

# **Official Transcript of Proceedings**

## **NUCLEAR REGULATORY COMMISSION**

Title:                   Advisory Committee on Reactor Safeguards  
                              ESBWR Subcommittee Meeting

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

+ + + + +

2630 ESBWR SUBCOMMITTEE

+ + + + +

THURSDAY

SEPTEMBER 22, 2016

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Subcommittee met at the Nuclear  
Regulatory Commission, Two White Flint North, Room  
T2B1, 11545 Rockville Pike, at 1:00 p.m., Peter C.  
Riccardella, Chairman, presiding.

COMMITTEE MEMBERS:

RONALD G. BALLINGER, Chairman

CHARLES H. BROWN, JR., Member

JOSE A. MARCH-LEUBA, Member

DANA A. POWERS, Member

PETER C. RICCARDELLA, Member

JOHN W. STETKAR, Chairman

MATTHEW W. SUNSERI, Member

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## DESIGNATED FEDERAL OFFICIAL:

GIRIJA SHUKLA, NRR

## ALSO PRESENT:

REGINA BORSH, Dominion

PATRICIA CAMPBELL, Dominion/GEH

MICHAEL DUDEK, NRR

ERICA GRAY, Sierra Club Virginia Chapter\*

JOE HEGNER, Dominion

THOMAS HICKS, Dominion/Excel Services Corp.

MICHAEL KEEGAN, Fermi 3 Proposal Intervenor\*

DOUGLAS KEMP, Dominion/Bechtel

JAMES SHEA, NRR

\* Present via telephone

## T-A-B-L-E O-F C-O-N-T-E-N-T-S

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

(1:00 p.m.)

CHAIRMAN RICCARDELLA: Good afternoon.

The meeting will now come to order. This is a meeting of the Advisory Committee on Reactor Safeguards ESBWR Subcommittee. I'm Pete Riccardella, newly appointed Chairman of the Subcommittee.

Subcommittee members in attendance are Charles Brown, Jose March-Leuba, John Stetkar, Matt Sunseri, Dana Powers, and Ron Ballinger.

MEMBER POWERS: The guy in the corner.

CHAIRMAN RICCARDELLA: Mr. Girija Shukla of the ACRS staff is a Designated Federal Official for this meeting. The meeting will be open to public attendance.

This is an informational briefing by the NRC staff and Dominion Virginia Power on the North Anna 3 combined license application and the staff's advanced safety evaluation report.

We've received no written comments or requests at this time to make oral statements from members of the public regarding today's meeting.

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

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1        formulate proposed positions and actions as  
2        appropriate for deliberation by the full Committee.

3                The rules for the participation in  
4        today's meeting have been announced as part of the  
5        notice of the meeting previously published in the  
6        Federal Register. A transcript of this meeting is  
7        being kept and will be made available as stated in  
8        the Federal Register notice.

9                Therefore, we request that participants  
10       in the meeting use the microphones located  
11       throughout the room when addressing the  
12       subcommittee. Participants should first identify  
13       themselves and speak with sufficient clarity and  
14       volume so that they may be readily heard.

15               A telephone bridge line has also been  
16       established for this meeting. To preclude  
17       interruption, the phone will be placed in a listen-  
18       in mode during presentations and Committee  
19       discussions.

20               I ask everyone to please silence your  
21       cell phones during the meeting, and we will now  
22       proceed. I call upon NRR management to begin  
23       please.

24               MR. SHEA: Good afternoon. This is,  
25       I'm Jim Shea, the NRC's Division of New Reactor

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1       Licensing and the Lead Project Manager for North  
2       Anna 3. And with me is Mike Dudek who is going to  
3       be, will be in the near future the acting branch  
4       chief for the branch.

5               So when we mention staff, we are it  
6       today, which I hope is good enough. I think we put  
7       together a pretty good summary of the review. And  
8       so our goal is basically to update the members and  
9       give them kind of a big overview of the review of  
10      including, you know, where Fermi and the ESBWR DCD  
11      fits in and how that in parallel was accomplished.

12              So we'll do that. We'll present that,  
13      and I just make a point that over the last probably  
14      18 months since I've been involved and the Project  
15      Manager, the push has been the closure on the  
16      seismic reanalysis.

17              So it was approximately a year ago from  
18      now that we had a significant milestone. We're  
19      preparing for the first of two audits at GEH to  
20      review the seismic calculations and the seismic one  
21      structures and their evaluation.

22              And those were two significant items  
23      about just about a year ago, done on that. So  
24      that's been really the primary focus over the last  
25      year. And we'll see that during my presentation.

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1           The other thing, I mean, we're speaking  
2           for the entire staff but we're, as the projects  
3           group, we're proposing what we believe would be the  
4           interest of the Committee when we go have our  
5           October 20th Subcommittee meeting. So we'll  
6           present that and we'll ask you for feedback so that  
7           we bring the right information for that  
8           subcommittee meeting.

9           I just want to say from the final thing  
10          from the project standpoint, and I know the staff  
11          isn't here because there's a lot of ongoing  
12          activities that they're involved in and so -- but I  
13          will just let you know maybe they'll read the  
14          transcript.

15          But my perspective from projects is  
16          that between our staff and the diligent review of  
17          our staff along with Dominion's responses to our  
18          information requests and along with the audit and  
19          several meetings over this last year, and again  
20          I'll give you more details on that, it was a  
21          significantly hard effort that took a lot of time  
22          and effort from both sides and communication had,  
23          in order for us to be here where we are at the  
24          final of the Phase 4 completion of the advanced  
25          final SER, it was a huge effort to get us there

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1 over the last year.

2 So just want to give the staff kudos  
3 and recognize Dominions for their efforts and  
4 ensuring that they provided the information staff  
5 requested. And with that, I'll just turn it over  
6 to Girija to, you know, continue.

7 (Off mic comments.)

8 MR. SHUKLA: Yes, good afternoon. My  
9 name is Joe Hegner. I'm the licensing manager for  
10 the North Anna 3 project and have been the manager  
11 since its inception in 2001.

12 We are very pleased to be here today  
13 because to us it represents real progress. We had  
14 met with the Committee back in 2009 when we were  
15 the reference for ESBWR. Things evolved over time,  
16 and we find ourselves where we are today. But  
17 this, in our view, is a good thing.

18 Let me introduce the team that we  
19 brought today. We have Gina Borsh who is our  
20 licensing lead for Dominion and she'll be our  
21 primary spokesperson. But she is supported by the  
22 GEH and Bechtel teams who provide most of the  
23 subject matter experts in the areas we think you'll  
24 be interested in today.

25 We have Doug Kemp from Bechtel who will

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1 assist us and Patricia Campbell who will provide  
2 the coordination for GE Hitachi. Also in  
3 attendance is Tom Hicks from Excel Services. He  
4 provides licensing support. He's Gina's right arm  
5 and he'll be taking notes today to make sure that  
6 we captured all the comments from the Subcommittee.

7 With that, I think you probably already  
8 seen our presentation. We coordinated with the  
9 Staff. We intend to just briefly talk about the  
10 site, a few of the licensing milestones which we  
11 have achieved, what we've done since 2013 when we  
12 returned to the GEH ESBWR technology, I cover the  
13 departures and exemptions proposed topics for the  
14 October 20th meeting, entertain questions as best  
15 we can, and then have a few concluding remarks.  
16 Mr. Chairman, that's what we have.

17 CHAIRMAN RICCARDELLA: Okay, thank you.  
18 Please proceed.

19 MR. HEGNER: Or is it staff first?

20 PARTICIPANT: You first.

21 MR. HEGNER: Okay.

22 MS. BORSH: Thank you for inviting us  
23 to attend this meeting. We're hoping that the  
24 information provided will help you in planning for  
25 the October 20th meeting --

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1 CHAIRMAN RICCARDELLA: Oh, yes. It's a  
2 little thing that -- got it?

3 MS. BORSH: I'm Gina Borsh. All right,  
4 so Joe covered the introduction. This first slide  
5 that I'm going to talk about which is Slide 3 gives  
6 you a sense of where the site is located in  
7 Virginia. And as you can see the star, I can't use  
8 the --

9 Thank you. Okay, so this is the North  
10 Anna Units 1 and 2 site. It would be the North  
11 Anna 3 site. It is approximately 40 miles north  
12 northwest of Richmond, about 20 or 22 miles west of  
13 Fredericksburg and about 35 miles east of  
14 Charlottesville.

15 MEMBER POWERS: Is it true it's above  
16 ground, I mean elevated up in the air the way the -  
17 -

18 MS. BORSH: No. No.

19 MEMBER POWERS: No?

20 MS. BORSH: No, no.

21 MEMBER POWERS: Okay.

22 MS. BORSH: That's just --

23 MEMBER POWERS: That's a  
24 misrepresentation?

25 MR. HEGNER: The southern border is

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1 also a curious misrepresentation. But it does come  
2 from Google. So it must be accurate.

3 PARTICIPANT: It must be true.

4 MR. HEGNER: Must be true.

5 MS. BORSH: Okay, this is a plan view  
6 of the site. And this is showing the North Anna 3  
7 site. So over here is Units 1 and 2. This shows  
8 you here's the reactor building, fuel building, the  
9 turbine building, control building, firewater  
10 service complex is right here.

11 This is where the cooling towers are  
12 located, and then over here is the switch yard.  
13 But wait, there's more. How about this Slide 5,  
14 this is a rendering that Bechtel prepared for us  
15 showing you a view of what it will look like when  
16 the plant is constructed.

17 Here is Units 1 and 2. Here are Units,  
18 excuse me, are Units 1 and 2 over here. And this  
19 is Unit 3. And over here are the cooling towers  
20 for Unit 3 just to give you a sense. So this is  
21 pretty much looking west. All right?

22 And then here is a view essentially  
23 looking east. So you see Units 1 and 2 are here,  
24 and here's Unit 3, the cooling towers.

25 MEMBER POWERS: So it looks like we

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1       should start on the aging management programs now,  
2       right? I mean, it's all here.

3               MS. BORSH: It's impressive, isn't it,  
4       what people can put together. Yes, the wonders of  
5       modern technology.

6               So that's the location of the site and  
7       the plant layout. And then if you have no  
8       questions, further questions on that I will talk  
9       about the milestones.

10              So as Joe said, we started in 2001  
11      working on our ESP application and we submitted it  
12      in September of 2003. The NRC issued the EIS in  
13      December of 2006 and then we received the early  
14      site permit from the NRC November of 2007.

15              And actually on the same day that the  
16      ESP was issued, we submitted the R-COLA for the  
17      ESBWR design and the NRC began their review. So we  
18      went through the RAI review process, questions and  
19      answers.

20              And then in, as some of you know, we  
21      came before you in June, July, and August of 2009  
22      and presented the R-COLA along with the NRC Staff.  
23      The full Committee met in October 2009 and then  
24      issued the ACRS letter to the Commission in October  
25      2009. And then in February 2010, NRC issued the

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1 supplemental EIS for the site.

2 I think most of you know that we made a  
3 couple of technology changes. So we started out,  
4 as I said, as an ESBWR R-COLA, submitted it in  
5 November of 2007. And in May of 2010, Dominion  
6 management decided we were going to make a design  
7 change. And so we revised the COLA to incorporate  
8 the APWR technology.

9 MEMBER POWERS: Not a subtle change,  
10 actually.

11 MS. BORSH: No, it was, there was a lot  
12 of content that stayed the same in the COLA, but  
13 yes. It was a big technology change. So that, we  
14 worked through that.

15 And then in April of 2013 Dominion  
16 management determined that it would be best overall  
17 for the company if we returned to the ESBWR  
18 technology which we did. And so we had to revise  
19 the COLA to reflect, to go back to the ESBWR  
20 technology.

21 And in order to do that, we followed  
22 the following approach to make the COLA changes.  
23 So basically what we said was we are going to be as  
24 standard as possible following the design centered  
25 working group approach that the NRC has endorsed.

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1           And we used as much of the standard  
2           content from the Fermi COLA that we could, that  
3           would apply to us. And then for the site specific  
4           COLA content, we said okay, let's use as much of  
5           the previous ESBWR COLA content that we had for  
6           North Anna as possible in this reversion back to  
7           the ESBWR technology.

8           I think you all also recognize that we  
9           had to make substantial changes to the COLA in  
10          order to address the seismic ground motion response  
11          vector exceedances that were developed as a result  
12          of changes in industry guidance and NRC issued  
13          guidance. So we made those changes. There were  
14          other changes --

15                 CHAIRMAN RICCARDELLA: Was that also as  
16          a result that the minerals, the mineral earthquake  
17          as well?

18                 MS. BORSH: We made changes to address  
19          the mineral earthquake. The mineral earthquake by  
20          itself would not have required a change. It gets a  
21          little bit complicated, Dr. Riccardella. There is  
22          certain guidance out there that does say that when  
23          you're determining your spectrum and your sources  
24          you do need to take into account recent events,  
25          seismic events that have occurred in your area.

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1                   And so we did do that because we were  
2                   updating our sources to incorporate the new CEUS  
3                   SSE. If we had just had the earthquake or the  
4                   earthquake had just occurred and we didn't have  
5                   that CEUS SSE update, I don't know if we would have  
6                   had to incorporate the mineral earthquake.

7                   MEMBER BROWN:       Could you say that  
8                   again? I got lost in the transition. You didn't  
9                   have the CEUS in your original COLA.

10                  MS. BORSH:   That's right.

11                  MEMBER BROWN:       And then in the  
12                  intervening period we had the mineral springs  
13                  earthquake.

14                  MS. BORSH:   Yes.

15                  MEMBER BROWN:   But in the new COLA, you  
16                  have the CESU?

17                  MS. BORSH:   Yes.

18                  MEMBER BROWN:   Does the CESU bound the  
19                  mineral springs and did the design meet that? I  
20                  thought there was some parts of the design that  
21                  didn't meet the mineral springs seismic that bound  
22                  the conditions. I just, I'm not an expert on that,  
23                  it's just some stuff being talked about.

24                  MS. BORSH:   Right. So --

25                  CHAIRMAN RICCARDELLA:   Just for the

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1 record, it's CEUS, not CUES.

2 MEMBER BROWN: Okay, I got it  
3 backwards. Sorry about that. I'm an electrical  
4 guy, so you'll have to excuse me.

5 MS. BORSH: So it's Central Eastern  
6 Unit --

7 (Simultaneous speaking.)

