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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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601<sup>ST</sup> MEETING

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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THURSDAY

FEBRUARY 7, 2013

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ROCKVILLE, MARYLAND

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The Advisory Committee met at the Nuclear  
Regulatory Commission, Two White Flint North, Room  
T2B1, 11545 Rockville Pike, at 8:30 a.m., J. Sam  
Armijo, Chairman, presiding.

## 1 COMMITTEE MEMBERS:

2 J. SAM ARMIJO, Chairman

3 JOHN W. STETKAR, Vice Chairman

4 HAROLD B. RAY, Member-at-Large

5 SANJOY BANERJEE, Member

6 DENNIS C. BLEY, Member

7 CHARLES H. BROWN, JR. Member

8 MICHAEL L. CORRADINI, Member

9 DANA A. POWERS, Member

10 JOY REMPE, Member

11 MICHAEL T. RYAN, Member

12 STEPHEN P. SCHULTZ, Member

13 WILLIAM J. SHACK, Member

14 GORDON R. SKILLMAN, Member

15

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17

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1 NRC STAFF PRESENT:

2 PETER WEN, Designated Federal Official

3 DAVID AYRES

4 JIM BEARDSLEY

5 TIMOTHY FRYE

6 THOMAS KOZAK

7 KERRI KAVANAUGH

8 JOHN LUBINSKI

9 JAMES LUEHMAN

10 RICHARD McINTYRE

11 PATRICK MILANO

12 RICK RASMUSSEN

13 ED ROACH

14 ABDUL SHE

15

16 ALSO PRESENT:

17 MARK DIRADO

18 DAN DORAN

19 MICHAEL GALLAGHER

20 GENE KELLY

21 MARK MARQUIS

22 MARK MILLER

23 GREG SPRISLER

24 TOM DOUGHERTY

25 CHRIS MUDRICK

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J. Sam Armigo

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

(8:30 a.m.)

CHAIR ARMIJO: Good morning. The meeting will now come to order. This is the first day of the 601st meeting of the Advisory Committee on Reactor Safeguards. During today's meeting the Committee will consider the following.

First, the final Safety Evaluation Report associated with the License Renewal Application for the Limerick Generating Station, Units 1 and 2.

Second, component fabrication and inspection of a large nuclear steam supply system. Three, revised Construction Reactor Oversight Process assessment program.

This meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act. Mr. Peter Wen is the designated federal official for the initial portion of the meeting.

We have received no written comments or requests to make oral statements from members of the public regarding today's sessions. There will be a phone bridgeline. To preclude interruption of the meeting, the phone will be placed in a listen-in mode during the presentation and Committee discussion.

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1           A transcript of portions of the meeting is  
2 being kept, and it is requested that speakers use one  
3 of the microphones, identify themselves and speak with  
4 sufficient clarity and volume so that they can be  
5 readily heard.

6           As an item of interest, we are sad to  
7 learn of the passing of former ACRS member, Dr. David  
8 Okrent. Dr. Okrent, Professor Emeritus of Engineering  
9 and Applied Science at UCLA, and a well renowned  
10 nuclear physicist and pioneer in the field of nuclear  
11 reactor safety, died at his home in Los Angeles on  
12 December 14th, 2012, at the age of 90.

13           He received his B.S. in Mechanical  
14 Engineering from Stevens Institute of Technology in  
15 1943, and a PhD degree in physics in 1950 from Harvard  
16 University. In 1963, Dr. Okrent was selected to serve  
17 on the ACRS, which advised the Atomic Energy  
18 Commission, which is now of course the Nuclear  
19 Regulatory Commission.

20           On issues related to nuclear safety, Dr.  
21 Okrent served on the ACRS for 24 years, or six terms,  
22 and as its chairman in 1966. During his time as  
23 chairman and while on the Committee he was well known  
24 for his unwavering commitment to reactor safety.

25           Under his leadership, the ACRS endorsed a

1 development of an NRC quantitative safety goal policy  
2 and developed the first set of quantitative safety  
3 goals for nuclear power plants, and that's in the  
4 NUREG-0739, An Approach To Quantitative Safety Goal.  
5 These safety goals were the basis for the later NRC  
6 work on the development of an NRC safety goal policy.

7 With that I'd like to turn the meeting  
8 over to Dr. Bill Shack who will lead us through the  
9 Limerick License Renewal briefing. Bill?

10 MEMBER SHACK: Our License Renewal  
11 Subcommittee met on September 5th, 2002, to discuss  
12 the Limerick License Renewal. There were two open  
13 items at that time. One was a license commitment to  
14 fully consider operating experience between issuance  
15 of the renewed license and implementation of program  
16 enhancements.

17 The other was regarding the Aging  
18 Management Program for the portion of the containment  
19 liner and the downcomers exposed to water in the  
20 suppression pool. The liner is carbon steel which has  
21 an inorganic zinc coating for corrosion protection.

22 Limerick has experienced coating loss and  
23 degradation and some corrosion of the liner. The  
24 staff and applicant have now reached agreement on an  
25 acceptable Aging Management Program based on

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1 enhancements to the ASME Section XI IWE program.

2 And we'll open off with John Lubinski, the  
3 director of the Division of License Renewal in NRR.

4 MR. LUBINSKI: Thank you, Dr. Shack. On  
5 behalf of the staff we are pleased to be here today,  
6 interact with ACRS and to discuss the License Renewal  
7 Application for the Limerick Generating Station.

8 We have representatives from the NRR staff  
9 here to support our presentation. Those who will be  
10 seated at the table during presentations today will be  
11 Patrick Milano, the Licensing Renewal project manager  
12 for Limerick; Matthew Homiak, mechanical engineer in  
13 our Aging Management Reactor Systems Branch; Allen  
14 Hiser, senior technical advisor for License Renewal  
15 and Aging Management; and Abdul Sheik, the senior  
16 structural engineer in the Aging Management of  
17 Structures, Electrical and Systems Branch.

18 We also have other NRC staff present for  
19 the discussions including several branch chiefs from  
20 the Division of License Renewal. We have Dennis  
21 Morey, Safety Projects Branch chief; Michael Marshall,  
22 Structural, Electrical and Systems Branch chief; Bo  
23 Pham, Aging Management of Reactor Systems Branch  
24 chief; and Shahram Ghasemian, acting Aging Management  
25 of Plant Systems Branch chief.

