out for  
16 public comment.

17 CHAIR RAY: Well, you tell us, though,  
18 if you need a letter, because I don't -- we don't  
19 want to -- I mean, it will take time. We'll have  
20 to -- we'll have to make arrangements to make  
21 sure the full Committee is engaged, before we get  
22 a letter out, and that will take time.

23 And so, if you feel that this is  
24 sufficient, we certainly would welcome that.

25 MR. MURPHY: No, this works for me.

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1 This is fine.

2 CHAIR RAY: All right. Again,  
3 anything else? Anybody wants to --

4 MEMBER SKILLMAN: Yes, I'd like to ask  
5 a question.

6 CHAIR RAY: All right.

7 MEMBER SKILLMAN: There are a couple  
8 of plants in the country that have a deep pit  
9 that is a secondary or tertiary back-up for  
10 emergency cooling.

11 MR. WILSON: I was actually the senior  
12 resident at Duane Arnold, and that's what they  
13 use.

14 MEMBER SKILLMAN: Well, there are a  
15 couple more.

16 MR. WILSON: Well, I know, but I'm  
17 just saying, I'm very familiar with that, because  
18 that is what Duane Arnold used.

19 MEMBER SKILLMAN: And some of those  
20 actually have a security connotation, such that  
21 failure of that deep pit could lead to downstream  
22 significant flood.

23 MEMBER BROWN: For the uninitiated,  
24 what does deep pit mean? Is that just a big hole  
25 in the ground?

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1 MR. MURPHY: The hole I've gotten  
2 myself into.

3 MEMBER SKILLMAN: If you were to look  
4 at the plant, say from the other side of the  
5 waterway, you would simply see a water intake and  
6 a couple of nukes.

7 But if you could peel away under the  
8 water level, you would find that there is a  
9 second bay and maybe even a third bay, at  
10 different levels, that enable intake of much  
11 cooler water, when the lake might be at August  
12 15h temperatures, and that could be the ECCS pit.

13 That could be where the water is drawn  
14 for emergency core cooling and --

15 MEMBER BROWN: So, they're just  
16 dredged out enough to have multiple layers --

17 MEMBER SKILLMAN: They have actually  
18 --

19 MEMBER BROWN: -- multiple sources of  
20 intake?

21 MEMBER SKILLMAN: They have actually  
22 built an underground structure that provides  
23 several different intake capabilities for the  
24 plant.

25 MEMBER BROWN: Now, okay, I understand

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1 that. I seem to remember something that was done  
2 with Dominion Power, where they were taking  
3 intake out of Potomac. I was reading something  
4 on that.

5 MEMBER SKILLMAN: So, my question is --

6 MEMBER BROWN: And there were multiple  
7 intakes --

8 MEMBER SKILLMAN: -- how does the Reg  
9 Guide -- what is the wording in the Reg Guide,  
10 that assures if those structures are inspected?

11 MR. WILSON: Well, to give you an  
12 example, I understand what you're saying. I  
13 thought you were talking about deep pit well,  
14 actually in the aquifer.

15 MEMBER SKILLMAN: No.

16 MR. WILSON: So, I was talking about  
17 something else. I know what you're talking about.

18 A lot of places that they have -- that  
19 they build a lake, you know, like at La Salle,  
20 they build a giant lake, and only part of that  
21 lake is an ultimate heat sink.

22 So, there is actually a dam within the  
23 dam. Under the water, there is a brand new  
24 embankment that -- and it's dug out deeper and  
25 that is your ultimate heat sink.

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1           That is inspected. The licensees have  
2 to do inspections on that. They dive it. They  
3 have to do soundings, to make sure that it's  
4 still deep enough and all of the -- the amount of  
5 acre-feet water that is there.

6           So, that is something that's part of  
7 something that we look at in the ROP, revised  
8 oversight process, to make sure that that is  
9 still there. They look at the sounding, the  
10 water capacity, and they actually monitor the  
11 temperature there.

12           So, that is looked at by the licensees  
13 and then we evaluate their inspections. We do  
14 not do our own diving inspections on those  
15 facilities.

16           MEMBER STETKAR: So, those are not  
17 covered under this Reg Guide then, if I hear what  
18 you're saying, is that correct?

19           MR. WILSON: Well, no, because the  
20 ones that you're talking about are not anything  
21 that -- well, the part of the Reg Guide --  
22 they're covered under the Reg Guide, but not  
23 something that I personally go out and inspect.