8 MEMBER BROWN: I really know what that  
9 is sort of.

10 MS. BORSH: All right, so --

11 CHAIRMAN RICCARDELLA: Since you live  
12 there.

13 MEMBER BROWN: Yes, I got hit by it.  
14 My chimney shook and my house shook.

15 CHAIRMAN RICCARDELLA: I guess is the  
16 CEUS spectra fully, does it fully bound the  
17 mineral?

18 MS. BORSH: It doesn't exactly work  
19 like that. And it would be best for our SMEs to  
20 explain that to you. But what we did find, I can  
21 tell you that what we did find was that when we  
22 incorporated the mineral earthquake into our source  
23 catalogue, looking at all the events that have  
24 occurred, it had a minimal impact on the earthquake  
25 response vector that were eventually developed.

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1 Okay?

2 CHAIRMAN RICCARDELLA: Okay.

3 MEMBER POWERS: Just a point in the  
4 probabilistic distribution of things, and it's not  
5 a very big one. So that it's not what you would  
6 call dominant at all unless there was something  
7 found as a result of the earthquake that changed  
8 its potential movement.

9 MS. BORSH: That's right. Doug, do you  
10 want to add anything to that?

11 MR. KEMP: Doug Kemp here. Yes. I  
12 think, Gina, you said it right. It had a very  
13 insignificant effect. Once you consider the  
14 history information, seismology and history of the  
15 CEUS, it had insignificant effect.

16 MEMBER STETKAR: Charlotte and  
17 Tennessee are still dominant, right?

18 MS. BORSH: Pardon me?

19 MEMBER STETKAR: The Charlotte  
20 earthquakes and the eastern Tennessee earthquakes -  
21 -

22 (Simultaneous speaking.)

23 MS. BORSH: Yes, that's right. And  
24 you'll see that when we come back on October 20th.  
25 We'll be showing you some figures that give you a

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1 sense of the events that have occurred in the area.

2 MEMBER STETKAR: Thank you.

3 MS. BORSH: Does that answer your  
4 question?

5 CHAIRMAN RICCARDELLA: Yes.

6 MS. BORSH: All right. So then this  
7 last bullet is basically acknowledging that we did  
8 receive NRC RAIs and we responded to those. And we  
9 also did some, made some changes to the COLA in  
10 order to address the open items that were  
11 outstanding from the SER back in 2009.

12 I thought you might be interested in  
13 giving you a sense of how far we're deviating from  
14 the DCD. So basically, we are extremely consistent  
15 in incorporating by reference the DCD unlike some  
16 other technologies you may have seen.

17 But so I'll just go through these  
18 departures and exemptions with you. The first  
19 departure and exemption is about the seismic  
20 response spectra exceeding the CSDRS.

21 And so that by far is the biggest  
22 change we've made to the COLA, and you'll see that  
23 when we come back on October 20th. I'm sure you'll  
24 want to hear about that. It's a departure. It's  
25 also an exemption because we had to change the

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1 definition of the safe shutdown earthquake which is  
2 incorporated into the DCD Tier 1 content.

3 So that's why it's a departure and an  
4 exemption. And just to give you a sense of where  
5 we are, FERMI doesn't have this departure. This is  
6 site specific.

7 The second departure is also an  
8 exemption, and this is very minor in the sense that  
9 it really is just a matter of figures. We are,  
10 because of the site limitations that we have at  
11 North Anna as far as space, we have to locate the  
12 main generator circuit breaker and the motor  
13 operated disconnects in an intermediate switch yard  
14 which is a little bit different from the DCD.

15 The DCD says we're going to have, that  
16 that equipment is in the Turbine Island Transformer  
17 Yard. So it's really just a matter of changing the  
18 figures, and those figures appear in the DCD Tier 2  
19 content and Tier 1. So we need a departure and an  
20 exemption, and this is unique to North Anna also.

21 The third departure involves the  
22 switchyard. So in the '70s we designed and  
23 constructed the North Anna Units 1 and 2  
24 switchyard, and we used the Dominion standards that  
25 were, that we had at the time.

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1 Well, subsequent to that, the NRC  
2 issued some regulatory guidance about switchyard  
3 protection. And, well, it's about lightening  
4 protection. It covers both the standard design and  
5 it also covers the switchyard.

6 And so there is one, the Reg Guide  
7 refers to IEEE standards. And one of the standards  
8 talks about surge protection. And we do not comply  
9 completely with that IEEE standard for the surge  
10 protection because it was basically non-existent at  
11 the time.

12 However, what we do have for design in  
13 the switchyard is it meets the intent of that  
14 guidance. And so we're asking for it, or we've  
15 reflected this as a departure to the Tier 2  
16 information, and there's an explanation of that in  
17 Part 7 of the COLA.

18 MEMBER STETKAR: We're talking about  
19 electrical stuff here. Before you get to other  
20 things that I don't understand, how are you  
21 addressing the open phase issue, because that's  
22 after the DCD was accepted.

23 MS. BORSH: Yes, yes.

24 MEMBER STETKAR: So do you have a  
25 discussion of that in Chapter 8 of your --

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1 MS. BORSH: Yes, we're following Fermi  
2 for that.

3 MEMBER STETKAR: Okay, thank you.

4 MS. BORSH: You're welcome. Next  
5 departure, this is the same as Fermi. We are  
6 reconfiguring the design, reconfiguring the  
7 Radwaste Building in order to allow us to have ten  
8 years of storage for the Class B and C radwaste and  
9 three months of storage for Class A. Right now the  
10 DCD has six months. Yes, right.

11 And we're the same as Fermi here, so  
12 you've seen this already. The next departure is  
13 also an exemption, and this involves liquid waste  
14 management systems. So the DCD right now says that  
15 we would discharge using the cooling tower blow  
16 down line, but what we plan to do is construct a  
17 radwaste defluent discharge piping line that will  
18 handle the discharges from liquid waste management  
19 system.

20 That's a figure also, or I'm sorry,  
21 that's content also in the DCD Tier 1 information,  
22 so it's a departure and it's an exemption.

23 And then the next departure and  
24 exemption involves Reg Guide 1.221 which is new  
25 guidance, well fairly new guidance that the NRC

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1 issued about hurricanes and hurricane missiles.

2 And so the DCD was submitted before  
3 this Reg Guide was issued, and so it was not, I'm  
4 sorry, the DCD didn't address Reg Guide 1.221  
5 requirements. And so we did. And what we found was  
6 that in certain instances, the velocities of  
7 certain missiles at North Anna is higher than the  
8 velocities that are in the DCD.

9 And so what we're going to have to do  
10 is, what we did was add additional requirements to  
11 meet the higher velocities that we're going to,  
12 that we could experience at North Anna. And that's  
13 a departure and an exemption also.

14 And then the last exemption I think you  
15 are familiar with. This is the exception that I  
16 think all of the Part 52 licensees are taking to  
17 the regulations in Part 70 and Part 74 for  
18 accountability of special nuclear material.

19 Right now the regulations give the Part  
20 50 licensees exceptions to the requirements, but it  
21 doesn't specifically, the regulations don't  
22 specifically address the Part 52 licensees. And so  
23 this is the same as what Fermi did and what the  
24 other utilities I believe are doing also. Any  
25 questions about this? Okay.

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1                   So with that, these are some topics we  
2                   thought -- okay. Well --

3                   MR. HEGNER: That's not the -- yes.

4                   MS. BORSH: Yes, this is a different  
5                   version than what I sent you but --

6                   MR. HEGNER: Close enough.

7                   MS. BORSH: -- it's close enough.  
8                   Let's move on. Let's go through it. Okay.

9                   (Off mic comments.)

10                  MS. BORSH: I think so.

11                  MEMBER BROWN: The difference is --

12                  (Simultaneous speaking.)

13                  MEMBER MARCH-LEUBA: She has, for  
14                  example, Chapter 9 up there and we don't on our  
15                  hard copies.

16                  MS. BORSH: Right.

17                  PARTICIPANT: And the other change is  
18                  it says October 20th electronic copy.

19                  MR. HEGNER: Oh yes, October 19th to  
20                  October -- that would be a hint, too.

21                  MS. BORSH: Well, this is up to you  
22                  guys. All right, so let's go over this. So the  
23                  first row that we were talking about here is  
24                  hazardous chemicals.

25                  And we did do a reanalysis of certain

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1 hazardous chemicals for the site. And in  
2 particular, we thought you might be interested in  
3 the reanalysis we did for liquid hydrogen for  
4 transport and storage. So that's one topic that  
5 you might be interested in.

6 MEMBER STETKAR: Gina?

7 MS. BORSH: Yes, John?

8 MEMBER STETKAR: Let me ask you  
9 something just sort of general because I might as  
10 well ask you now. The North Anna has some revision  
11 of a site safety analysis report, correct, that was  
12 developed as part of the early site permit. Is  
13 that correct?

14 MS. BORSH: An SSAR?

15 MEMBER STETKAR: SSAR.

16 MS. BORSH: Yes. And so what was your  
17 question?

18 MEMBER STETKAR: Well, I hadn't got to  
19 it yet.

20 MS. BORSH: Oh. We have --

21 MEMBER STETKAR: How does your FSAR for  
22 the -- I hate this because years ago I didn't speak  
23 this way, but I'll start babbling. How does your  
24 FSAR for the COLA relate to the SSAR for the ESP?

25 CHAIRMAN RICCARDELLA: Surprisingly, I

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1 understood it.

2 MEMBER STETKAR: And you know it's time  
3 to retire when you start speaking like that. And  
4 understanding it, yes. I tried to annunciate  
5 clearly so that our transcript has all of the --  
6 anyway, you get what I'm asking?

7 MS. BORSH: Yes.

8 MEMBER STETKAR: Because, so what's  
9 your answer?

10 MS. BORSH: The answer is that we  
11 followed Reg Guide 1.206 as far as incorporation.  
12 Well, we followed 1.206 with the guidance about how  
13 to write a COLA when you have a DCD and an ESP.

14 MEMBER STETKAR: Okay.

15 MS. BORSH: And in that section of  
16 1.206 it says use the SSAR information and maybe  
17 add something --

18 MEMBER STETKAR: So that for example if  
19 I'm interested in understanding some site specific  
20 aspects of the meteorology, I might need to go look  
21 at the SSAR rather than your FSAR, is that correct?

22 MS. BORSH: Not exactly. What happens  
23 is that if that were to be the case, if we were  
24 relying on the SSAR content, then what we do is we  
25 incorporate the SSAR content by reference just like

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1 we have been incorporating the DCD.

2 MEMBER STETKAR: Okay, by reference.  
3 But I have the DCD. But what I'm hearing you say  
4 is if I'm curious about some parameter, some  
5 meteorological parameter, and I read the FSAR, you  
6 may incorporate information from the SSAR by  
7 reference.

8 MS. BORSH: Right.

9 MEMBER STETKAR: So I need that  
10 document.

11 MS. BORSH: Yes.

12 MEMBER STETKAR: What's the most recent  
13 revision of your SSAR, do you know?

14 MS. BORSH: Is it --

15 MR. HEGNER: Rev 9 I think.

16 MS. BORSH: That's what I was going to  
17 say.

18 MEMBER STETKAR: I think I have a  
19 reference for that. I'm not sure I have the  
20 document, but I can go find it. I just wanted to  
21 make sure it wasn't, like, Rev 37.

22 MS. BORSH: No. And that document has  
23 not been revised. It's static.

24 MEMBER STETKAR: Yes, I mean, it's like  
25 a 2000 --

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1 (Simultaneous speaking.)

2 MEMBER STETKAR: Yes, no, I've got an  
3 ML number for it. I just used the last one that I  
4 could find and I wasn't sure whether there was  
5 anything after that. So thank you.

6 MS. BORSH: You're welcome. So for  
7 Chapter 2, we also think that you might be  
8 interested in some of the changes that we made.  
9 And these are the things where we thought okay,  
10 these are, we did some different revised analyses  
11 for these topics, and so that's why we thought you  
12 might be interested in them.

13 And so in Chapter 2 Section 2.4 we did  
14 some reanalysis for flooding and groundwater and  
15 accidental releases. And these were done to  
16 respond to some RAIs that we received from the  
17 staff. So you may be interested in seeing some of  
18 them.

19 The third row with Chapters 2, 3, 4, 9,  
20 14, 19 all involve the seismic exceedances. All  
21 these chapters were affected in one way or another  
22 by the changes.

23 Chapters 3 and 19 on the next row, this  
24 is what I spoke about earlier, the Reg Guide 1.221  
25 hurricane wind and missile analysis that we did, we

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1 thought you might be interested in that. It's  
2 different than what you saw at Fermi's ACRS  
3 meetings and from what we had provided before.

4 MEMBER STETKAR: Since I'm a PRA guy  
5 and Chapter 19 is PRA, would I form this be  
6 accurate in inferring that the only changes to the  
7 PRA might be in the external hazards  
8 characterization, or have you made any other  
9 changes to Chapter 19?

10 MS. BORSH: I think that was it. I  
11 would have to look at them.

12 MEMBER STETKAR: That's fine, I can go  
13 search it.

14 MS. BORSH: You want us to, I can ask  
15 Patricia.

16 MEMBER STETKAR: It's fine, I can read.

17 MS. BORSH: Okay. Chapter 8, this is  
18 the departure and exemption I told you about before  
19 that both of them, one is the switchyard and  
20 creating an intermediate switchyard for the site  
21 because of its limited space, and then the other is  
22 about having a departure from the Reg Guide on  
23 surge protection.

24 Chapter 9, yes we made some site  
25 specific water system changes. They're very

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1       minimal.     It was adding some information about  
2       using the fiberglass reinforced piping that we're  
3       going to be using for plant, PSWS and things like  
4       that.   Not too significant.

5                 And then Chapter 11 is the departure  
6       and exemption I told you about earlier which is  
7       using the rad waste discharge piping rather than  
8       the cooling tower blowdown line for the liquid  
9       waste management system discharge piping.

10                MEMBER BROWN:    So -- I'm sorry, John.  
11       Were you going to --

12                MEMBER STETKAR:  No, go ahead.

13                MEMBER BROWN:    Oh, I thought I heard  
14       somebody else say something.   Before you go on,  
15       there's no Chapter 7 on there, that's INC.   And  
16       when we first approved the ESBWR, ESBWR DCD in 2009,  
17       or at least we reviewed it and then I guess we  
18       wrote our letter.   I forgotten the date you showed.  
19       It's in --

20                MS. BORSH:   It's all right.

21                MEMBER BROWN:   Is that October 9, 2009?

22                MS. BORSH:   Yes.

23                MEMBER BROWN:   There was considerable  
24       angst in two major areas.   One was the voting units  
25       for the reactor trip and safeguards functions not

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1       having watchdog timers that actually monitored  
2       those microprocessor based, software based voting  
3       units.