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1 I would like to note a few things about  
2 the Limerick application. First, the Limerick  
3 application is the first application we have reviewed  
4 where the applicant reviewed its programs against GALL  
5 Rev 2. We do believe that GALL Rev 2 was successful  
6 in introducing efficiencies in the review, and I  
7 believe the Limerick application supports that  
8 conclusion.

9 Second, at the subcommittee meeting last  
10 September we pointed out that two open items remain  
11 for review by the NRC staff. As you will hear today,  
12 the applicant adequately addressed these items and NRC  
13 revised the Safety Evaluation Report to now show the  
14 closure of these two items.

15 Finally, while the ACRS does not review  
16 the environmental aspects of the reviews, I do need to  
17 note that the waste confidence decision, which was  
18 issued by the court last year, has affected the review  
19 schedules for License Renewal. Specifically, a  
20 decision on whether to approve issuance of a renewed  
21 license will not occur until the waste confidence  
22 decision is adequately addressed.

23 While we have completed our safety review,  
24 we are aware that issues may arise between now and the  
25 time when the waste confidence decision is adequately

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1 addressed. These may arise from staff review of  
2 operating experience, review of other applications,  
3 and review of the annual updates by the applicants of  
4 their License Renewal Applications. The staff will  
5 consider if and how this new information could impact  
6 pending license renewal activities, including  
7 Limerick.

8 In order to keep the review process moving  
9 and to not create a waterfall of ACRS meetings when we  
10 get ready to make final decisions on License Renewals,  
11 we propose to maintain our schedule with ACRS and  
12 request decision letters.

13 However, we will keep ACRS informed of any  
14 changes to SERs or supplements, so that the ACRS can  
15 assess whether it needs to have any follow-up  
16 discussions with the applicant or staff on these  
17 changes.

18 This concludes my opening remarks. I  
19 would now like to turn over the presentation to Mr.  
20 Michael Gallagher, senior vice president for License  
21 Renewal with Exelon.

22 MR. GALLAGHER: Thank you, Mr. Lubinski.  
23 Good morning. My name is Mike Gallagher, and again  
24 I'm the vice president of the License Renewal for  
25 Exelon. Slide 1, please.

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1           Before we begin today's presentation I'd  
2           like to introduce the presenters. To my right is Gene  
3           Kelly. And Gene is the Exelon License Renewal manager  
4           for Limerick. Gene has 38 years of nuclear power  
5           plant experience, including 13 years at Limerick.

6           To Gene's right is Dan Doran. And Dan is  
7           our Limerick Engineering director. Dan has 21 years  
8           of nuclear power plant experience at Limerick. To  
9           Dan's right is Mark DiRado. Mark is our Programs  
10          Engineering manager, and Mark has 13 years of nuclear  
11          power plant experience at Limerick.

12          In addition to today's presenters we also  
13          have with us today Tom Dougherty. Tom is our site  
14          vice president. And we have Chris Mudrick, and he's  
15          our senior vice president of Mid-Atlantic Operations.

16          Slide 2. Slide 2 shows our agenda for  
17          today's presentation. We will begin with a  
18          description of the site and an overview of the  
19          Limerick operating history, followed by an overview of  
20          our License Renewal Application.

21          We will then continue with the discussions  
22          of our resolutions of the open items regarding  
23          operating experience and the suppression pool liner,  
24          redeveloped robust Aging Management Programs that will  
25          ensure the continued safe operation of the Limerick

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1 Generating Station.

2 We appreciate this opportunity to make  
3 this presentation and look forward to any questions  
4 you may have. With that I'll now turn the  
5 presentation over to Dan Doran.

6 MR. DORAN: Thank you, Mike. Slide 3,  
7 please. Good morning. My name is Dan Doran and I am  
8 the engineering director at Limerick Generating  
9 Station. Limerick Units 1 and 2 are General Electric  
10 BWR-4 designs with Mark II containments that are owned  
11 and operated by Exelon.

12 The station is located on the east bank of  
13 the Schuylkill River in Limerick Township, Montgomery  
14 County Pennsylvania, and is approximately four miles  
15 downriver of Pottstown and 35 miles upriver from  
16 Philadelphia. On this slide you will see that we have  
17 pointed out some of the key site features. Slide 4,  
18 please.

19 This slide provides an overview of the  
20 Limerick Station operation and several major physical  
21 improvements. Limerick was initially licensed to 3293  
22 megawatts thermal in 1984 for Unit 1 and 1989 for Unit  
23 2. A five percent increase in rate power on both  
24 units was performed in 1995 and 1996.

25 In April 2007, a 1.65 percent measurement

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1 uncertainty recapture power uprate was implemented  
2 which increased the thermal rating on each unit to  
3 their current rating of 3515 megawatts thermal.

4 Exelon has also continued to make  
5 substantial improvements to both units, such as  
6 turbine rotor replacements, digital feedwater control  
7 modifications, independent spent fuel storage, main  
8 transformer replacements, and the recent addition of  
9 recirculation pump adjustable speed drive units.  
10 Limerick has operated on 24-month fuel cycles. The  
11 current 24-month capacity factor is 90.41 percent for  
12 both units.

13 The License Renewal Application was  
14 submitted on June 22nd, 2011, and our current licenses  
15 expire on October 26th, 2024 for Unit 1, and June  
16 22nd, 2029 for Unit 2.

17 I'll now turn it over to Gene Kelly who  
18 will present to you the highlights of the License  
19 Renewal Application.

20 MR. KELLY: Thank you, Dan. Slide 5,  
21 please. Good afternoon. My name is Gene Kelly and  
22 I'm the License Renewal manager. My portion of the  
23 presentation covers the highlights of our License  
24 Renewal Application, including the Aging Management  
25 Programs and commitments as well as an overview of our

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1 resolution of the two open items in the SER. Slide 6,  
2 please.

3 In preparing this application, Exelon used  
4 industry and NRC guidance with the goal of making our  
5 application as consistent with the GALL as possible.  
6 Our submittal was based on GALL Revision 2.