24           Yes, because they're used as the  
25 ultimate heat sink, they're covered under the Reg

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1 Guide, but I'm telling you how they're evaluated  
2 is in the ROP. That is how we -- how the NRC  
3 would look at that, is we would do a follow up on  
4 the licensee inspection and the ROP, because I  
5 have done that.

6 At La Salle, the ultimate heat sink  
7 was a dam within a dam, buried underwater.

8 MEMBER STETKAR: Yes, there are  
9 several plants that have those --

10 MR. WILSON: Right, that is normal.

11 MEMBER STETKAR: --- you know,  
12 underwater embankments.

13 MR. WILSON: Right, that is a normal  
14 occurrence.

15 MEMBER STETKAR: Right, okay.

16 MR. WILSON: But there is also a lot  
17 of facilities that have something like you're  
18 talking about, where they actually dug a pipe  
19 into the bottom of a lake, and they suck the  
20 water down for ECCS. It comes in, or it comes  
21 into a cooling tower, and that's an ultimate  
22 source.

23 Some of the TVA plants have actually  
24 went in, and we got a water source that's coming  
25 from the bottom of the lake, so, they always

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1 maintain maximum temperature, going into their  
2 cooling tower, or as an alternate source of  
3 cooling for ECCS.

4 MEMBER SKILLMAN: Now, George, I  
5 appreciate the explanation. Now, could you lead  
6 me through how this Reg Guide applies to what  
7 you've just explained?

8 MR. WILSON: I think -- well, I've  
9 never grabbed a hold of this Reg Guide and put  
10 through and matched it up against the ROP.

11 So, I would have to go back and look  
12 at that.

13 But this Reg Guide says that you have  
14 to do an inspection of your water facility. You  
15 have to -- so, when I would -- basically, what  
16 this says, but this is talking about pedometers  
17 and settling and everything else that I -- you're  
18 looking at the overall embankment.

19 But other things that this Reg Guide  
20 requires you to do, for the ultimate heat sink,  
21 you are required to do a sounding, because you  
22 have to know what volume is there.

23 So, I'm telling you that they dive.  
24 We would look at the way they dive down to make  
25 sure the embankment is there. We'd look at the

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1 ultra-sound that is done, to make sure that there  
2 was no settling, and there was a bunch of extra  
3 muck that has got in, that's affecting the acre-  
4 feet.

5 All that stuff is evaluated by the  
6 licensee of a five-year frequency. Then we, in  
7 turn, evaluate those inspections.

8 CHAIR RAY: George?

9 MR. WILSON: Yes.

10 CHAIR RAY: Would you do us a favor?  
11 Marty has been very cooperative here, and  
12 responsive.

13 Would you review the Reg Guide and  
14 give him any comments?

15 MR. WILSON: Sure.

16 CHAIR RAY: Because you know, life  
17 takes us in different directions. You're mostly  
18 interested and concerned in -- with the  
19 inspections that you guys have procedures to  
20 perform, and so on and so forth.

21 I just want to make sure that they  
22 match up, okay, and if it turns out that another  
23 public comment period is going to occur, we want  
24 to make absolutely sure there aren't any loose  
25 ends after that.



1 MR. WILSON: No, actually, from your  
2 comment, what you got is that -- the comment that  
3 I'm taking back from this might be just a little  
4 bit different than what Marty took.

5 I am looking at making one or two. If  
6 we're going to do this, I'm not looking at making  
7 one or two changes. We didn't look at the --

8 CHAIR RAY: That is up to you guys.

9 MR. WILSON: No, we didn't look at the  
10 content. We just made it for -- so, I understand,  
11 we'll have to go back at the content and we'll  
12 make sure that it all matches up.

13 CHAIR RAY: All right.

14 MEMBER SKILLMAN: Let me be clear, as  
15 to the basis of my question.

16 Harold has led the way here, saying  
17 this Reg Guide can be confusing or ambiguous, and  
18 on the first bullet on page five, the gentleman  
19 said it's applicable only the water-control  
20 structure specifically built for use in  
21 conjunction with an NPP, and its failure could  
22 trigger the failure of ECCS.

23 I know that there are plants that have  
24 multiple intakes at different levels, for  
25 different purposes, among them ECCS, and so, I'm

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1 curious about the inspection of those structures,  
2 and I guess I am wondering if the ones I'm  
3 thinking about are among the nine that you are  
4 thinking about.

5 MR. WILSON: No, you are thinking --  
6 not the -- I know what you are -- like I said,  
7 those will be covered -- they are inspected.  
8 They're covered -- they're done on a biannual  
9 inspection by the regional inspectors.

10 I will take out of this, I need to  
11 make sure that we're tying the ROP inspection  
12 procedures into this because that will cover what  
13 you are talking about.