4               And there were changes made to  
5       institute if a voting unit in any division or  
6       channel however, I don't remember how you referred  
7       to them, locked up and couldn't monitor the vote,  
8       that the timer would, the hardware based timer, not  
9       software based supposedly, would then initiate a  
10      trip for that channel, a reactor trip or an alarm  
11      for a safeguards unit because you don't want to  
12      obviously trip the safeguard systems on a failure  
13      like that.

14             And there were a bunch of promised DCD  
15      changes for that function to be included, and this  
16      was Rev 7 of the DCD I believe. The reason I'm  
17      hesitant right now, my laptop got scrubbed by NRC  
18      four years ago and I've lost, I got to go find the  
19      paper and I haven't been able to find it yet to  
20      recreate where those were supposed to be.

21             So it was supposed to be incorporated  
22      in the later revisions of Rev, after Rec 7 and  
23      since I can't find my information yet, I can't  
24      verify that. And it happened also with the Fermi  
25      one, so I've been taking it on face. But this time

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1 I'm going to ask the question of how that got  
2 incorporated.

3 The second item was the way the  
4 networks communicated offsite. In other words, let  
5 me say it this way. Outside, no outside the plant.

6 So corporate or administrative areas,  
7 corporate workstations, et cetera, et cetera, they  
8 were initially based on software based firewalls  
9 and, you know, electrical, like you have in your  
10 computer today as opposed to data being transmitted  
11 to the administrative or outside the plant via  
12 hardware one way, data diodes without any ability  
13 to be monitored or controlled or monitored or  
14 changed via software externally or internally.

15 You had to manually go change  
16 something, you know, take it out, put something  
17 else in. Both of those were supposed to have been  
18 incorporated. Those are the two questions I'm  
19 looking at trying to confirm that were still there  
20 now that we're up to, I think you all are doing Rev  
21 10, at least based on the paperwork we've gotten so  
22 far.

23 And so those are the only two questions  
24 I would like to try to make sure we have addressed.  
25 This question is also for the staff obviously.

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1 MR. SHEA: Yes, we're up to Rev 10,  
2 there's a supplement to that Rev 10.

3 MEMBER BROWN: Oh yes?

4 MR. SHEA: Yes, supplement one. So I  
5 mean, and that was based on all the steam dryer  
6 issues.

7 MEMBER BROWN: Yes, I saw that. But  
8 that has nothing to do with this particular, the  
9 INC part.

10 MR. SHEA: Right, right. There was an  
11 INC from my understanding. INC, all those issues  
12 were resolved long ago.

13 MEMBER BROWN: I'm not arguing about  
14 that.

15 MR. SHEA: And we'll take that back and  
16 we'll get you an answer.

17 MEMBER BROWN: I just want to make sure  
18 they are not, I never saw the actual changes to the  
19 original Rev 7 of the DCD. When we went through  
20 this there were proposed changes to the DCD shown  
21 to us and they were supposed to be incorporated. I  
22 can't verify that right now. I admit, that  
23 happened in 2009, so somebody's going to have to do  
24 some digging.

25 MR. SHEA: We'll take that back and get

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1 an answer for you ASAP.

2 MEMBER BROWN: There should be figures  
3 that show the hardware based watchdog timer  
4 approach for the building units and there should be  
5 a picture showing hardware based data diodes for  
6 all data going out of the plant networks into, you  
7 know, like administrative functions, corporate,  
8 whatever it is outside the plant. Okay?

9 MR. SHEA: Yes. Understand. We'll  
10 take that back. Like I said, I think these were  
11 all resolved in the DCD and --

12 MEMBER BROWN: We were told they were  
13 resolved.

14 MR. SHEA: -- we'll find it.

15 MEMBER BROWN: Okay. Thank you. Thank  
16 you.

17 CHAIRMAN RICCARDELLA: So I understand  
18 that your intent to have some technical details on  
19 each of these topics at the October?

20 MS. BORSH: That was my intent. We had  
21 a subsequent slide that didn't show up, but what we  
22 were thinking was the reason that some of these  
23 topics are on here is because there's a departure  
24 and an exemption and it's different from Fermi.

25 So the last three for Chapters 8, 9,

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1 and 11, I'm not sure they're significant enough.  
2 The only reason they're on here is because they're  
3 an exemption. But they're very straightforward  
4 changes. And so in the more recent revision that I  
5 submitted, and apparently it's gotten lost in the  
6 electrons, I would propose that we not even include  
7 those topics.

8 MR. SHEA: This is Jim Shea again from  
9 the staff. I would just add to what Gene has, and  
10 you'll see it in my presentation. But I kind of  
11 always thought of those three items as  
12 administrative exemptions. They're essentially  
13 changes to a figure in the DCD. And in the case of  
14 8 and in the case of 9, that was the fiberglass  
15 piping.

16 MS. BORSH: Reinforced piping.

17 MR. SHEA: The staff did an extensive  
18 review on that. I mean, pages of review. And  
19 maybe because at the time that's not really a  
20 common material. But I think since then this  
21 really has become a common material even in the  
22 operating fleet where this is a common replacement  
23 for the current piping for service water, et cetera  
24 because of its corrosion abilities.

25 CHAIRMAN RICCARDELLA: Fiberglass or

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1 HBP?

2 MR. SHEA: The fiberglass reinforced  
3 piping, yes. But we have an extensive review of  
4 that in our SER. And the other one, the rad waste  
5 discharge line, again another almost administrative  
6 change and an exemption I would call it because  
7 it's, and what's interesting about that one, and  
8 you'll see it in our SER, and we evaluate every one  
9 of these exemptions in our individual SER.

10 So you'll see a separate evaluation,  
11 separately for the exemption, and that's partly  
12 required by regulation. So we have a detailed  
13 evaluation of each one of these.

14 And in that particular case, the  
15 interesting fact is that the plant is planned to be  
16 a zero release liquid plant, and that is usually  
17 the case for BWRs because BWR's generally secondary  
18 side, steams a lot, and all the water, you end up  
19 making up water not discharging water in a BWR.

20 So with those, with that fact and what  
21 North Anna, and it's in our SCR what their goal was  
22 is to I think de-complicate the design of that  
23 discharge line and make it a simple discharge out  
24 to the discharge canal with a procedure that if you  
25 ever did release liquid, you would need Unit 1 or

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1 Unit 2 operating for the dilution.

2 And the point of the design if it's a  
3 stand-alone plant, the dilution is the cooling  
4 tower. That's where the credit for dilution of  
5 liquid release in the DCD. So this is just taking  
6 advantage of the fact that the site has two units  
7 and it can offer an alternate dilution.

8 Anyway, and I agree, and you'll see in  
9 my presentation I agree with Gina's assessment,  
10 that it's probably not a significant item to really  
11 review. And of course it's up to you but it's not  
12 significant. It's well written in our SER and also  
13 in the FSAR.

14 MEMBER STETKAR: I think that, I  
15 personally, I hear what you're saying. And  
16 remember this is a subcommittee meeting so this  
17 isn't ACRS. ACRS has a responsibility to the  
18 public to make sure that we, we have to reach our  
19 own independent conclusion about assurance of  
20 safety.

21 And I hear what you're saying, that you  
22 think things are really easy. But our not having  
23 an opportunity to have a discussion about those  
24 things that are really easy and the presumption  
25 that we're going to agree with everything can be a

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1 bit prejudicial.

2 So I would say use caution in terms of  
3 saying well, we don't plan to discuss this stuff  
4 because I guarantee that members of the  
5 subcommittee are going to read everything. And  
6 although you might not have it on the agenda, you  
7 can get questions about anything. So just be aware  
8 of that.

9 MR. SHEA: Yes, I apologize if I  
10 misspoke but my point was that as far as our  
11 perspective, what we're proposing, and you'll see  
12 in our presentation is that the lion share of the  
13 interest to the public as well as the Committee in  
14 our view is that the seismic analysis which is  
15 really what the large technical issue was over the  
16 last two years.

17 But in fact, that's what we're looking  
18 for from this meeting is to get the feedback on  
19 what you want us to present. We would be happy to  
20 present that. But I just would point out that our  
21 SER that's been published now, I think all the  
22 SER's should have been published by today on the  
23 public website.

24 It's a simple review. And take a look  
25 at that and then let us know if you want to explore

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1 that, for any of these items, explore further. And  
2 that's what we hope to get back out of this  
3 meeting.

4 CHAIRMAN RICCARDELLA: I would ask any  
5 of my other colleagues of any thoughts on what  
6 should or should not be presented at the October  
7 meeting?

8 MEMBER POWERS: I would think that the  
9 subcommittee would find it interesting to look at  
10 the evacuation time estimates. They don't have one  
11 for Unit 3, just the 1 and 2 evacuation time  
12 estimates. It's been relatively recent that you've  
13 done that.

14 MS. BORSH: The update?

15 MEMBER POWERS: Yes.

16 MS. BORSH: Yes.

17 MEMBER POWERS: And it could be useful  
18 for them to get a feel for the site by seeing that  
19 ETE. I mean, a fairly summary presentation I don't  
20 think you need to go into chapter and verse on  
21 methodology, but more focused on the results to get  
22 a feel for what the site is like.

23 CHAIRMAN RICCARDELLA: Okay.

24 MEMBER POWERS: And the emergency  
25 planning. I don't know, you probably don't have

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1 one taking into account Unit 3. But with Units 1  
2 and 2, I think it's good enough.

3 MR. HEGNER: It's a site.

4 MEMBER POWERS: Yes.

5 MEMBER SUNSERI: Yes, my input would be  
6 I'm interested in the whole content, I mean all the  
7 topics. If it's a real easy one, then it will be a  
8 short discussion, theoretically. You know, but at  
9 least it gives us a chance to ask a question should  
10 we have one.

11 MS. BORSH: When you say -- may I ask a  
12 question?

13 MEMBER SUNSERI: Yes.

14 MS. BORSH: When you say all of the  
15 topics, are you saying all of these topics or all  
16 of --

17 MEMBER SUNSERI: Everything that you  
18 have --

19 MS. BORSH: Okay.

20 MEMBER SUNSERI: -- a deviation or I  
21 forget what the --

22 PARTICIPANT: Departure.

23 MEMBER SUNSERI: Departure on.

24 MS. BORSH: Okay. I wasn't sure if you  
25 meant the whole COLA.

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1 MEMBER SUNSERI: No, no. I'm sorry. I  
2 was referring to the slide.

3 MEMBER POWERS: We want to go through  
4 the whole thing.

5 MS. BORSH: Okay.

6 MEMBER POWERS: It was so much fun the  
7 first time.

8 MS. BORSH: Okay, that's right. Thank  
9 you for reminding me.

10 CHAIRMAN RICCARDELLA: Charlie, are you  
11 specifically requesting that that item be covered,  
12 or is that just something that you'll review on  
13 your own in the DCD?

14 MEMBER BROWN: I'm just going to be  
15 trying to find, no I'll try -- I want --

16 CHAIRMAN RICCARDELLA: Charlie, turn  
17 your --

18 MEMBER BROWN: Oh, sorry about that.

19 CHAIRMAN RICCARDELLA: Thank you.

20 MEMBER BROWN: No, I want to have it  
21 addressed in the subcommittee meeting by the staff.  
22 Primarily the staff. I don't think Dominion could  
23 be able to do that.

24 MS. BORSH: Yes, that was a DCD --

25 CHAIRMAN RICCARDELLA: A DCD item, not

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1 a COLA.

2 MEMBER BROWN: Yes, exactly. I just  
3 want to make sure the DCD was updated as was  
4 promised by the DCD sponsor after our final letter.  
5 And where. Where in the DCD. That way you ought  
6 to be able to see it in 7, 9 and 10. I may have  
7 that page at home. I don't know.

8 MEMBER MARCH-LEUBA: And during the  
9 Turkey Point review that we just did recently, we  
10 had the issue with the low population density, the  
11 500 people per square mile. You can now address  
12 what the population density is for the plan.

13 CHAIRMAN RICCARDELLA: John?

14 MEMBER STETKAR: I tend to look at  
15 everything.

16 CHAIRMAN RICCARDELLA: Okay.

17 MS. BORSH: Okay. So our conclusions  
18 are that -- is that right, going to the next slide?  
19 Okay. Just to remind you, we did follow the design  
20 centered working group approach to creating the  
21 COLA that you have before you. And as a result of  
22 that, we've maximized standardization both with the  
23 DCD and with Fermi 3.

24 The site-specific issues that were  
25 identified have been evaluated and resolved. The

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1 seismic and structural analyses and the resulting  
2 design enhancements that we made demonstrate the  
3 capability of the structures, systems, and  
4 components, and the North Anna site is adequate to  
5 support the construction and operation of North  
6 Anna Unit 3 as an ESBWR. And that's all I have  
7 unless you have any other questions.

8 CHAIRMAN RICCARDELLA: Thank you. Any  
9 other subcommittee members have questions? Okay,  
10 well we look forward to hearing more details on  
11 these topics in October.

12 MS. BORSH: Thank you.

13 MR. SHEA: Oh is it there? Okay. All  
14 right, just move that over and just press the  
15 arrows right? There they are. Okay, big arrows.

16 All right, thank you. I want to thank  
17 the Committee again for having us and have this  
18 public meeting. I think this was, originally, we  
19 were just going to have an informal meeting with  
20 the Committee and then propose what we thought  
21 would be good for the subcommittee. But I think  
22 this was a much better way to present what the  
23 staff has done over the last several years on the  
24 review of this North Anna 3.

25 And particularly, since I've been

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1 involved, like I said, the last 18 months, is the  
2 seismic evaluation.

3 So with that, we'll start with number  
4 one. And what I did, really when I look at Gina's  
5 -- and we did not do this together. I looked at  
6 Gina's presentation, I think Tuesday. And I had  
7 already pretty much completed mine, and I looked at  
8 them and I said, the good news here is we're all  
9 pretty much on the same page.

10 And I think what's good, and I think  
11 what helped the Committee on my presentation, is I  
12 give a little more details, including dates, which  
13 is what the staff, you know, we look at the dates  
14 of submittals and things like that. So I added  
15 some of that detail.