7 There are 45 Aging Management Programs  
8 including 34 existing programs and 11 new programs  
9 developed for the application. All but one of the  
10 programs were consistent with the GALL. The one  
11 exception to GALL was associated with the reactor head  
12 closure stud bolting program, specifically the  
13 preventive measure for measured or actual yield  
14 strength.

15 There are 47 license renewal commitments.  
16 These commitments are managed under an existing  
17 process consistent with NEI 99-04 and they're tracked  
18 as part of that process. Forty-five of these  
19 commitments are associated with aging management  
20 programs.

21 One commitment institutes an operating  
22 experience program enhancement, another commitment  
23 will reevaluate a Unit 1 recirculation nozzle safe-end  
24 flaw prior to the period of extended operation. This  
25 flaw was mitigated by a mechanical stress improvement

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1 in 1992. Slide 7, please.

2 There were two open items in the SER with  
3 Open Items that are now closed in the final SER.  
4 Slide 8, please. The first item involves operating  
5 experience for aging management programs. The staff  
6 requested additional information to determine whether  
7 operating experience will be considered in the period  
8 between issuance of the renewed licenses and the  
9 implementation of the program enhancements.

10 Exelon revised its commitments and the  
11 UFSAR supplement to require that the enhancements to  
12 the Limerick Operating Experience Program are  
13 implemented no later than the date that the renewed  
14 operating licenses are issued. The reviews will be  
15 conducted on an ongoing basis throughout the terms of  
16 the renewed licenses. Slide 9, please.

17 The second item involves aging management  
18 of the suppression pool liner. The NRC staff  
19 requested additional information in five main areas.  
20 First, our prioritized approach to implementation of  
21 the coating maintenance plan.

22 Second, our methods for underwater  
23 examination. Third, the expected corrosion mechanism  
24 that's present in the suppression pools. Fourth, the  
25 ASME requirements for Exelon owner-defined criteria

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1 that are used for augmented examination. And fifth,  
2 the recoat criteria that we've established for the  
3 downcomers.

4 To resolve the open item, Exelon updated  
5 IWE commitments to specify the prioritized approach  
6 for implementation of the Coating Maintenance Plan as  
7 well as the conduct of ultrasonic exams to validate  
8 our visual techniques used during the IWE  
9 examinations.

10 Additional information was provided on the  
11 underwater examination methods and the mechanism of  
12 general corrosion that's present in both suppression  
13 pools. Also, Exelon agreed to add the owner-defined  
14 criteria for recoat and augmented examination of the  
15 downcomers to the UFSAR supplement as well as in the  
16 ASME Section XI IWE program procedures.

17 We are confident that this Aging  
18 Management Program will be effective in maintaining  
19 the coating and minimizing liner metal loss.

20 At the Subcommittee meeting we provided a  
21 detailed presentation of the suppression pool open  
22 item. I'm going to now turn the presentation over to  
23 Mark DiRado who will provide the summary for the  
24 benefit of the Full Committee members.

25 MR. DIRADO: Thank you, Gene. Slide 10,

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1 please. Good afternoon. My name is Mark DiRado and  
2 I'm the engineering programs manager at Limerick.

3 First I'll summarize some key points about  
4 the Limerick primary containment design, specifically  
5 the suppression pool. I will then address these key  
6 points on subsequent slides. Slide 11, please.

7 At Limerick, primary containment is a Mark  
8 II design incorporating a six-foot to eight-foot thick  
9 reinforced concrete containment and a 250-mil thick  
10 metal liner. The liner is twice as thick as needed to  
11 withstand design loads.

12 Excellent water chemistry in the  
13 suppression pool in combination with the normally  
14 inerted suppression pool airspace results in a low,  
15 gentle corrosion rate. The material condition of the  
16 liner has been thoroughly characterized, this part of  
17 ASME coat inspections, and the material condition is  
18 therefore well understood.

19 Exelon is committed to an Aging Management  
20 Program begun well in advance of the period of  
21 extended operation, which will ensure that the  
22 suppression pool liner intended function is maintained  
23 throughout the period of extended operation. Slide  
24 12, please.

25 The Limerick Mark II primary containment

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1 design is shown on the diagram on this slide. Primary  
2 containment consists of a drywell and a suppression  
3 pool. A slab separates the upper and lower sections  
4 of the containment. The suppression pool is situated  
5 below the drywell, and a continuous carbon steel  
6 liner, which is shown in the blue color, functions as  
7 a leakage barrier.

8 Downcomers provide a direct path for  
9 uncondensed steam from the drywell to the water in the  
10 suppression pool during a design basis event. Slide  
11 13, please.

12 The Limerick suppression pool has a  
13 continuous carbon steel liner 250 mils thick coated  
14 with inorganic zinc. The liner has 100 percent  
15 thickness margin, a 125-mil large area thickness is  
16 required for structural integrity. For local areas,  
17 a thickness of 62.5 mils is required for structural  
18 integrity.

19 Regular exams, spot recoating, reactive  
20 large area recoats, and frequent cleaning of the  
21 suppression pool and removal of sludge will sustain  
22 the service life of the coating system. Suppression  
23 pool water quality is excellent and meets the  
24 guidelines of BWRVIP-190.

25 Gentle corrosion of carbon steel is the

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1 corrosion mechanism present in the pools, and it  
2 occurs at a rate of less than 2 mils per year.

3 MEMBER POWERS: Can you tell me more about  
4 your primary coat, the what you call the inorganic  
5 zinc sacrificial coating, which I think is a zinc  
6 primer?

7 MR. KELLY: I'd like to ask Mark Miller of  
8 our project team to address that question, Dr. Powers.

9 MR. MILLER: My name is Mark Miller and  
10 I'm a member of the Exelon License Renewal Team. Can  
11 you repeat the specific question about the coating?

12 MEMBER POWERS: I want to know what it is.

13 MR. MILLER: What it is, there's two  
14 separate zinc coating. One is the Carbozinc 11 and  
15 the other is the Dimetcote 6.

16 MEMBER POWERS: Same below the water level  
17 and above the water level?

18 MR. MILLER: In the suppression pool,  
19 that's correct.

20 MEMBER POWERS: Okay, so it's all the  
21 same. It has two coatings 40 mils thick, something  
22 like that?

23 MR. MILLER: Originally applied, six to  
24 eight mils.

25 MEMBER POWERS: Six to eight mils. Then

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1 you said it was just a carbon coat?