14 MEMBER SKILLMAN: Thank you.

15 MR. WILSON: This is not tied, right  
16 now. That is why I'm saying, if we're going to  
17 do this and fix the content, we're going to have  
18 to make major changes to this, not just a little  
19 wording.

20 MEMBER SKILLMAN: Thank you. Let me  
21 ask one other question.

22 What consideration have you given to  
23 linking this Regulatory Guide Revision to Reg  
24 Guide 1.59, flooding, because flooding is, at  
25 least a piece of what has driven this Committee

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1 to meet today.

2 There is the issue of, what about the  
3 dam? What about loss of the dam? What about  
4 cascading failures?

5 But another real piece is, well, what  
6 about flooding?

7 MR. MURPHY: Within the Reg Guide  
8 itself, it talks about 1.59.

9 Now, if you're talking about  
10 specifically linking beyond making the reference  
11 to 1.59, I don't believe that consideration has  
12 been given, but this Reg Guide does point you to  
13 1.59.

14 MEMBER SKILLMAN: Thank you.

15 MR. MURPHY: Okay.

16 MEMBER SKILLMAN: Thank you.

17 CHAIR RAY: Anything else? Okay, as  
18 I forecasted, this meeting took long -- shorter --  
19 -- less time than scheduled, but in part, it was  
20 due to the responsiveness of Marty, yourself and  
21 the others. So, we appreciate that very much.

22 With that, then we'll adjourn the  
23 meeting.

24 (Whereupon, the above-entitled matter  
25 concluded at approximately 9:40 a.m.)

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## REG 1.127

# “Inspection of Water-Control Structures Associated with Nuclear Power Plants”

Revision 2 update

Martin Murphy, Branch Chief

Juan Uribe, Technical Reviewer

NRR/DE/EMCB

# Purpose



- Changes associated with RG 1.127 Rev. 2
- Request ACRS approval of RG 1.127 Rev. 2

# Summary of Changes



- Primarily editorial
- Reflect updated dam safety laws and requirements
- Enhanced discussion section
  - References and guidance
- Update Appendices for dam failures & causes
- NO CHANGE to Scope/Regulatory Position
- Draft Regulatory Guide was available for public comment, Federal Register (76 FR 2725), January 14, 2011.

# RG Overview



- First issued March, 1978
- Applicable to Water Control Structures used to impound, retain and/or divert water for emergency cooling operations at NPP
- Objective ensure adequate inspection programs and detect early signs of issues
  - intent to increase the performance level and integrity of the WCS.

# Regulatory Position



- Applicable only to water-control structures specifically built for use in conjunction with a NPP and whose failure could trigger the failure of emergency cooling systems.
- Applicable to structures built wholly or in part, for the purpose of controlling or conveying water for either normal or emergency cooling operation
- Structures can be on or off-site.
- The recommendations of this guide **may** be considered fulfilled if the structure is regulated by another agency or state that enforces a comparable inspection program.



# Significant Changes for Revision 2 (July 2011)



- Discussion has been added in regards to new plants licensed under 10CFR50.52
  - 52.47(a)(2)
  - 52.79(a)(4)
  - 52.137(a)(3) } Regulations that state that the general design criteria in Appendix A as minimum requirements
- References RG 3.11 "*Design, Construction and Inspection of Embankment Retention Systems at Uranium Recovery Facilities*" for details regarding stability analysis of embankment slopes existing at NPP.
- References NUREG-0800, "Standard Review of Safety Analysis Reports for NPPs", Section 2.5.4, "Stability of Subsurface Materials and Foundations".
- References FEMA 93, "Federal Guidelines for Dam Safety"

# Significant changes for Revision 2 (July 2011)



- Expanded discussion of the “National Dam Safety Program Act” and NRC’s involvement in the ICODS Committee
- Note added to special inspections for engineering evaluation after significant events have occurred (i.e.: earthquake, floods, etc)
- Note added in technical evaluation section, to consider liquefaction after a seismic event
- Distinction made in inspection frequency to the normal inspections by the owner and the regulatory staff and those performed by the NRC Dam Safety Officer every two years (as applicable), as required by the Dam Safety Act

# Inspection Periodicity



- Can be performed no longer than every 5 years based on performance
- RG inspections are in addition to the bi-annual NRC Dam Safety Program inspections
- NRC Dam Safety program is based on SECY 91-193 “Dam Safety Program Plan”

## *RG 1.127-comments for Rev 2*

- Received total of three public comments
- All were editorial changes
- All three were resolved and incorporated in the RG when applicable.

Questions??