16 But I won't go over, in a lot of  
17 detail, everything Gina already said. But I may  
18 highlight a couple things where she did not, at  
19 least initially. And also I'd like to just really  
20 briefly talk about how Fermi and the DCD kind of  
21 fit in.

22 Because if you look at this project, on  
23 both Fermi and North Anna -- North Anna being the  
24 original R-COLA, right? Up to Phase 2.

25 And essentially Fermi, incorporating by

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1 reference in their SER -- if you look at the Fermi  
2 SER, I think we've provided, a lot of their content  
3 is IBR North Anna from Phase 2. And you'll see  
4 then the switch.

5 In the North Anna's case, if you're  
6 looking for this, really the most significant area  
7 where IBR occurred, or it shouldn't be IBR, but  
8 standard content from Fermi, was in Chapter, what  
9 we call Chapter 20. The Fukushima Chapter.

10 Which just as an aside, Fukushima  
11 Chapter, I kind of invented the Fukushima Chapter.  
12 When I was JLD before getting this job, and I was  
13 the liaison for NRO working with how to present the  
14 Fukushima evaluation in the COLs.

15 And this Chapter 20 was an invention so  
16 that really for the public's perspective, they  
17 could go to one single place of that huge event of  
18 interest and look. And essentially we sent out  
19 then, in that chapter, we show you in the FSAR  
20 where these things were evaluated specifically, so  
21 you don't have to go hunting for it if you're from  
22 the public. So we put it all in one place and  
23 evaluated it. So that's where you'll see where  
24 North Anna --

25 And there's other ways that they

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1 incorporated Fermi information. And we'll go  
2 through that as we come across it in the  
3 presentation. But big picture, that's kind of the  
4 overall view.

5 So this first slide, the only thing I  
6 really wanted to highlight here was the same  
7 information, expect with dates, that North Anna  
8 provided or Dominion provided. Is some of this  
9 idea of how Dominion incorporated the Fermi  
10 information.

11 So on August 30th, somewhere down about  
12 a third of the way down through that slide, on  
13 August 30th, 2013, Dominion submitted its RAI  
14 reconciliation from Fermi R-COL. Which was  
15 important for the staff to see, okay, these RAIs  
16 that are still valid for North Anna, these are the  
17 new RAIs we incorporated from Fermi, the update  
18 from Phase 2. And that was important so that we  
19 could go forward with these RAIs.

20 There's almost 900 RAIs with North  
21 Anna. Just to give you some perspective.

22 So navigating all those RAI questions,  
23 figuring out what applied, once they reverted back  
24 to the ESBWR, was important.

25 And the other one I highlight here in

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1 this same slide, which is also important, was this  
2 January 23rd, 2015. Again, following the design-  
3 centered approach in the reverse, where Fermi  
4 became the reference COL, they incorporated much of  
5 the finalized -- at that point, the Fermi SER was  
6 finalized essentially. I mean it still had to go  
7 through the licensing, et cetera.

8 But from that perspective, if you look  
9 at that, the incorporation into that particular  
10 revision, I think that was Revision 6 -- no. Well,  
11 it ended up in, later, in Revision 8 of the FSAR.

12 And in that revision, included all the  
13 things like licensing conditions that previously in  
14 Phase 2 looked different. In both applications.

15 But after OGC, when it goes through the  
16 licensing phase, OGC has their comments and  
17 adjustments. So these license conditions all  
18 looked a little different than you would see in a  
19 Phase 2 SERs.

20 So all that was incorporated. Dominion  
21 essentially incorporated the Dominion -- or the  
22 Fermi license conditions. And it ended up and  
23 reflected in that Rev. 8.

24 So as we proceeded with our review, we  
25 essentially took those license conditions. And

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1       that's what is now reflected in the advanced final  
2       SER. As you'll see in Phase 4.

3               Now of course, that could change.  
4       We're going to go through the licensing phase next  
5       and some of those could be noodled again, but  
6       anyway.

7               So as part of that approach, you can  
8       follow the breadcrumbs a little bit there on how  
9       this, you know, it was a very complex issue of  
10      first reverting back to the US-APWR and then  
11      reverting back.

12              And it was a challenge, I think, for  
13      both sides and for the staff to keep track of,  
14      okay, what's valid? So that kind of fills in some  
15      of those blanks there.

16              And the only thing I just, I kind of  
17      emphasis in my slide presentation is that Dominion  
18      submitted a seismic closure plan. Like I said, the  
19      focus of the last year and a half is really on the  
20      seismic issue. There was other things, and we'll  
21      talk about them, but this was the main focus.

22              And that seismic discussion started  
23      over two years ago. The fall of 2014, correct?  
24      And so there was meetings.

25              And a lot of this, because after the

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1 Fukushima event and then after the Mineral  
2 earthquake event in August of 2011, of course the  
3 staff had concerns about the seismic evaluation at  
4 the time. There was several meetings to discuss  
5 how the path forward would go.

6 And so in that Seismic Closure Plan,  
7 the staff came to agreement with, and Dominion, put  
8 together a plan on how to close the issue. Which  
9 incorporated all that, those events. The Fukushima  
10 Lessons Learned and the seismic and the actual  
11 Mineral earthquake in 2011. Both happening in  
12 2011.

13 So that's where that kind of comes in.  
14 And that has been the crux in what we've been  
15 working on over the last 18 months to come to  
16 closure on this advance final SER Phase 4.

17 Any questions before I go to the next  
18 one? It's kind of highlights. Okay, what's the  
19 other one? It's easier to actually look up here.

20 Oh, here is -- I put a few, just a few  
21 highlights for the Fermi and ESBWR DCD review. And  
22 you can see in there that the Fermi application  
23 came a little later after North Anna in 2008. So  
24 they were the S-COL.

25 And in March 9th, 2011 the NRC actually

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1 issued the ESBWR DCD FSER. But then there was some  
2 issues. There was a couple issues.

3 I think the open phase was one of the  
4 issues in the DCD, but that was addressed in the  
5 DCD. So I believe that was one of the issues.

6 There was two issues. One was the  
7 steam dryer. And there was this, I think it was  
8 the open phase, but there was another issue that  
9 was addressed in this Rev. 10. And Supplement 1  
10 really includes the conclusion of the staff review  
11 of the dryer issue.

12 So that's where we are is, oh, that's  
13 the, right. It's Rev. 10 DCD. Supplement 1 is our  
14 FSER. I know I'm having trouble reading my own  
15 slide, but it was just pointed out I could just  
16 look right in front. Look at that.

17 So that's where I got the Supplement 1.  
18 The Supplement 1 is from FSAR.

19 MEMBER STETKAR: And you're right.  
20 Rev. 10 of the DCD --

21 MR. SHEA: Yes.

22 MEMBER STETKAR: -- addresses the open  
23 phase stuff.

24 MR. SHEA: Right.

25 MEMBER STETKAR: ACRS hasn't seen a DCD

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1 in a long time.

2 MR. SHEA: Right. So that's why I  
3 wanted to say, I think when you open --

4 MEMBER STETKAR: You're right. I just  
5 did a word search. It does.

6 MR. SHEA: Yes. Okay, so I had my  
7 supplements backwards. It was the FSER Supplement  
8 1 that addressed, that particularly addressed the  
9 dryer issues. Rev. 10 addressed the open phase  
10 issue. If that helps clarify that.

11 I actually, then I added just a couple,  
12 a big picture staff FSER things for your, just for  
13 your information, about the ESBWR rated for 4500  
14 megawatt thermal so you get a feel for this plant.

15 But the one thing that always struck  
16 me, of course, the Passive Containment Cooling  
17 System. This plant is a passive plant, 72-hour  
18 post-accident, no need for pumps.

19 MEMBER STETKAR: Coping time.

20 MR. SHEA: Coping time. And that's  
21 addressed also as part of the Fukushima. So  
22 another issue is that it's really past 72-hour  
23 response on Fukushima is what they're addressing  
24 when it comes to mitigating strategies.

25 And I also point out that in the staff

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1 SER, Chapter 19, the staff did review the PRA in  
2 that chapter, and it's pretty extensive. And of  
3 course the applicant report is, core damage  
4 frequency of  $1.65 \times 10^{-8}$ . Which I believe is the  
5 best core damage frequency, if you want to look in  
6 terms of probability as far as --

7 MEMBER POWERS: Of course that's a  
8 totally meaningless core damage frequency.

9 MEMBER STETKAR: Yes. It's not the  
10 best core damage frequency; it's the silliest core  
11 damage frequency.

12 MEMBER POWERS: It's just a silly thing  
13 to report.

14 MEMBER STETKAR: That's on record.

15 MR. SHEA: Right. Well, I mean it's a  
16 number that's used in a PRA.

17 But what the staff did, if you look at  
18 that, and that's why I wanted to point that out, is  
19 what the staff has basically come to the conclusion  
20 is, it's clear because of a few factors, because of  
21 the passive nature of the PCCS system, and you've  
22 got the ICS system and all these systems, add up to  
23 a design. Of course that is reduction of risk in  
24 comparison to current operating reactors.

25 So the point was --

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1                   MEMBER POWERS:     Is it really?     If  
2 earthquake dominates the risk, does it matter?

3                   MEMBER STETKAR:   And we won't know that  
4 because North Anna doesn't have to quantify  
5 earthquake risk until sometime after the COL is  
6 issued and before fuel is loaded.

7                   MEMBER POWERS:   I think it's the great  
8 leveler. It doesn't matter whether you put a Mark  
9 I --

10                  MEMBER STETKAR:   Right.

11                  MEMBER POWERS:   -- or an ESBWR on the  
12 site. You're going to get dominated by your  
13 seismic risk here.

14                  MEMBER STETKAR:   And we won't know what  
15 that is.

16                  MR. SHEA:   Right.

17                  MEMBER STETKAR:   Until sometime before  
18 they load fuel.

19                  MR. SHEA:   Yes. And I don't want to  
20 belabor this point, but this is just --

21                  MEMBER POWERS:   Do we know about fire?

22                  MEMBER STETKAR:   What?

23                  MEMBER POWERS:   How about fire?

24                  MEMBER STETKAR:   You don't to have to  
25 finish the site-specific stuff until before they

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1 load fuel. I mean, you're not going to run a --

2 MR. SHEA: But I think the answer -- to  
3 address another question in that Chapter 9, and in  
4 fact in our SER for Chapter 19, we do discuss the  
5 differences between the DCD PRA and the North Anna  
6 specific PRA, and there are those differences.

7 And I believe it is dominated by things  
8 such as external events rather than -- from my  
9 recollection of going through that. But that's,  
10 you know, so that's --

11 MEMBER STETKAR: Just remember that I  
12 don't believe, I'm skimming through it now, but I  
13 suspect they have not done a seismic risk  
14 assessment. I suspect they've changed their  
15 seismic margin assessment to account for their  
16 revised seismic hazard. That's not a risk  
17 assessment. It just looked at different deltas I  
18 suspect.

19 I mean I haven't read what they've  
20 done, but I can almost guarantee it's not a seismic  
21 risk assessment.

22 MR. SHEA: I don't know.

23 MEMBER STETKAR: The DCD was not a  
24 seismic risk assessment. And unless they've done a  
25 heck a lot of work in their PRA, and I'm sure they

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1 haven't, they looked at a revised seismic margin  
2 assessment looking at the revised hazard.

3 And that's not -- they will. They'll  
4 perform a quantified seismic risk assessment before  
5 they load fuel. But you're required by the  
6 regulations, so they know they have that ahead of  
7 them. And their estimated core damage frequency  
8 might increase by a couple orders of magnitude.

9 MR. SHEA: Yes. Our SER does cover  
10 some of those aspects, so I think you'll find some  
11 of that information there. And in the FSAR.

12 All right, moving on. Okay, so here's  
13 some, again, what was interesting about this  
14 parallel review, I call it, you know, you had the  
15 ESBWR being reviewed at the same time as the Fermi  
16 and same time as North Anna. By the time we got to  
17 Phase 2, these were all being reviewed at the same  
18 time.

19 And what you find is that a lot of the,  
20 there was several RAIs that were sent to the actual  
21 COLA applications that end up being deferred to the  
22 DCD. So there was a lot of that going on during  
23 that timeframe.

24 And so you'll even see in our current  
25 SERs, which are leftover from the Phase 2, of

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1 course, from the Phase 2 information that shows  
2 that. And explains that.

3 I mean, theoretically, I should have  
4 been able to weed all that out because it was  
5 addressed in the DCD. But it was too hard at this  
6 stage to try to take all that out. But you'll see  
7 some of that in there where all these applications  
8 were being reviewed, and you'll see where it was,  
9 RAIs were redirected back into the DCD. On certain  
10 aspects.

11 So you can see -- and then what I also  
12 wanted to do next was to focus on the ACRS  
13 interactions associated with the DCD, the Fermi and  
14 now North Anna. All the details there.

15 Dominion had touched on it, but I have  
16 a few more details associated with that. You can  
17 see that, we mentioned already that there was June,  
18 July, August ACRS subcommittee meetings presented  
19 on each individual chapter. For the Phase 2 SERs.

20 And ultimately, we had the letter on  
21 October 8th, where the ACRS Full Committee Meeting  
22 Phase 2 was submitted. And on the next page I talk  
23 about your conclusions there.

24 No significant issues. Of course, when  
25 that was sent, we didn't have the Mineral

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1 earthquake, and we didn't have Fukushima. So you  
2 can see -- so what we had been focusing on since  
3 2011 has been really the seismic issue.

4 And I'll mention the way we close, the  
5 other thing I want to go over is the closed and the  
6 open items in Phase 2 SER. I gave some details  
7 there.

8 You can see the staff SER Phase 2. We  
9 actually had open items, confirmatory items. There  
10 was 71 open items from Phase 2, 40 confirmatory  
11 items. And now in Phase 4, there's 34 additional  
12 confirmatory items to review to show the latest  
13 update.

14 Mostly in the seismic area again, to  
15 reflect what the markups that were, you know, that  
16 are now in the FSAR. And we have that job ahead of  
17 us to confirm all that. And we're on our way to do  
18 that.

19 And the point is, like for example, the  
20 71 open items that we had under -- for example, we  
21 had 19 chapters then; Chapter 20 didn't exist. So  
22 takeaway 19. Each chapter had DCD as an open item.  
23 So you could look at that as there's 52 actual open  
24 items from RAI. And these 40 items were already  
25 RAI responses with markups that just were

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1 confirmatory.