2 MR. MILLER: Carbozinc 11 and Dimetcote 6.

3 MEMBER POWERS: Okay.

4 MR. DIRADO: Slide 14, please. This slide  
5 depicts the current material condition of the Unit 1  
6 liner using data from our 2012 refueling outage. The  
7 total submerged surface area affected by corrosion is  
8 graphically shown on the y-axis as a function of liner  
9 metal wall loss. The first vertical dash line is the  
10 ten percent liner wall thickness value of 25 mils.

11 The acceptance limits for large area  
12 corrosion, 125 mils, and for local corrosion, 187.5  
13 mils, are also shown as dashed vertical lines. The  
14 large area corrosion is depicted by the colored bars  
15 on the graph.

16 The first bar shown in green indicates  
17 that 84.8 percent of the submerged liner surface has  
18 intact coating. The second bar shown in yellow  
19 indicates that 12.6 percent of the submerged liner  
20 surface is affected by gentle corrosion that ranges in  
21 average depth up to 25 mils.

22 The third bar, shown in blue, indicates  
23 that 2.6 percent of the liner surface is affected by  
24 gentle corrosion that ranges in average depth from 25  
25 to 50 mils. The fourth smaller bar, which is shown in

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1 red, indicates that a very small portion, 0.03 percent  
2 of the liner surface, is affected by gentle corrosion  
3 that has an average depth of 50-57 mils.

4 The large area of data demonstrates that  
5 97.4 percent of the submerged liner surface area has  
6 less than or equal to ten percent wall loss, all of  
7 which is well below the 125-mil large area acceptance  
8 limit.

9 This slide also depicts individual local  
10 areas of general corrosion less than 2.5 inches in  
11 diameter. The right hand side y-axis is the number of  
12 the locations as a function of metal loss. Locations  
13 with corrosion greater than 50 mils in depth are  
14 depicted by green diamonds.

15 The acceptance limit for these areas,  
16 187.5 mils, is shown as a dashed vertical line. As  
17 can be seen from this graph, a few local areas of  
18 general corrosion with greater than 50 mils metal loss  
19 have been observed. Those locations that have been  
20 identified are well below the corrosion limit of 187.5  
21 mils.

22 MEMBER BANERJEE: How have these areas  
23 evolved over time, do you have any idea? Those  
24 diamonds, for example?

25 MR. DIRADO: Yes, the local areas of

1 general corrosion are examined frequently. The  
2 corrosion rate is understood. It's a general  
3 corrosion rate of less than two mils. The majority of  
4 the locations in the Unit 1 pool have been recoated to  
5 arrest the corrosion, and subsequent examinations will  
6 be performed per the plan to ensure that those  
7 locations don't recur or the coating does not degrade.

8 MEMBER BANERJEE: So suppose I took one of  
9 those diamonds, where were they five years ago?

10 MR. KELLY: I'd like to ask Mark Miller of  
11 the project team to address that, Dr. Banerjee.

12 MR. MILLER: My name is Mark Miller and  
13 I'm a member of the Exelon License Renewal team.  
14 Concerning the diamonds, there are 62 areas of spot  
15 corrosion exceeding 50 mils. Of those, 26 have been  
16 recoated to date, 22 of those were performed during  
17 this last outage in 2012 for Unit 2.

18 Many of those were identified during 1R,  
19 excuse me, the 2012 outage for Unit 1. However, four  
20 diamonds or areas of spot corrosion that are the  
21 largest metal loss are on a single plate and they have  
22 been recoated, and the very earliest inspections on  
23 those plates identified large areas where there was  
24 mechanical damage to the liner plate.

25 MR. GALLAGHER: I think we're not

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1 answering Dr. Banerjee's question. Our 2012 outage  
2 for Unit 1 was the first outage where we had the  
3 criteria of the 50 mils that we were looking for to  
4 spot recoat, so I don't think we have, you know, a  
5 direct comparison of, have we observed them before,  
6 and then didn't recoat it and then saw what they are.

7 The only thing I can offer to you, Dr.  
8 Banerjee, is if we go to, we have a backup slide. I'd  
9 like to go to Backup Slide 25. So we do have some  
10 comparison on our larger area, okay, and because we  
11 had done inspection in 2006, and we did an inspection  
12 in 2012, 2012 was the more thorough inspection with  
13 our new Aging Management Plan being initiated. But  
14 you can see here that there wasn't really much of  
15 change between 2012 and 2006.

16 MEMBER BANERJEE: So the hashed ones are  
17 the 2006?

18 MR. GALLAGHER: Correct, correct. And  
19 then the first bar is the 2006 inspection, the second  
20 bar is the 2012 inspection. And there wasn't really  
21 much change between the two, because, you know, we've  
22 done studies on the corrosion mechanism and our  
23 evaluations show it should be about 2 mils a year or  
24 less, and the data that we've taken actually bears  
25 that out.

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1 MEMBER BANERJEE: And there's no new areas  
2 that's cropped up in these five years?

3 MR. GALLAGHER: No, because they were  
4 pretty much the same. There might be some  
5 recharacterization, but you can see the general  
6 percentages are about the same.

7 MEMBER BANERJEE: Okay. I think that --

8 MEMBER SHACK: But there's some  
9 degradation that's --

10 MR. GALLAGHER: Yes, and we expect that  
11 really, until, you know, our plan is to initiate the  
12 Coating Maintenance Plan so we would take care of  
13 those areas and not have further degradation. So we  
14 have just initiated that plan, but this is like a  
15 comparison of apples and apples, if you will.

16 MEMBER BANERJEE: Yes, over 50 mils, if I  
17 read this correctly, because of the way this graph is  
18 done it de-emphasizes that but you've seen some  
19 significant increase in degradation at that level,  
20 right? The red solid is --

21 MEMBER SHACK: Well, he's not showing the  
22 spots here which is unfortunate.

23 MR. GALLAGHER: Yes, there's no spots on  
24 here. We're not showing the spots. This is just the  
25 general area.

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1 MEMBER SHACK: The general area of  
2 corrosion. So he doesn't really have what you're  
3 looking for, but the general area of corrosion is --

4 MEMBER BLEY: We can infer a little bit of  
5 them --

6 MEMBER SHACK: Infer, right.

7 MEMBER BLEY: The 25 to 50 mils went down  
8 a little, and I suspect that's, a few things got  
9 bigger than 50.

10 MR. GALLAGHER: But, you know, and our  
11 plan is focused on spot recoating those local areas  
12 greater than 50 mils so we can prevent the development  
13 of the larger areas, if you will. And so we think by  
14 doing that, you know, we should keep on top of it.

15 MEMBER BANERJEE: And your detection of  
16 these areas is quite reliable?

17 MR. GALLAGHER: Yes, the --

18 MEMBER BANERJEE: You know, inspections?

19 MR. GALLAGHER: Yes.

20 MEMBER BANERJEE: How do you see them in  
21 particular? Do you do a visual?

22 MR. GALLAGHER: Yes. Okay, we do have,  
23 Mark, why don't you give a discussion on the  
24 inspection technique?

25 MR. DIRADO: Right. All the inspections

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1 are done by underwater divers that perform a VT-3  
2 inspection. It's a visual inspection. They use  
3 calibrated tools to determine the depth of any local  
4 area spots of corrosion, and they have a specific set  
5 of procedures and tools in hand to be able to assess  
6 the areas of either coating loss or corrosion to which  
7 they present back to the Station for our review and  
8 oversight.

9 MEMBER BANERJEE: And typically this is  
10 seen as a difference in contrast on the surface? I  
11 mean if --

12 MR. DIRADO: We're going to have a  
13 picture, I think.

14 MEMBER BANERJEE: Oh. Well, maybe I  
15 should just wait then.

16 MR. DIRADO: Okay, go ahead.

17 MR. GALLAGHER: Yes, we, basically what  
18 we're trying to do here, Dr. Banerjee, is give a, we  
19 gave a presentation at the Subcommittee. We're trying  
20 to give Dr. Shack, trying to give the same amount of  
21 information in a smaller presentation, but we think we  
22 have all the information, so I think we'll be --

23 MEMBER BANERJEE: Okay.

24 MEMBER SCHULTZ: Related question on  
25 timing. You indicate in the presentation that the

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1 suppression pool water quality meets the VIP  
2 guidelines, and can you give us some history on when  
3 those were instituted and for how long the guidelines  
4 have been attained?

5 MR. KELLY: Yes, I'd like to have Greg  
6 Sprissler of the Plant Chemistry Department address  
7 your question, Mr. Schultz.

8 MEMBER SCHULTZ: Thank you.

9 MR. SPRISLER: Good morning. My name is  
10 Greg Sprissler. I'm with the Limerick Chemistry  
11 Department. Limerick Station, since day one, has been  
12 following BWR guidelines for suppression pool  
13 chemistry.

14 We have data from 1995 to present. It  
15 shows typical chloride concentration of about two to  
16 three parts per billion. It shows sulfate  
17 concentrations of about ten to 15 parts per billion.  
18 TOC, which is total organic carbon, typically 30 parts  
19 per billion, and conductivity three micromhos against  
20 a goal of five.

21 So the history of Limerick's chemistry of  
22 the suppression pool has been within the BWR  
23 guidelines.

24 MR. KELLY: Thank you.

25 MR. SPRISLER: You're welcome.

1                   MEMBER SKILLMAN: On this slide, please,  
2 a programmatic question. The gentleman from Chemistry  
3 mentioned that there are 62 locations. This chart  
4 shows 11 greater than 50 mils. For either the 62  
5 items or the 11, does each one of these have a name  
6 tag in your corrective action program so that the  
7 corporate memory of the team knows where to go, where  
8 to look, so it's back on the identical location?

9                   MR. KELLY: Yes, Mr. Skillman, the  
10 findings here are all captured in the corrective  
11 action program.

12                   MEMBER SKILLMAN: Does each item have it's  
13 own name tag?

14                   MR. KELLY: Not individually, not  
15 necessarily individually. It may be by a plate or it  
16 may be by a location.

17                   MEMBER SKILLMAN: I would just offer that  
18 I was involved in a plant that had boric acid leaks,  
19 and each leak location had its own ID so that the  
20 boric acid corrosion program owner and the site could  
21 know exactly where that indication was so that it  
22 could be tracked and repaired.

23                   So if each one of these is not identified  
24 uniquely, then I would suggest that is something that  
25 you need to look at.

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1 MEMBER SHACK: They've lost one point on  
2 the graph, because our graph shows a point at 125 and  
3 there's doesn't.

4 MR. KELLY: Now moving forward, Mr.  
5 Skillman, as part of our plan, you know, the plan is  
6 to address these spots in the outage of discovery. So  
7 when we find a 50-mil spot of small, localized  
8 corrosion, moving forward, we will recoat it in the  
9 outage of discovery.

10 MEMBER SKILLMAN: What I'm thinking is  
11 that this is a very large area --

12 MR. KELLY: Yes.

13 MEMBER SKILLMAN: -- and it could be easy  
14 for a diver to say, well, I think it was here, but it  
15 was really over here.

16 MR. KELLY: You're right.

17 MEMBER SKILLMAN: In which case you've got  
18 a miss, and this is the membrane for your containment.

19 MR. KELLY: You're right.

20 MR. DIRADO: And we do take detailed  
21 measurements and locate it in the final reports. We  
22 have a good understanding as to where those are.

23 MEMBER SKILLMAN: Thank you.

24 MR. KELLY: You're welcome.

25 MR. GALLAGHER: Yes, Dr. Shack, I don't

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1 know what happened but our, I mean the slide I have,  
2 the highest point is 122 mils, and we talked about  
3 that at the Subcommittee, and that was spot recoated.  
4 I don't know why it's not --

5 MEMBER SHACK: Recoated it and just got  
6 rid of it.

7 MR. GALLAGHER: I don't know why it's not  
8 in there. It was on there before. We'll make sure we  
9 get the right chart.

10 MEMBER BANERJEE: So does it mean that  
11 those others haven't been recoated?

12 MR. GALLAGHER: No. No, it should have  
13 been shown. Okay, and Mr. Skillman, we'll take that  
14 under advisement. We have been capturing by plate,  
15 but we'll look at more individual characterization.