2 In fact, what we have done recently in  
3 project staff is I assigned one of our project  
4 managers to basically look at each one of these.  
5 Go back to the Phase 2; pull them all up; put them  
6 in a grid.

7 And I did that. And we then validated  
8 every single one of these open items and made sure  
9 they were in Rev. 8 of the FSAR. So that was a few  
10 months back.

11 But that's what we did to make sure we  
12 had closed all those items. I mean we could assume  
13 that because all the RAIs were closed. If you look  
14 at currently, there's not a single RAI that is open  
15 on the safety side of this review.

16 And so we went through 900 of these  
17 RAIs; made sure everything was closed, resolved;  
18 looked at all these open items; looked at all the  
19 confirmatory items. So as you can image, it was a  
20 pretty large effort on our side to make sure that  
21 all the i's and t's were crossed from the tech  
22 staff. And they were, fortunately.

23 And I just put up this one on the  
24 Fukushima. I mentioned before was, that this  
25 Chapter 20 was kind of a new invention. And Fermi

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1 addressed RAIs that were part of the Fukushima SECY  
2 papers, and essentially Dominion took those RAIs  
3 and took it as standard content and put it in there  
4 FSAR, as appropriate, and followed the Fermi,  
5 essentially verbatim. So you'll look in our  
6 Chapter 20, and you'll see it's standard content.

7 The only subtle difference is that, and  
8 I mentioned it here, in case of North Anna, because  
9 following the Fukushima event, of course, all the  
10 new guidelines were created in the Central Eastern  
11 United States, et cetera. Dominion incorporated  
12 all that into their design for Chapter 3 and  
13 Chapter 2. And therefore there was no need to  
14 reevaluate the Seismic 2.1 for Fukushima, again.

15 So that's what Fermi actually did.  
16 Because they weren't --

17 Yes. Fermi actually did reevaluate  
18 under the new central-eastern United States curve  
19 and had to show that they were bounded by the DCD.  
20 And that's how Fermi addressed in their Chapter 20.  
21 Whereas North Anna didn't have to do that step  
22 because they incorporated it, the new central-  
23 eastern United States curve. That followed.

24 So just so you're not confused about  
25 that. Only those recommendations were determined

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1 to be necessary for North Anna. And again, Fermi  
2 only had that 2.1 recommendation also addressed.  
3 Everything else was determined because of this  
4 passive plant, none of the other recommendations  
5 were applicable.

6 Okay, so just to highlight the RAIs. A  
7 big effort on our part and project was just to make  
8 sure these things were all closed out, resolved and  
9 reviewed, so when we sent this to the public  
10 website they were finished. It looks like it's  
11 finished.

12 In fact, we're still finalizing that.  
13 I think we've got a half a dozen/a dozen RAIs that  
14 we're still tracking down.

15 What we're finding is there are a few  
16 of these RAIs that were leftover from the APWR.  
17 They're not applicable to North Anna, so it's just  
18 a matter of us going back and confirming what they  
19 are and then closing them out appropriately. So I  
20 think we're left with, I don't know, at the most a  
21 dozen of these that we're tracking down.

22 And I just want to point out that there  
23 were, this kind of surprised me, that since April  
24 2013, when Dominion reverted back to the ESBWR,  
25 there's an additional 62 E-RAIs.

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1                   Now, that kind of -- E-RAIs, I didn't  
2                   have time to figure out all the RAIs that's  
3                   embedded in those E-RAIs, but for the most part,  
4                   all these, over the last, since then, most of the  
5                   have been single question RAIs. Because back in  
6                   the, prior to Phase 2, you'd get these multiple,  
7                   you'd get one E-RAI with 15 questions. So that's  
8                   kind of how that's done.

9                   So if you look at the 62, I think even  
10                  Gina mentioned to me, when we were discussing this,  
11                  there was about a hundred actual questions since  
12                  this. And there's various reasons.

13                  In fact, that's why I actually listed  
14                  them. These are all the ones that had been since  
15                  the conversion back with the ESBWR.

16                  MEMBER STETKAR: And they're kind of  
17                  all over the map, aren't they?

18                  MR. SHEA: They are. This kind of  
19                  surprised me. You know, there --

20                  MEMBER STETKAR: They're not all  
21                  seismic is why I was --

22                  MR. SHEA: Yes.

23                  MEMBER STETKAR: They are kind of all  
24                  over.

25                  MR. SHEA: But they aren't all seismic.

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1 But I want to take a special note there. You see,  
2 I've been on the project for 18 months, and you  
3 notice how many RAIs went out under my watch? 4.

4 And that was -- so we were more toward  
5 the end, over the last 18 months, and we were  
6 really just closing the safety evaluations. And  
7 even though there was no really technical issues,  
8 it still takes time to close these out. It's just  
9 the nature of the beast.

10 We have to get through OGC and all of  
11 our processes in order to close these. And it was  
12 a big effort. Even though there really wasn't many  
13 significant, in fact, the last four weren't very  
14 significant RAIs.

15 So if you go through this, you can see  
16 there is a number of RAIs in rad waste area,  
17 Chapter 11 and 12. And actually, if I have to  
18 guess where I spent most of my time, other than  
19 seismic, it was with that section. Since I've been  
20 involved in the project. But that was early on.  
21 And I'm still confused why there was any additional  
22 RAIs, to be honest.

23 And anyway, but --

24 MEMBER STETKAR: That's not the kind of  
25 thing you want to say in a public meeting with the

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1 applicant here. Just saying.

2 (Laughter)

3 MR. SHEA: You're right, I'm sorry.  
4 But they're very important. Actually, I think what  
5 part of it was, was you have new staff members who  
6 take a different look and a different, you know,  
7 and take a different view, and maybe we missed  
8 something in Phase 2. So, you know.

9 But anyway, a lot of them, obviously we  
10 had some issues, and they were resolved, and we got  
11 through those. But that's the other one you'll  
12 see, other than seismic.

13 And then there's some other ones. The  
14 other one that's just, just to point out for the  
15 committee was, in Chapter 2, there was an issue  
16 about the, because of the new design change there  
17 was a reanalysis of the LIP event for the --

18 MEMBER STETKAR: Hmm.

19 MR. SHEA: Only because of the physical  
20 plant. And so they reevaluated it. And that took  
21 some time to resolve. And I think because it was  
22 low on the radar.

23 But that was like the last Chapter 2  
24 issue that was resolved was the reanalysis. And it  
25 ended up with the --

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1                   MEMBER STETKAR: For the public record,  
2                   that's local intense precipitation.

3                   MR. SHEA: Right. Local intense  
4                   precipitation. And the way that was resolved  
5                   eventually is the curbs in a couple of the seismic  
6                   structures, in the main structure, had a couple  
7                   curbs added to meet that new LIP evaluation.

8                   But other than that, and this other  
9                   one, control and habitability, there was some  
10                  slight differences. Obviously Fermi. It's a site-  
11                  specific evaluation based on the industrial area,  
12                  how the different tanks.

13                  I think you had a couple of tank sizes  
14                  that were different. Fermi had two tanks for  
15                  hydrogen, and North Anna has one. Reverse.

16                  Yes, Dominion has two tanks for  
17                  hydrogen and Fermi has one large tank. So there's  
18                  some slight differences, some RAIs, and some issues  
19                  that were resolved following the 2013 submittal for  
20                  the ESBWR.

21                  So anyway, I give those to you guys to  
22                  contemplate and ask us, and if you have any  
23                  questions about any of those, just Girija will let  
24                  me know.

25                  All right, so this next slide, it just

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1 points out the focus. And I'm sorry if I misspoke  
2 earlier about what we think is really the  
3 significant issue, at least from a project side, is  
4 for the subcommittee.

5 And because the focus for us, and for  
6 the staff really for the last 18 months or so, has  
7 been on, and it's similar to what Dominion  
8 mentioned was the exemptions. The Tier 2  
9 departures and the variances.

10 We didn't talk about variances early  
11 from the ESP. The variances from the ESP, I got a  
12 list of those variances. And where that comes from  
13 is just the physical plant changing, and therefore  
14 some of that, the original SSAR information didn't  
15 quite fit into the new ESBWR footprint.

16 So you'll see a whole list of that.  
17 They're not significant from a projects perspective  
18 or from -- in fact I talked to the staff about  
19 those and they said they're not a significant,  
20 those variances aren't really significant.

21 And I think you brought up a question  
22 earlier about this SSAR incorporated by reference.  
23 And you'll see in the, it's very clear in our SER,  
24 how that was done.

25 And in fact, if you ask me, we usually

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1 quote it -- we actually put it all in the SER, so  
2 you don't really have to go anywhere. We address  
3 it.

4 It's almost like a one-stop shop. You  
5 don't have to go back to the SSAR to look at  
6 things. Because pretty much the way the SER was  
7 written included what the issue was; here's our  
8 variation; and this is why it changed. Or if it's  
9 incorporated, it describes what that was and where  
10 it's from.

11 MEMBER STETKAR: So you've done a lot  
12 of that?

13 MR. SHEA: Yes.

14 MEMBER STETKAR: Like what you're  
15 saying is you've done a lot of that leg work, at  
16 least from the staff side?

17 MR. SHEA: Yes.

18 MEMBER STETKAR: Okay.

19 MR. SHEA: From the staff side. That  
20 was a big issue in Chapter 2. That was really.

21 So I know we talked -- this is actually  
22 a table directly out of Part 7, to save you time  
23 looking at that, instead of looking it up yourself.  
24 But this just talks about these exemptions.

25 And I mentioned that on chapter -- that

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1 that's a standard exemption number one. They had  
2 it different. They went backwards, or they had a  
3 different order. They talked about it in a  
4 different order.

5 I talk about it in this order. I think  
6 that was presented in Part 7. And this Chapter 1,  
7 it's the typical exemption that all COLs are going  
8 through.

9 And then there's the other one. Now  
10 there's four other ones. Fermi did not have any  
11 other exemptions, other than this Number 1. So  
12 this is where Dominion or the North Anna is  
13 different. And that's why I highlight it here.

14 And we already talked about these to  
15 some degree. And the one I highlight is this, of  
16 course Number 3, which is the Tier 1 change, the  
17 DCD, which changes the definition, essentially, of  
18 the SSA from what the DCD was calling it.

19 So the other ones, like I said, I'm  
20 sure Dominion and the staff are more than happy to,  
21 will have people to present these at the  
22 subcommittee. That's what we'll plan to do since  
23 you expressed interest in these. But they're  
24 fairly straightforward in my thinking.

25 MEMBER STETKAR: And we also have

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1 Dominion's, whatever it is, the Departures,  
2 Variances and Exemptions Report or whatever it is.  
3 That's up to date, right? I think it's got a date  
4 of June on it of this year.

5 MR. SHEA: Yes. I pulled this right  
6 out of the Rev. 9. I failed to bring that. Rev. 9  
7 of the FSAR was submitted in June of this year.

8 MEMBER STETKAR: But the, I happen to  
9 be looking at that, it's the North Anna 3 COLA Part  
10 7 Departures Report. That's Rev. 7. That's the  
11 most current version of that document?

12 MS. BORSH: Yes.

13 MEMBER STETKAR: It is dated June of  
14 this year, but --

15 MS. BORSH: Yes.

16 MEMBER STETKAR: Okay.

17 MR. SHEA: And the way that works,  
18 Gina, correct me if I'm wrong, if there was no  
19 changes from the FSAR update, the rev didn't  
20 change.

21 MS. BORSH: That's right. Even the  
22 part is the same.

23 MR. SHEA: Right.

24 MEMBER STETKAR: It could be listed  
25 anything as long as I have --

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1 MR. SHEA: Right.

2 MEMBER STETKAR: -- that this is the  
3 latest and greatest.

4 MR. SHEA: Well that confused me. When  
5 I first got this project I said, wait a minute,  
6 Rev. 8 of the FSAR, but it's Rev. 6 of the, but  
7 anyway. But that's why that is. It doesn't always  
8 change on every revision.

9 Okay, so I actually squeezed in all  
10 these departures also. Actually, when you look at  
11 the SER, you would think there's a lot more  
12 departures. But the reality is, you can see that  
13 departure on Chapter 11.

14 I don't recommend reading Chapter 11  
15 unless you are really tired at night and want to  
16 get a good night's sleep. But you can see we  
17 covered a lot in that chapter. It's a very long  
18 chapter. And it talks about all these departures.  
19 And that probably was part of the reasons why the  
20 staff had additional RAIs, et cetera.

21 But Fermi also, I believe Fermi also --  
22 you're basically following the Fermi on that?

23 MS. BORSH: Yes.

24 MR. SHEA: Yes. Okay. And the same  
25 thing, Chapter 12. There is that issue.

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1                   And 19A is the RTNSS. The effect of  
2                   the missile effect in RTNSS. Also, if you go to  
3                   Chapter 3, you'll see where they discuss the  
4                   missiles, and we discuss it there. And the bottom  
5                   line there is that the missiles are bounded by the  
6                   tornado, right? According to the FSAR.

7                   So that the hurricane missiles really  
8                   are not a factor to that degree, expect maybe in  
9                   the RTNSS structures where --

10                  MS. BORSH: The velocities.

11                  MR. SHEA: -- right. The velocities,  
12                  right.

13                  So the RTNSS, that new reg guide  
14                  changed some of the velocities of the missiles.

15                  MS. BORSH: That is correct.

16                  MR. SHEA: But if you look at Chapter  
17                  3, it basically says that the missiles are bounded  
18                  by the tornado missile, which is the DCD tornado.

19                  MEMBER STETKAR: Hmm. Well, we'll look  
20                  at it.

21                  MR. SHEA: Okay, here's all that list  
22                  of variances. Again, it looks like, oh my gosh,  
23                  what's all that. But again, it was based on a fact  
24                  that the site physical plant changed from the time  
25                  of the ESP.

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1 I think they actually moved, right?  
2 From the ESP there was a where are you going to put  
3 the plant originally, or where it was proposed, and  
4 it moved? Was that the issue?

5 MR. HEGNER: Originally we were going  
6 to put it closer --

7 MEMBER STETKAR: You have to --

8 MR. HEGNER: Yes.

9 MEMBER STETKAR: -- make sure you're  
10 speaking in the microphone because that's the only  
11 way --

12 MR. HEGNER: Originally we were going  
13 to put Unit 3 closer to Units 1 and 2, and then  
14 overtime, we moved it farther away to be closer to  
15 the cooling towers.