16 MEMBER SKILLMAN: Thank you.

17 MR. DIRADO: Slide 15, please. This slide  
18 depicts the current material condition of the Unit 2  
19 liner using data from the 2009 refueling outage. The  
20 information is presented in a similar fashion to that  
21 on the previous slide.

22 Same conclusions are drawn for Unit 2,  
23 mainly that the majority of the coating, more than 95  
24 percent, is intact, and that there are few local spots  
25 greater than 50 mils in depth. Slide 16, please.

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1                   This slide provides a picture of what the  
2 liner corrosion looks like. The area shown is  
3 approximately one square foot of the surface area on  
4 Unit 1 floor plate 9 Alpha. The picture represents a  
5 plate surface that's affected by general corrosion  
6 that's occurring at a rate of less than 2 mils per  
7 year in the suppression pool.

8                   MEMBER BANERJEE: So those dark, the  
9 smallest dark areas they're about what, less than  
10 quite a bit like an eighth of an inch or --

11                   MR. KELLY: Yes, I can address that Dr.  
12 Banerjee. First of all, this is a one square foot  
13 area so it's quite small. When we see a localized  
14 spot they're typically an eighth of an inch in  
15 diameter. We define small as less than two and a half  
16 inches, but the vast majority are a fraction of an  
17 inch.

18                   MR. DIRADO: And just for information, so  
19 the areas on where corrosion is visible have  
20 experienced coating depletion.

21                   That estimated coating depletion on this  
22 plate in particular is 40 percent, and the average  
23 metal loss due to general corrosion is 17 mils in  
24 depth, and has less than ten percent wall thickness  
25 loss. And the unaffected areas still have their

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1 inorganic zinc coating present and it's protecting  
2 their liner surface.

3 MEMBER BANERJEE: So when you go and  
4 repair this, you basically recoat it in the whole  
5 region or just specific spots? Like we see a rather  
6 extensive region at the bottom, right, so --

7 MR. GALLAGHER: Yes, if you go to our  
8 Slide --

9 MR. KELLY: Slide 17.

10 MR. GALLAGHER: -- the next one. Dr.  
11 Banerjee, this is our overall coating maintenance  
12 plan, and basically what we do is we spot recoat areas  
13 that are greater than 50 mils in depth and larger  
14 areas that are greater than 25 mils.

15 And then to get to your question, we also  
16 have what we consider is a proactive addition which is  
17 we recoat plates, and this would be larger areas where  
18 there's coating depletion greater than 25 percent.  
19 And so the corrosion level could still be less than  
20 ten percent wall loss. So that gets to the wider area  
21 and gets it before there's any significant metal loss.

22 But with that Mark can explain this --

23 MEMBER BANERJEE: No, I think it's clear.

24 MR. GALLAGHER: Mark?

25 MR. DIRADO: This slide summarizes the

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1 enhancements made to the IWE Aging Management Program  
2 for the suppression pool. The enhancements will  
3 maintain the suppression pool coating protection and  
4 minimize liner metal loss.

5 This plan includes removal of accumulated  
6 sludge in the suppression pool every refueling outage.  
7 This minimizes potential corrosion sites. An ASME  
8 examination of the submerged liner surface in the  
9 suppression pool is also conducted once each ISI  
10 period, which is three times in ten years.

11 MEMBER POWERS: What is your sludge?

12 MR. DIRADO: The sludge composition is  
13 primarily composed of corrosion products. It's  
14 believed to be small amounts that are influxed from  
15 attached --

16 (Crosstalk)

17 MR. KELLY: Is that good, or did you want  
18 a little more on that, Dr. Powers?

19 (Crosstalk)

20 MR. KELLY: Mark Miller of our project  
21 team, I think, can address your question, Dr. Powers.

22 MEMBER POWERS: Mark's going to get sore  
23 knees by the time the day's over here.

24 MR. MILLER: I'm Mark Miller and I'm a  
25 member of the Exelon License Renewal team.

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1 (Off the record comments)

2 MR. MILLER: We have data from when we've  
3 removed sludge during the outages, and we've been  
4 averaging about a 100 pounds of sludge a year based on  
5 that information.

6 MEMBER POWERS: Do you have any idea of  
7 what it's made of?

8 MR. GALLAGHER: The composition, Mark, is  
9 what he's saying.

10 MR. MILLER: I'm not aware of the  
11 composition. I don't believe we've had analysis done  
12 on it.

13 MR. KELLY: Yes, we have not had any  
14 chemical analysis on it done.

15 MEMBER POWERS: You know what it looks  
16 like. Does it look like rust and magnetite, or is it  
17 boric acid?

18 MR. KELLY: Dr. Powers, I'd like to ask  
19 Greg Sprissler of Station Chemistry. Maybe he can  
20 address that, of what the sludge looks like, Greg?  
21 No?

22 MR. MILLER: How about Mark Marquis?

23 MR. KELLY: We have another Mark.

24 (Crosstalk)

25 MR. GALLAGHER: Mark is our diver

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1 contractor.

2 MR. KELLY: UCC, he's the guy.

3 (Crosstalk)

4 MR. MARQUIS: Good morning. My name's  
5 Mark Marquis. I'm with Underwater Construction  
6 Corporation, NDE Level III. The sludge composition  
7 is, there is some corrosion product mixed in, but  
8 trying to describe exactly what it looks like, it's  
9 film-like in consistency if that helps provide a  
10 visual.

11 MEMBER POWERS: Color? Brown or red?

12 MR. MARQUIS: Generally brown.

13 MEMBER POWERS: I mean it sounds like it's  
14 a little bit of rust and a lot of dirt.

15 MR. MARQUIS: Yes.

16 MEMBER POWERS: Maybe a little chicken  
17 fat, I mean organics that have polymerized.

18 MR. GALLAGHER: Okay, Mark?

19 MR. MARQUIS: Thank you.

20 MR. DIRADO: In order to address the NRC  
21 staff questions associated with visual inspection  
22 techniques, ultrasonic thickness measurements will be  
23 performed on four areas of the liner affected by  
24 general corrosion. The UT will be implemented  
25 whenever examinations are conducted, and are used to

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1 validate the visual inspection techniques and results.