16 MR. SHEA: Okay. So that was the  
17 reason why all these variances are there because it  
18 ends up moving physically. So you got like ground  
19 hydrology, and all these things slightly were  
20 changed because of that move. So I just didn't  
21 want this to confuse you.

22 But like I said, in Chapter 2, if you  
23 want to pick out any one of these, just do a search  
24 in Chapter 2, and it will be in there, and we would  
25 have addressed it. The staff.

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1           So that, actually that whole, all those  
2           actually complicated Chapter 2 a little bit. So  
3           that made Chapter 2 go a little longer than one  
4           would suspect from the Phase 2 SER.

5           Okay, I mentioned before the Seismic  
6           Closure Plan. Again, this has been our focus,  
7           really, from the staff's standpoint. And it has  
8           been a large effort.

9           I mentioned at the beginning that  
10          between Dominion staff and our staff, there was  
11          just, we had been meeting, and I'd put our meeting  
12          at 40 public meetings. Essentially we're meeting  
13          at least every other week on this.

14          Now, we did have, there was four major  
15          public meetings that we had face-to-face here at  
16          the Commission where major milestones occurred that  
17          were addressed, where they presented their results  
18          based on the seismic closure plan. Which provided  
19          a plan to give us all the FSAR markups, provide all  
20          the reanalysis. And it was done by date certain.

21          And there was some milestones there I  
22          mentioned. I think it's December 2015, RAI  
23          responses and COLA markups of the structural  
24          design. All these things were critical path, make  
25          or break, in order to keep the schedule that we're

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1 currently on.

2 And between the staff and Dominion, we  
3 were able to meet all those goals. Meet the  
4 staff's issues, resolutions on all this.

5 And on top of that we did have, if you  
6 look at one of our audit plans, in fact, Audit Plan  
7 2, you'll get a summary of all the issues the staff  
8 was resolving through this entire seismic closure  
9 plan. We ended up with 62.

10 We were tracking it for a couple  
11 purposes. Just so we knew where we were as far as  
12 the RAIs. Had very open public information for the  
13 public to see what we were actually reviewing. And  
14 just so that we could keep a track of all the  
15 issues that we are trying to resolve with the  
16 Applicant.

17 So you can see a very detailed list of  
18 all the issues and the sub-issues as part of those  
19 issues. There was a total of, what did I say, 60-  
20 some issues that had even sub-issues.

21 And every one of those, they were, it  
22 didn't look like we'd ever end to be honest. And  
23 the key to closing these issues was these face-to-  
24 face, onsite GEH audits where the staff spent, we  
25 spent a week, and we worked to resolve all these,

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1 to review all the documents and raise additional  
2 issues.

3 We might have gone into Audit 1 with 30  
4 issues; we came out of Audit 1 with 60 issues or  
5 something to that effect. Nothing significant, but  
6 just, hey, we want you to do additional analysis or  
7 benchmarking, or whatever the word is, on this  
8 particular aspect.

9 And so you can look at that. It's in  
10 our audit summary plans. It's pretty well detailed  
11 what went on there. And like I said, every meeting  
12 -- we held public meetings every other week to go  
13 through that list. We took public comments as we  
14 went along.

15 And like I said, it was very open and  
16 transparent on how we did this. And you'll see  
17 that in the write-up for the FSER, or on our SER on  
18 Chapter 3. And it also references these major  
19 meetings.

20 And I just point out, the last major  
21 meeting we had, prior to the second audit, Dominion  
22 essentially presented their results of all the  
23 analysis. The talk about, what's the change to the  
24 structural design based on this new seismic  
25 analysis?

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1                   And if I could sum it up in a nutshell,  
2           Dominion might be able to help me here, but  
3           essentially the physical plant does not change  
4           based on the seismic analysis.

5                   There was some, in the case of the PCCS  
6           structure, there was some increase bolt sizes to  
7           accommodate the new demands. And in addition,  
8           there was some rebar changes on some of the walls  
9           in the reactor building. And the fuel pool had  
10          some structural changes.

11                   So when you boil all this down, there  
12          was really -- is that all the things that captured,  
13          Gina? There was like three --

14                   MS. BORSH: That's essentially it.

15                   MR. SHEA: Yes. There was three  
16          issues. The big thing was that the physical plant  
17          did not change. It was not required. No  
18          additional thicknesses on the floors, the concrete  
19          or the walls. Just additional strength and  
20          reinforcement.

21                   MS. BORSH: Yes. Jim, may I interrupt?  
22          I just remembered, we should talk about the shear  
23          keys for the Firewater Service Complex.

24                   MR. SHEA: Okay.

25                   MS. BORSH: So that is different.

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1                   MR. SHEA:   Okay.   Right, that was the  
2                   other -- right.

3                   MS. BORSH:   Yes.

4                   MR. SHEA:   Yes.   Okay.   But that's it.  
5                   And you'll see that in our FSAR Chapter 3.  
6                   There's, what else did I want to say on this.   You  
7                   could see that we are really running on a tight  
8                   schedule with this.

9                   We had our March meeting, where they  
10                  gave us those final results.   We had an audit two  
11                  weeks after that, the March, to review all those  
12                  design, detailed structural design calcs.

13                  And following the end of that audit, we  
14                  found no significant issues.   In fact, all the  
15                  items of those action items were closed, expect for  
16                  maybe a couple, two or three, that then  
17                  subsequently, with subsequent meetings, we were  
18                  able to close.   And then the markups in the end of  
19                  May.   The final markups that the staff used to  
20                  finish their draft SER.

21                  And of course then, when the final SER  
22                  came in, FSAR came in, on Rev. 9 in June, actually  
23                  the seismic staff, you'll notice we have no  
24                  confirmatory items in Chapter 3 because actually  
25                  the seismic staff took the time to review all that

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1 extensive changes in Chapter 3 and confirm that  
2 everything has been incorporated. So that was a  
3 huge job that's taken off, kind off my shoulders as  
4 far as confirmatory items for Phase 6.

5 Again, so that's why I -- I look at  
6 that as the issue that I feel is the one that may  
7 interest you the most. And so the subcommittee  
8 meeting, we definitely will present, we'll have our  
9 staff present aspects of their review, an overview.

10 But if there's anything in, as far as  
11 that review goes, any specific things, we would  
12 like the feedback as far as that, what you want to  
13 see as far as our presentation in the subcommittee  
14 meeting.

15 With that, any questions on that?  
16 Okay.

17 The last thing I just want to point out  
18 is, I mentioned that the, essentially where we are.  
19 This is the public information that we wrote, I  
20 think it was the first week of September. We sent  
21 out a new application review letter. Which  
22 actually moved the date. I think it was two months  
23 that we improved the date or three months or  
24 something. Three months.

25 Which, okay, doesn't sound like much,

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1 but I thought it was. Dominion was happy. I  
2 thought it was a major effort on the staff's part  
3 in order to do that, given the amount of  
4 information that was reviewed and the amount of  
5 information that the final FSAR Rev. 9 included on  
6 the seismic aspect.

7 So going forward, we do have the -- so  
8 the next step is of course the subcommittee meeting  
9 that's to stay on track with our current schedule.  
10 And we have the final, we have the full committee  
11 meeting scheduled for November.

12 MR. SHUKLA: November?

13 MR. SHEA: With that, that's the end  
14 of my presentation. Unless there's any questions?

15 MEMBER MARCH-LEUBA: No conclusions?

16 MR. SHEA: No. My conclusion is, oh,  
17 here's my actual conclusion, which this is what I  
18 feel will be the, at least the lion share of our  
19 presentation coming up for the subcommittee  
20 meeting, was this Departure 3.71. And it affects a  
21 number of the chapters. And you see 2, 3, 4, 9 and  
22 19.

23 And so that's what we feel would be the  
24 big ticket items, as far as the subcommittee  
25 meeting that we're going to address.

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1                   So we'll have the representative,  
2                   essentially with Chapter 2, it's the seismology and  
3                   the Mineral earthquake. And we can talk about  
4                   that, and we'll have our guys in there to discuss  
5                   the aspects of that. And the rest of it is  
6                   actually the response.

7                   Now, Chapter 4 also talks about a,  
8                   there was a -- the fuel became an issue kind of  
9                   late, based on the fact that it exceeded the DCD as  
10                  far as the number, but did not exceed the actual  
11                  fuel design. But it did exceed what the DCD had as  
12                  far as seismic response to the fuel.

13                  And so we're going to present that  
14                  information there. And then other topics, as  
15                  requested.

16                  And I already heard, if I heard it  
17                  right, we want to go through all these exemptions,  
18                  at least in a cursory fashion, and discuss those.  
19                  So we'll have the proper staff to do that.

20                  MEMBER STETKAR: Yes, I would certainly  
21                  have people available in case. It's a subcommittee  
22                  meeting; we have one shot at this. And you don't  
23                  necessarily want to run the risk of somebody asking  
24                  a question that you say, well, we'll have to  
25                  follow-up in a full committee meeting. Because we

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1 don't have all that much time in the full committee  
2 meetings, as you're well aware.

3 MR. SHEA: Yes, makes sense. Any other  
4 questions, comments?

5 MR. SHUKLA: Do you want to talk about  
6 Chapter 7?

7 MEMBER BROWN: Yes, only Chapter 7.

8 MR. SHEA: Oh.

9 MEMBER BROWN: Don't forget that one.

10 MR. SHEA: Yes, Chapter 7.

11 MEMBER BROWN: It's in the transcript.  
12 You can find the two areas of specific.

13 MR. SHEA: Yes, I actually wrote them  
14 down.

15 MEMBER BROWN: Oh, you did?

16 MR. SHEA: Yes.

17 MEMBER BROWN: Okay.

18 MR. SHEA: Chapter 7 and all the  
19 exemptions.

20 MEMBER BROWN: And population.

21 MR. SHEA: And population. Okay. And  
22 I'll take back to the staff with those topics.

23 MEMBER BROWN: Oh, estimated time of  
24 escape. And evacuation.

25 MEMBER MARCH-LEUBA: Evacuation and

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1 escape.

2 MEMBER BROWN: I couldn't remember the  
3 other word.

4 MEMBER MARCH-LEUBA: Escape.

5 MEMBER BROWN: Escape from the site;  
6 evacuate the site. It's all kind of the same  
7 thing.

8 MEMBER POWERS: I'm going to have to  
9 take to beating you, Charlie.

10 MEMBER BROWN: Pardon?

11 MEMBER POWERS: I'm going to have to  
12 take up beating you.

13 MEMBER BROWN: And you're good at it.

14 MR. SHEA: All right, so if there's any  
15 additional details on any of these topics, Girija  
16 will let me know.

17 MR. SHUKLA: Yes.

18 CHAIRMAN RICCARDELLA: Okay, thank you.

19 MR. SHUKLA: Any from the other  
20 members?

21 CHAIRMAN RICCARDELLA: Any other  
22 comments from other members around the room?  
23 Questions?

24 MEMBER BROWN: Is the bridge line on?

25 CHAIRMAN RICCARDELLA: Yes. There's no

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1 members of the public in the room, since there's  
2 nobody else in the room, but if we could turn the  
3 bridge line on.

4 MS. GRAY: Hello, can you hear me?

5 CHAIRMAN RICCARDELLA: Yes.

6 MS. GRAY: Yes, hi. This is Erica Gray  
7 calling from Richmond, Virginia. And I'm also with  
8 the Sierra Club, Virginia Chapter. And just wanted  
9 to let you that, yes, I have been listening in.  
10 And I have been participating in the meetings when  
11 they do have them.

12 I do have a question though. I heard  
13 that obviously they moved the location of where the  
14 planned reactor will be, so I guess in some sense,  
15 that's a good thing because Reactor 1 and 2 sits on  
16 top of an ancient fault. So I'm not sure how far  
17 Reactor 3 would be from this ancient fault. Maybe  
18 you guys know?

19 CHAIRMAN RICCARDELLA: Thank you for  
20 the question. Our staff will address that, if  
21 you'd like to --

22 MEMBER STETKAR: We'll take note of  
23 that and make sure that we address it in our  
24 subcommittee meeting. But we typically don't  
25 answer questions from the public in kind of in real

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1 time.

2 MS. GRAY: Well that's fine. I  
3 definitely just want you all to --

4 MEMBER STETKAR: Yes.

5 MS. GRAY: -- I mean, because North  
6 Anna has a history. And obviously prior to it  
7 becoming the NRC, the Atomic Agency in Vepco were  
8 fine for misrepresenting that there was a fault  
9 they built Unit 1 and 2 on. And that fault line  
10 runs directly under 1 and 2.

11 This project is a real risk. And so  
12 participating in these meetings, I like how the  
13 presenter made it sound like they've done so much  
14 work, which I guess they have. But sitting in  
15 these meetings, I can tell you, from a public's  
16 perspective, that there is more work they really  
17 should do. Thank you.

18 CHAIRMAN RICCARDELLA: Okay, thank you.  
19 Is there anybody --

20 MR. KEEGAN: Hello?

21 CHAIRMAN RICCARDELLA: Yes, hello.

22 MR. KEEGAN: Hello, Michael Keegan in  
23 Michigan. I'm an interviewer on the Fermi 3  
24 proposal.

25 I'm not seeing the documents being

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1 filed in the record. And to my understanding, is  
2 there still seismic issues unresolved there?

3 And what is the -- is the central-  
4 eastern U.S. data been now encompassed and rolled  
5 into the Fermi 3?

6 I don't have a good status on that and  
7 there's missing records in the docket. So if you  
8 could help get that corrected I would much  
9 appreciate it.

10 CHAIRMAN RICCARDELLA: Yes.

11 MR. KEEGAN: I am tracking these  
12 closely. Going back on the Fermi, the cost to do  
13 the proper foundation on the Fermi 3, the cost of  
14 concrete would be exorbitant. Twice the cost of  
15 all the rest of the concrete.

16 So the seismic qualification is a big  
17 deal. It is a budget buster. And I want to know  
18 that they have met qualifications.

19 I am hearing advisory members talking  
20 about a couple orders of magnitude regarding how  
21 they deal with the seismic issues. So very  
22 important. Just want you to know the public is  
23 following very closely.

24 CHAIRMAN RICCARDELLA: Okay, thank you.  
25 Is there anybody else out there that would like to

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1       make a comment?   Hearing none, we will close the  
2       bridge line and I guess adjourn the meeting if  
3       there's no other comments.