2 MEMBER BANERJEE: So the sludge is cleared  
3 out at every outage?

4 MR. DIRADO: Yes.

5 MEMBER BANERJEE: And it's about 100  
6 pounds?

7 MR. DIRADO: That's correct.

8 MEMBER BANERJEE: Low fiber?

9 MR. GALLAGHER: We can't have --

10 (Crosstalk)

11 MR. KELLY: I refuse to answer.

12 (Laughter)

13 MEMBER POWERS: On the grounds that you  
14 don't want to participate in a three-hour discussion,  
15 right?

16 MR. KELLY: That would be a very smart  
17 move.

18 MR. GALLAGHER: Okay, Mark?

19 MR. DIRADO: Prior to the period of  
20 extended operation the results of the examinations  
21 will be used to implement the Coating Maintenance Plan  
22 as outlined on this slide. The prioritized approach  
23 shown is an enhancement to the program as a result of  
24 the SER Open Item resolution.

25 By spot recoating small locations at

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1 greater than 50 mils upon discovery we prevent the  
2 development of the larger affected surface area  
3 corrosion. This action is based on how the zinc  
4 coating depletes in a Limerick suppression pool  
5 environment, starting with very small areas that then  
6 deplete radially. Spot recoats are the highest  
7 priority. We choose to spot recoat in the outage of  
8 discovery.

9 In addition to the more immediate spot  
10 recoats, plates with more than ten percent wall loss  
11 or 25 mils will be prioritized for a large area  
12 recoat. And as a proactive measure, plates with more  
13 than 25 percent surface depletion will also be  
14 prioritized for recoat regardless of metal loss.

15 During the PEO the Coating Maintenance  
16 Plan will also be continued as shown on the slide.  
17 Localized areas that are greater than 50 mils and the  
18 large areas of corrosion with corrosion depths greater  
19 than 25 mils will be recoated in the outage of  
20 discovery.

21 And as a proactive measure, plates with  
22 more than 25 percent surface depletion will also be  
23 recoated, regardless of metal loss, by the next  
24 inspection. This plan will continue through the  
25 periods of extended operation to ensure the coating

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1 protects the liner and in order to minimize liner  
2 material loss. Slide 18, please.

3 The IWE program was further enhanced to  
4 include the recoat criteria used during downcomer  
5 inspections. Using the results of ASME IWE  
6 inspections of the submerged portions of the  
7 suppression pool downcomers areas affected by  
8 corrosion will be recoated as shown on the slide.

9 MEMBER SHACK: I always have a problem  
10 with the language that you use to describe this,  
11 because I would hope that you're going to recoat all  
12 areas with more than 40 mils of loss. And that what  
13 you mean by a larger area of 30 mils is an area with  
14 loss greater than 30 mils that's larger than 5.5  
15 inches.

16 MR. GALLAGHER: That's right.

17 MR. DIRADO: That's right.

18 MEMBER SHACK: You really ought to say  
19 that instead of this backward way that you have it now  
20 where you have to sort of infer what a larger area is  
21 because you've defined the local area.

22 MR. GALLAGHER: Yes, I see what you're  
23 saying. Yes, or basically what we're saying is the  
24 local areas, the criteria's 40 mils. The larger  
25 area's criteria is --

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1                   MEMBER SHACK: Everything greater than 40  
2 mils is going to, even if it was larger than 5.5  
3 inches you'd coat it.

4                   MR. GALLAGHER: Yes, could it be greater  
5 than 30.

6                   MEMBER SHACK: Well, yes. You get into  
7 that logic. It would be easier just to say you're  
8 going to recoat all areas greater than 40 mils and  
9 areas greater than 30 mils that are larger than 5.5  
10 inches.

11                  MR. GALLAGHER: Okay. Yes, that's the  
12 intent.

13                  MEMBER SHACK: That's the intent, just a  
14 firmer way to state it. And you have the same problem  
15 in the liner, our unit where it's 2.5 inches.

16                  MR. DIRADO: So these criteria will also  
17 be used to determine when submerged portions of the  
18 downcomers require augmented inspections in accordance  
19 with Section XI. Currently none of the downcomers on  
20 either Unit 1 or Unit 2 meet the criteria for  
21 augmented examination or recoat. Slide 19, please.

22                  In summary, the enhancements to the  
23 Limerick IWE Aging Management Program ensure that  
24 aging of the suppression pool liner will be managed  
25 appropriately. Limerick has a Mark II containment

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1 design with a metal liner that is 100 percent  
2 thickness margin. The water chemistry quality in the  
3 suppression pool minimizes general corrosion reflected  
4 in a low corrosion rate less than 2 mils per year,  
5 which is confirmed by examinations.

6 Exelon is committed to an Aging Management  
7 Program begun well in advance of the period of  
8 extended operation, which ensures that the intended  
9 function of the suppression pool liners for both  
10 Limerick units is maintained throughout the periods of  
11 extended operation.

12 MR. GALLAGHER: And that concludes our  
13 presentation pending any questions you may have.

14 MEMBER SCHULTZ: Michael, with regard to  
15 this particular issue and thinking about operating  
16 experience, both incoming and outgoing with regard to  
17 Limerick, is this an isolated problem? What is the  
18 industry doing or what is the industry conditions?  
19 How would that be characterized by Exelon?

20 MR. KELLY: I think I can address that,  
21 Mr. Schultz.

22 MEMBER SCHULTZ: Thank you.

23 MR. KELLY: First of all, the Mark II  
24 containment seems similar in design but they're all  
25 different. We're very similar to a Susquehanna unit

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1 but other Mark IIs are different. Some have stainless  
2 steel liners and some have different, they have epoxy  
3 coatings. For instance, Columbia that was here has an  
4 epoxy coating. It's not the zinc.

5 So really, they're all different when you  
6 look at them in detail including the design and the  
7 layout. And so I think perhaps Susquehanna's probably  
8 our best benchmark in that regard and we do keep in  
9 contact with them.

10 MEMBER SHACK: But still, your materials  
11 are just like a Mark I torus.

12 MR. KELLY: True, yes.

13 MEMBER SHACK: And your coating  
14 degradation is right on, in fact, it may be worse than  
15 some of the Mark I torus's. If you look at Duane  
16 Arnold or Cooper, you know, they've got coating loss  
17 too so, you know, I suspect you're going to be doing  
18 lots of patching.