4                       (Whereupon, the above-entitled matter  
5       went off the record at 2:43 p.m.)

6  
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North Anna

3

# North Anna Unit 3 COLA

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Planning Meeting with ACRS ESBWR  
Subcommittee

September 22, 2016

# Introduction

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- North Anna Unit 3 (NA3) site
- NA3 licensing milestones
- COLA changes since 2013
- Departures and Exemptions
- Potential topics for October 20 Meeting
- Conclusions

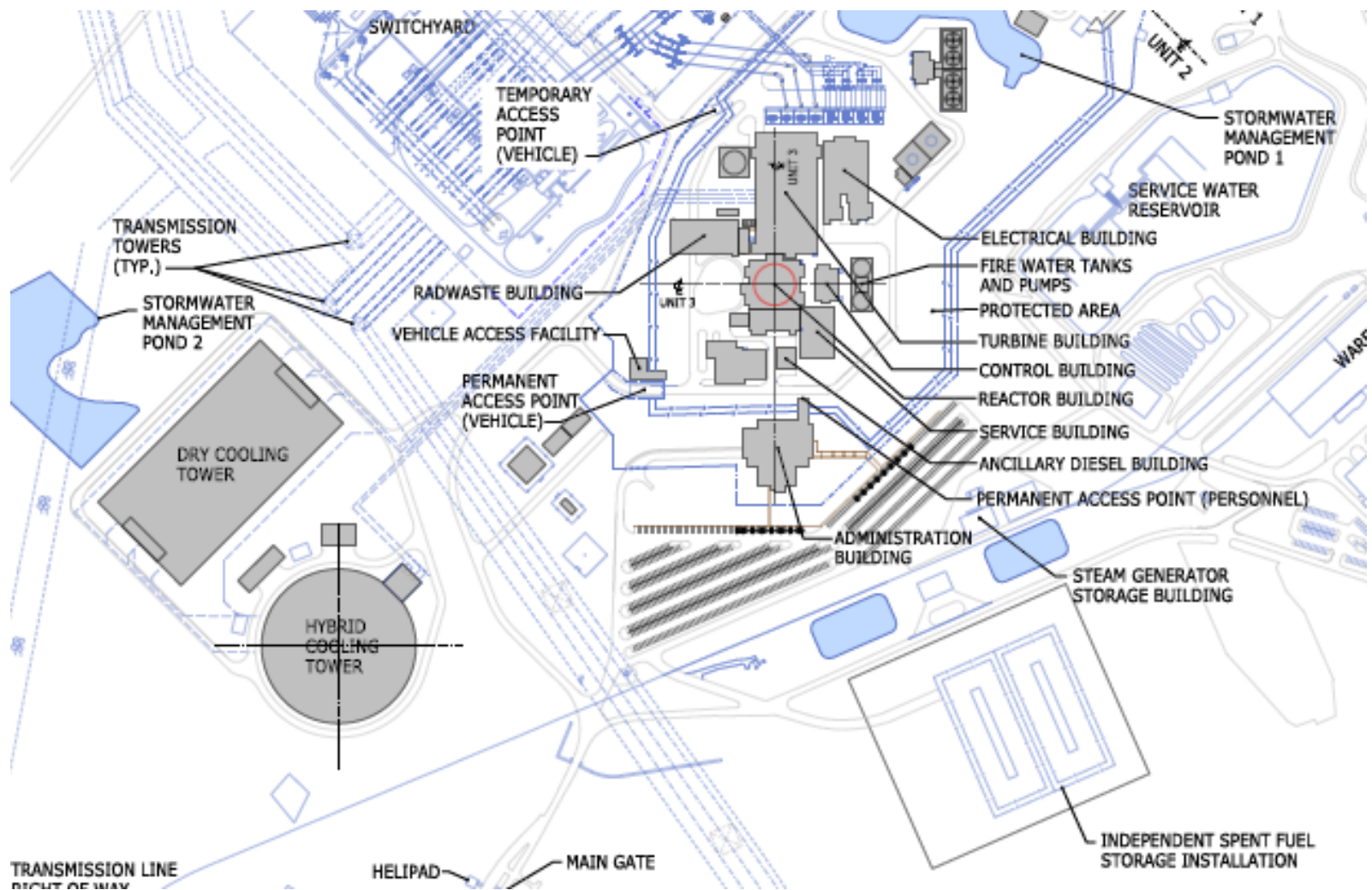


# North Anna Site Location

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# NA3 Plan View



# North Anna Site with Unit 3

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# NA3 Power Station

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# NA3 Milestones

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- ESP

- ESP Application submitted September 2003
- EIS issued December 2006
- ESP issued November 2007

- COLA (as ESBWR R-COLA)

- COLA submitted November 2007
- ACRS Subcommittee meetings June, July, August 2009
- ACRS Full Committee meeting October 2009
- ACRS Letter October 2009
- Supplemental EIS issued February 2010

- Technology Changes

- Changed to APWR technology May 2010
- Reverted to ESBWR technology April 2013

# Approach to Post-2013 COLA Changes

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- Standard COLA content generally followed R-COLA (Fermi 3) content
- Site-specific COLA content relied on information from previously reviewed ESBWR COLA as much as possible
- Substantial COLA revision was required to address changes to seismic ground motion response spectra
- Other changes were in response to NRC RAIs and SER open items

# NA3 Departures and Exemptions

Category	Topic	Same as Fermi 3?
Departure and Exemption	Seismic response spectra exceed CSDRS at certain frequencies/SSE Definition	No
Departure and Exemption	Relocate MG circuit breaker & motor-operated disconnects from Turbine Island/Transformer Yard to Intermediate Switchyard	No
Departure	Switchyard lightning protection design uses some Dominion rather than IEEE standards	No
Departure	Reconfigure Radwaste Bldg for 3 months of Class A & 10 years of Class B & C storage	Yes
Departure and Exemption	LWMS discharges only use radwaste effluent discharge piping, not CT blowdown line	No
Departure and Exemption	RG 1.221 results in higher velocities for certain hurricane wind-generated missiles	No
Exemption	Exception to certain regulations for SNM	Yes

# Potential Topics for October 19 Meeting

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FSAR Chapter(s)	Topic
2, 6	Site-specific issues associated with hazardous chemicals
2	Site-specific issues associated with flooding, groundwater, accidental releases
2, 3, 4, 9, 14, 19	Changes associated with new seismic ground motion response spectra and revised structure foundation design
3 and 19	RG 1.221 hurricane wind and missiles
8	Site-specific switchyard and offsite power
9	Site-specific water system changes
11	Changes to radwaste discharge piping



# Conclusions

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- Dominion implemented the design-centered review approach to maximize standardization
- Site-specific issues that were identified have been evaluated and resolved
- Seismic and structural analyses and resulting design enhancements demonstrate capability of structures, systems, and components
- North Anna site is adequate to support the construction and operation of NA3



## **North Anna 3 ESBWR COL Staff Review**

**James Shea PM (DNRL / NRO)**

# **North Anna 3 ESBWR COL Staff Review**

## **North Anna 3 Application Summary**

- ❖ September 25, 2003, North Anna ESP submittal.
- ❖ November 26, 2007 North Anna 3 ESBWR R-COL Application.
- ❖ June 28, 2010, Dominion revised its application to the US-APWR.
- ❖ April 25, 2013, Dominion reverted back to the ESBWR.
- ❖ August 30, 2013, Submitted RAI S-COL RAI reconciliation from FERMI R-COL after May, 2010, through May 31, 2013.
- ❖ June 24, 2014, Dominion revised application that incorporated by reference the ESBWR DCD, Revision 10.
- ❖ January 23, 2015, Dominion followed the design center approach and reviewed the recent Detroit Edison Company Fermi 3 COL application updates.
- ❖ October 22, 2014, Dominion Submitted its Seismic Closure Plan.
- ❖ June 22, 2016, Dominion Submitted Revision 9 FSAR incorporating the staff reviewed FSAR markups from RAI responses.



# North Anna 3 ESBWR COL Staff Review

## ESBWR DCD / FERMI Staff Review Summary

- ❖ August 24, 2005 - GEH submitted the ESBWR DCD.
  - ❖ September 18, 2008 - FERMI 3 S-COL Application.
  - ❖ March 9, 2011 - NRC staff issued the ESBWR DCD FSER.
  - ❖ February 12, 2014 - ESBWR DCD FSER NUREG-1966 Supplement 1.
  - ❖ August 16, 2014 - ESBWR DCD Final rule was issued.
  - ❖ May 1, 2015 - FERMI Combined License Issued.
- 
- ❖ FSER Chapter 1 - The ESBWR is rated up to 4500 MWt. Estimated gross electrical power output of 1594 MWe and net 1535 MWe.
  - ❖ FSER Chapter 1 - The Passive Containment Cooling System (PCCS) maintains containment pressure limits for DBAs.
  - ❖ FSER Chapter 19 - The applicant reported a CDF of  $1.65 \times 10^{-8}/\text{yr}$  for internal events initiated during power operation.
  - ❖ FSER Chapter 19 - ESBWR design reflects a reduction in risk compared to the design of currently operating BWRs.

# **North Anna 3 ESBWR COL Staff Review**

## **ESBWR DCD / FERMI ACRS Review Summary**

- ❖ April 10-11, 2014, the ACRS, reviewed the supplemental Final Safety Evaluation Report (FSER) NUREG-1966 Supplement 1.
- ❖ September 4, 2014, ACRS Full Committee meeting FERMI.
- ❖ September 22, 2014, ACRS Letter regarding FERMI 3.
- ❖ November 14, 2014, Staff response to ACRS three generic issues related to seismic re-evaluations, mitigating strategies, and spent fuel pool instrumentation.

# **North Anna 3 ESBWR COL Staff Review**

## **North Anna 3 ACRS Review Summary**

- ❖ June 18, 2009: ACRS subcommittee meeting presented SER/OI chapters 1, 4, 6, 7, 8, 15, 18, 19.
- ❖ July 21, 2009: ACRS subcommittee meeting presented SER/OI chapters 5, 9, 10, 11, & 12.
- ❖ July 22, 2009: ACRS subcommittee meeting presented SER/OI chapters 13, & 16.
- ❖ August 21, 2009: ACRS subcommittee meeting presented the remaining SER/OI chapters 2, 3, & 14.
- ❖ October 8, 2009: ACRS full committee meeting Phase 2 SER/OI

- 1) **SER Section 2.3 (MET), 2.4 (Hydro) & 2.5 Geology, Seismology & Geotech Eng**
- 2) **SER Section 3.9.6 (IST), Section 3.11 (EQ),**
- 3) **SER Section 9.2.1 (SW), 9.2.3 Makeup & 10.4.5 Circ Water**
- 4) **SER Section 14.3 – ITAAC**



# **North Anna 3 ESBWR COL Staff Review**

## **North Anna 3 ACRS Review Summary**

- ❖ **October 23, 2009, ACRS Letter to EDO Phase 2 SER (ML092890370)**
- 1. We have not identified any significant issues at this time regarding the North Anna COL application. The staff should proceed with the development of the final SER after resolving all open items.**
- 2. The completion of the ESBWR Design Certification SER with no open items is a major activity that remains to be resolved for the North Anna COL.**
- 3. We will review the resolution of North Anna COL open items when the final North Anna SER is issued by the staff.**



# North Anna 3 ESBWR COL Staff Review

## North Anna 3 Post Phase 2 Review Summary

- ❖ **Staff SER Phase 2 Open Items** - closed by incorporation of approved RAI response in the North Anna 3 FSAR Revision 8, June 2014. (71 Items)
- ❖ **Staff SER Phase 2 Confirmatory Items-** Incorporated in Revision 6 FSAR July 2013 (40 Items)
- ❖ **Staff SER Phase 4 Confirmatory Items** – Staff confirmation in progress in Revision 9 FSAR June 2016 (34 Items) –Phase 6 FSER.
- ❖ **Tier 1 [Fukushima] recommendations SECY-11-0137, as modified in SECY-12-0025** - applicable to North Anna 3 COL review SER Chapter 20:
  1. Recommendation 4.2: Equipment covered under 10 CFR 50.54(hh)(2)
  2. Recommendation 7.1: Spent fuel pool instrumentation
  3. Recommendation 9.3: Emergency preparedness regulatory actions
- ❖ North Anna 3 Standard Content with FERMI response to these recommendations.
- ❖ The applicant evaluated the seismic and flood hazards using current guidance and methodologies, therefore Recommendation 2.1 not addressed in SER Chapter 20.



# **North Anna 3 ESBWR COL Staff Review**

## **North Anna 3 Post Phase 2 Review Summary**

- ❖ All Safety RAIs are Resolved/Unresolved closed Over 900 Total RAIs.
- ❖ 62 E-RAIs submitted since April 2013.

# North Anna 3 ESBWR COL Staff Review

## North Anna 3 Post Phase 2 Review Summary

1	RAI 8616	01 - Introduction and Interfaces	Closed	Shea, James	6/15/2016
2	RAI 8459	02.05.04 - Stability of Subsurface Materials and Foundations	Closed	Shea, James	2/12/2016
3	RAI 8417	01.05 - Other Regulatory Considerations	Closed	Shea, James	1/7/2016
4	RAI 8074	01.05 - Other Regulatory Considerations	Closed	Shea, James	9/20/2015
5	RAI 7853	08.02 - Offsite Power System	Closed	Buckberg, Perry	5/23/2015
6	RAI 7820	02.05.02 - Vibratory Ground Motion	Closed	Weisman, Robert	7/7/2015
7	RAI 7810	03.07.02 - Seismic System Analysis	Closed	Buckberg, Perry	3/26/2015
8	RAI 7774	02.04.13 - Accidental Releases of Radioactive Liquid Effluents in Ground and Surface Waters	Closed	Buckberg, Perry	1/14/2015
9	RAI 7772	02.04.13 - Accidental Releases of Radioactive Liquid Effluents in Ground and Surface Waters	Closed	Buckberg, Perry	1/11/2015
10	RAI 7745	06.04 - Control Room Habitability System	Closed	Buckberg, Perry	1/8/2015
11	RAI 7710	02.04.12 - Groundwater	Closed	Buckberg, Perry	12/21/2014
12	RAI 7708	02.04.02 - Floods	Closed	Patel, Chandu	1/10/2015
13	RAI 7704	12.02 - Radiation Sources	Closed	Buckberg, Perry	12/14/2014
14	RAI 7703	12.02 - Radiation Sources	Closed	Buckberg, Perry	12/14/2014
15	RAI 7701	11.04 - Solid Waste Management System	Closed	Patel, Chandu	11/14/2014
16	RAI 7697	11.02 - Liquid Waste Management System	Closed	Buckberg, Perry	12/14/2014
17	RAI 7696	01 - Introduction and Interfaces	Closed	Buckberg, Perry	11/28/2014
18	RAI 7693	11.04 - Solid Waste Management System	Closed	Williams, Stephen	12/21/2014
19	RAI 7692	11.02 - Liquid Waste Management System	Closed	Weisman, Robert	10/22/2014
20	RAI 7691	11.02 - Liquid Waste Management System	Closed	Weisman, Robert	10/22/2014

# North Anna 3 ESBWR COL Staff Review

## North Anna 3 Post Phase 2 Review Summary

21	RAI 7690	11.02 - Liquid Waste Management System	Closed	Williams, Stephen	5/3/2015
22	RAI 7689	11.02 - Liquid Waste Management System	Closed	Buckberg, Perry	12/14/2014
23	RAI 7683	13.04 - Operational Programs	Closed	Patel, Chandu	11/14/2014
24	RAI 7682	12.03-12.04 - Radiation Protection Design Features	Closed	Patel, Chandu	11/7/2014
25	RAI 7681	14.02 - Initial Plant Test Program - Design Certification and New License Applicants	Closed	Patel, Chandu	11/14/2014
26	RAI 7680	12.03-12.04 - Radiation Protection Design Features	Closed	Patel, Chandu	11/14/2014
27	RAI 7679	12.03-12.04 - Radiation Protection Design Features	Closed	Patel, Chandu	11/14/2014
28	RAI 7677	12.03-12.04 - Radiation Protection Design Features	Closed	Patel, Chandu	11/14/2014
29	RAI 7676	12.02 - Radiation Sources	Closed	Patel, Chandu	11/14/2014
30	RAI 7670	09.02.04 - Potable and Sanitary Water Systems	Closed	Buckberg, Perry	12/14/2014
31	RAI 7660	02.03.05 - Long-Term Atmospheric Dispersion Estimates for Routine Releases	Closed	Patel, Chandu	10/8/2014
32	RAI 7654	03.07.04 - Seismic Instrumentation	Closed	Patel, Chandu	11/13/2014
33	RAI 7646	02.04 - Hydrology	Closed	Klos, John	8/28/2014
34	RAI 7642	02.05.01 - Basic Geologic and Seismic Information	Closed	Patel, Chandu	8/31/2014
35	RAI 7580	04.02 - Fuel System Design	Closed	Patel, Chandu	8/23/2014
36	RAI 7559	06.04 - Control Room Habitability System	Closed	Chien, Nan	7/20/2014
37	RAI 7557	12.02 - Radiation Sources	Closed	Patel, Chandu	8/31/2014
38	RAI 7556	12.02 - Radiation Sources	Closed	Patel, Chandu	8/31/2014
39	RAI 7552	03.09.02 - Dynamic Testing and Analysis of Systems Structures and Components	Closed	Patel, Chandu	7/24/2014
40	RAI 7547	19.02 - Review of Risk Information Used to Support Permanent Plant-Specific Changes to the Licensing Basis: General Guidance	Closed	Patel, Chandu	7/24/2014

# North Anna 3 ESBWR COL Staff Review

## North Anna 3 Post Phase 2 Review Summary

41	RAI 7546	02.02.03 - Evaluation of Potential Accidents	Closed	Patel, Chandu	8/17/2014
42	RAI 7545	02.02.03 - Evaluation of Potential Accidents	Closed	Klos, John	6/27/2014
43	RAI 7538	03.08.05 - Foundations	Closed	Patel, Chandu	7/4/2014
44	RAI 7537	03.08.04 - Other Seismic Category I Structures	Closed	Patel, Chandu	7/4/2014
45	RAI 7536	03.07.02 - Seismic System Analysis	Closed	Patel, Chandu	7/4/2014
46	RAI 7535	03.07.03 - Seismic Subsystem Analysis	Closed	Patel, Chandu	7/4/2014
47	RAI 7533	03.05.01.04 - Missiles Generated by Tornadoes and Extreme Winds	Closed	Patel, Chandu	7/18/2014
48	RAI 7520	03.07.01 - Seismic Design Parameters	Closed	Patel, Chandu	7/4/2014
49	RAI 7483	13.03 - Emergency Planning	Closed	Patel, Chandu	6/4/2014
50	RAI 7481	09.02.01 - Station Service Water System	Closed	Patel, Chandu	5/29/2014
51	RAI 7477	02.05.01 - Basic Geologic and Seismic Information	Closed	Patel, Chandu	5/14/2014
52	RAI 7476	13.06.01 - Physical Security - Combined License	Closed	Patel, Chandu	6/6/2014
53	RAI 7474	03.07.04 - Seismic Instrumentation	Closed	Patel, Chandu	5/1/2014
54	RAI 7473	02.05.02 - Vibratory Ground Motion	Closed	Patel, Chandu	5/1/2014
55	RAI 7472	02.05.02 - Vibratory Ground Motion	Closed	Patel, Chandu	5/1/2014
56	RAI 7471	03.05.01.04 - Missiles Generated by Tornadoes and Extreme Winds	Closed	Patel, Chandu	5/2/2014
57	RAI 7468	02.05.05 - Stability of Slopes	Closed	Patel, Chandu	5/1/2014
58	RAI 7414	03.12 - ASME Code Class 1, 2, and 3 Piping Systems and Piping Components and Their Associated Supports	Closed	Patel, Chandu	3/12/2014
59	RAI 7411	13.06.01 - Physical Security - Combined License	Closed	Caldwell, Robert	3/1/2014
60	RAI 7309	13.06.01 - Physical Security - Combined License	Closed	Klos, John	6/1/2014
61	RAI 7286	19 - Probabilistic Risk Assessment and Severe Accident Evaluation	Closed	Patel, Chandu	12/7/2013
62	RAI 7278	03.09.06 - Functional Design Qualification and Inservice Testing Programs for Pumps, Valves, and Dynamic Restraints	Closed	Weisman, Robert	10/24/2013

# North Anna 3 ESBWR COL Staff Review

## North Anna 3 Post Phase 2 Review Summary

Staff Review **Focus** included the North Anna 3 Site Characteristics as described in FSAR Chapter 2, Chapter 3 and Part 7 of the COL application including:

- Exemptions
- ESBWR Tier 2 Departures
- Variances from the ESP

<b>COL Part 7 Exemption</b>	<b>Description</b>	<b>Regulation</b>	<b>Location of Evaluation in FSER</b>
<b>1</b>	Special nuclear material control and accounting (MC&A) program description	10 CFR 70.22(b), 70.32(c), 74.31, 74.41, 74.51	Chapter 1 Section 1.5.5
<b>2</b>	An exemption is requested for certain information depicted on DCD, Tier 1, Figure 2.13.1-1, <i>Electric Power Distribution System Functional Arrangement</i> , Sheet 1.	As permitted by 10 CFR 52.7 and Section VIII.A.4 of the Design Certification Rule,	Chapter 8 Section 8.1.4
<b>3</b>	The exemption involves a new definition in Tier 1 and a change to DCD Tier 1, Table 5.1-1, Footnote (4) to define the Unit 3 SSE for purposes of performing the verification, through inspections, tests, and analyses, that applicable acceptance criteria specified in DCD Tier 1 ITAAC are met for the seismic design, analyses, and qualification of structures, systems, and components.	10 CFR §§50.12, 52.7, and 52.63(b)(1).	Chapter 3 Section 3.7.4
<b>4</b>	"The LWMS either returns processed water to the condensate system or discharges to the environment via the circulating water system." This description is changed to: "The LWMS either returns processed water to the condensate system or discharges to the environment using the liquid radwaste effluent discharge pipeline.".	10 CFR §§ 50.12, 52.7, and 52.63(b)(1).	Chapter 11 Section 11.2.4
<b>5</b>	This exemption modifies Footnote 7 to DCD Tier I Table 5.1-1 to specify that the Unit 3 site-specific missile velocities derived in accordance with RG 1.221 are used in the design of structures housing RTNSS equipment when the site-specific missiles are more severe than the missiles specified in the DCD.	10 CFR §§ 50.12, 52.7, and 52.63(b)(1).	Chapter 19 Appendix 19A

<b>DCD Departure Number</b>	<b>Location of Evaluation in NA3 COL</b>	<b>Staff Evaluation FSER Section</b>	<b>Description and Acceptability</b>
NAPS DEP 3.7-1	FSAR Sections 1.3, 2.0, 3.7, 3.8, 4.2, 19.2, and Appendices 3A, 3C, and 19A.		Ground Response Spectra for Seismic Structural Loads and Floor Response Spectra
NAPS DEP 8.1-1	FSAR Section Figure 8.1-1, Sheet 1, and Section 8.2.1.2.1,		Figure 8.1-1, Sheet 1, <i>Electrical Power Distribution System</i>
NAPS DEP 8.1-2:	FSAR Section 8.1.5.2.4 and Table 8.1-1R.		On-site Power System SRP Criteria Applicability Matrix
NAPS DEP 11.4-1	FSAR Sections 1.2.2.10.2, 1.2.2.16.9, 11.4, 11.4.1, 11.4.2.2.1, 11.4.2.2.2, 11.4.2.2.4, 11.4.2.3.1, 12.2 and 12.3; FSAR Tables 1.9-11R, 9A.5- 5R, 11.4-1R, 11.4-2R, 12.2-22R, and 12.3-8R; and FSAR Figures 1.2-21R, 1.2-22R, 1.2-23R, 1.2- 24R, 1.2-25R, 9A.2- 20R, 9A.2-21R, 9A.2- 22R, 9A.2-23R, 9A.2-24R, 11.4-1R, 11.4-2R, 12.3- 19R, 12.3-20R, 12.3- 21R, 12.3-22R, 12.3- 39R, 12.3-40R, 12.3-41R, 12.3-42R, 12.3-61R, 12.3-62R, 12.3-63R, and 12.3-64R.		Long-term, Temporary Storage of Class B and C Low-Level Radioactive Waste
NAPS DEP 12.3-1	FSAR Section 11.2.3.2		Liquid Radwaste Effluent Discharge Piping Flow Path
NAPS DEP 19A-1	FSAR Section 2.0 Table 2.2-201, and Appendix 19A.		Design of Structures Housing RTNSS Equipment for Hurricane Wind Generated Missiles

## **COL Variances from the ESP**

NAPS ESP VAR 2.0-1 - Long-Term Dispersion Estimates ( $\chi/Q$  and  $D/Q$ )

NAPS ESP VAR 2.0-2 - Hydraulic Conductivity

NAPS ESP VAR 2.0-3 - Hydraulic Gradient

NAPS ESP VAR 2.0-4 - Vibratory Ground Motion

NAPS ESP VAR 2.0-5 - Distribution Coefficients ( $K_d$ )

NAPS ESP VAR 2.0-6 - DBA Source Term Parameters and Doses

NAPS ESP VAR 2.0-7 - Coordinates and Abandoned Mat Foundations

NAPS ESP VAR 2.3-1 - Tornado Site Characteristics

NAPS ESP VAR 2.4-1 - Void Ratio, Porosity, and Seepage Velocity

NAPS ESP VAR 2.4-2 - NAPS Water Supply Well Information

NAPS ESP VAR 2.4-3 - Well Reference Point Elevation

NAPS ESP VAR 2.4.4 - Lake Level Increase

NAPS ESP VAR 2.4-5 - Lake Anna PMF Level Increase

NAPS ESP VAR 2.5-1 - Stability of Slopes

NAPS ESP VAR 2.5-2 - [Deleted]

NAPS ESP VAR 12.2-1 - Gaseous Pathway Doses

NAPS ESP VAR 12.2-2 - [Deleted]

NAPS ESP VAR 12.2-3 - Annual Liquid Effluent Releases

NAPS ESP VAR 12.2-4 - Existing Units' Doses

NAPS ESP VAR 12.2-5 - Annual Gaseous Effluent Releases



# North Anna 3 ESBWR COL Staff Review

## North Anna 3 Seismic Closure Plan SCP

- ❖ October 22, 2014, Dominion Submitted its Seismic Closure Plan.
- ❖ September 28-October 2, 2015 – Staff seismic demand analyses audit.
- ❖ December 2015: RAI responses and COLA markups structural design
- ❖ March 21-25, 2016 – Staff site-specific design analyses of category I seismic structures audit.
- ❖ Staff maintained an action list of 61 items that tracked staff issues related to the review of FSAR Chapter 3 Section 3.7 and 3.8.
- ❖ Final FSAR Markups submitted end of May 2016
- ❖ Approximately 40 Public Meetings / Phone Meetings Held
- ❖ Staff Completed AFSEAR Chapter 3 on September 9, 2016 to complete North Anna 3 COL AFSE Phase 4.

# North Anna 3 ESBWR COL Staff Review

## North Anna Combined License Application Review Milestones

### **Safety Review:**

<i>Task Description</i>	<b>Completion Date</b>
Phase 1 - Preliminary Safety Evaluation Report (PSER) and Requests for Additional Information	Completed August 2008
Phase 2 - SER with Open Items (OIs)	Completed July 2009
Phase 3 - Advisory Committee on Reactor Safeguards (ACRS) Review of SER with OIs	Completed November 2009
Phase 4 - Advanced SER with no OIs	August 2016
Phase 5 – ACRS Review of Advanced SER with no OIs	November 2016
Phase 6 – Final SER	January 2017

### **Environmental Review:**

<i>Task Description</i>	<b>Completion Date</b>
Draft Supplemental Environmental Impact Statement	August 2008
Final Supplemental Environmental Impact Statement	February 2010

# **North Anna 3 ESBWR COL Staff Review ACRS October 20 Meeting Topics**

- ✓ **Departures 3.7-1 from the reference ESBWR DCD** - Staff plans to present the staff review of the North Anna 3 site specific seismic design, analyses, and qualification of structures, systems, and components to the ACRS Subcommittee on October 20, 2016.
- ✓ **Departures 3.7-1 - FSER Chapters 2, 3, 4, 9, & 19**
- ✓ **Other Topics as Requested from the ACRS**