19 MR. KELLY: Yes.

20 MEMBER SHACK: The good news is they don't  
21 have a torus that's twice as thick as it needs to be.

22 MR. KELLY: Right.

23 MR. GALLAGHER: And we took that kind of  
24 operating experience from the Mark Is and that's how  
25 we developed our Coating Maintenance Plan. And we

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1 think that, you know, we've transitioned from an  
2 inspection program to an Aging Management Program at  
3 the right time. So we think that we're early in  
4 getting ahead of this, and versus some of the other,  
5 the Mark II, some of the Mark I plants were later on  
6 in life.

7 MEMBER SHACK: Your coating degradation  
8 seems to be somewhat localized too in the sense that  
9 you've got like 15 percent overall but you've got a  
10 plate with a 40 percent loss, which means that there  
11 are other plates that have very little.

12 MR. KELLY: That's true, yes.

13 MEMBER SHACK: And so whether somebody  
14 messed up the coating application or something in that  
15 particular one or --

16 MR. KELLY: It could have been mechanical  
17 damage. It could have been a number of things to  
18 start that's hard to put your finger on it today, but  
19 you're quite right. There are four to five plates on  
20 Unit 1 that when we get them we'll be back to a very  
21 good place.

22 And you're talking about 11,000 square  
23 feet of exposed area, 6,000 on the walls and 5,000 on  
24 the floor, and quite a large fraction is still intact  
25 at full dry film thicknesses.

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1 MEMBER POWERS: I would say --

2 MEMBER SHACK: So you did use the  
3 operating experience.

4 MEMBER POWERS: -- from all the steel in  
5 the water, I mean this is kind of the corrosion you  
6 would expect after this number of years of operation.

7 MR. KELLY: Yes.

8 MEMBER POWERS: I mean I think it's  
9 unavoidable with this kind of coating system. And  
10 there are more modern coating systems that probably  
11 perform better, but I mean it didn't look outrageous  
12 to me.

13 MEMBER SHACK: Any more comments or  
14 questions from the Committee?

15 MEMBER SCHULTZ: One question. With  
16 regard to the first-in to the GALL program Rev 2, what  
17 we heard from the NRC's position that they thought it  
18 was a good experience. What's your take on it?

19 MR. KELLY: Yes, I can answer that. It  
20 was very good, you know, much improved from GALL Rev  
21 1. We had over 5,000 line items, you know, for aging  
22 management review and more than 95 percent of those  
23 were standard A&C notes as they called the meeting.  
24 We had a perfect match with, you know, material,  
25 environment and aging effect. So that made our job

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1 easier and I think it made the staff's job easier too.

2 So, you know, we had a lot of good  
3 matches. There were better matches for environment  
4 and material in GALL 2. Also the aging management  
5 programs themselves, I think, were consolidated well  
6 and it enabled us to what I say write a better  
7 program.

8 There was better internal consistency in  
9 the program in GALL. Some of the one-time programs  
10 that require a sample, a population, the samples were  
11 better defined in the GALL. So that was very clear-  
12 cut and very easy to meet, so that also helped us  
13 tremendously in, you know, putting a good, quality  
14 application together.

15 MEMBER SCHULTZ: Thank you.

16 MR. KELLY: You're welcome.

17 MEMBER SHACK: Thank you very much.

18 MR. GALLAGHER: Thank you.

19 (Off the record comments)

20 MR. MILANO: Good morning, Chairman and  
21 members of the ACRS. Again my name is Patrick Milano.  
22 I'm the License Renewal project manager for the  
23 staff's review of the Limerick Generating Station  
24 application.

25 I'm here today to discuss the review of

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1 this application as documented in the Safety  
2 Evaluation Report issued on January 10th of this year.

3 As Mr. Lubinski made the introductions for  
4 the staff members that are at the table, however, I'd  
5 like to also state that seated in the audience are  
6 members of the technical staff who participated in the  
7 review of the License Renewal Application or were at  
8 audits conducted at the plant. Next slide, please.

9 This is just a general overview of what  
10 we're going to present today. We're going to give you  
11 a short overview. We're going to talk about the  
12 closure of the open items and then our overall  
13 conclusion. Next slide.

14 As indicated on this slide, the staff  
15 issued its Safety Evaluation Report with Open Items on  
16 July 30th, 2012, and the staff met with the ACRS  
17 Subcommittee on License Renewal, as Mr. Shack  
18 indicated, on September 5th of 2012.

19 The open items that were discussed at that  
20 time are now closed, and the final Safety Evaluation  
21 Report was issued on January 10th of this year and  
22 covered most of the information on this slide also.  
23 Next slide, please.

24 As you're aware, in its Memorandum and  
25 Order on August 7th of 2012, the Commission addressed

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1 the court's ruling striking down our current waste  
2 confidence provisions. The Commission noted that it  
3 was now considering all available options for  
4 resolving the waste confidence issue, which could  
5 include generic or site-specific NRC actions or a  
6 combination of both.

7 But in recognition of its duties under the  
8 law, the Commission stated that the NRC will not issue  
9 licenses dependent upon the waste confidence decision  
10 or the Temporary Storage Rule until the court's remand  
11 is appropriately addressed. Because of that  
12 determination, because that determination extends just  
13 for the final issuance of licenses, the Commission  
14 stated that all licensing reviews and proceedings  
15 should continue to move forward.

16 Late last year the License Renewal staff  
17 met with the members of the ACRS to discuss options to  
18 continue their review and meetings with the ACRS  
19 during this period when the issuance of renewed  
20 licenses is on hold.

21 We mentioned that the staff will likely  
22 continue to address issues, and that could come about  
23 from its review of annual updates to the License  
24 Renewal Applications or the evaluation of operating  
25 experience. The latter could result in the staff

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1 deciding to prepare Interim Staff Guidance documents.

2           Although the staff's overall conclusion  
3 may not change after reviewing the new information,  
4 it's likely that a revision or a supplement to the SER  
5 may be needed. In order to continue with the  
6 deliberations with the ACRS leading to the ACRS  
7 issuing that decision letter, the License Renewal  
8 staff proposed to take certain actions.

9           First, we would continue to provide the  
10 ACRS with copies of documents prepared by both the  
11 staff and the applicant addressing any new technical  
12 information. In addition, the staff would provide any  
13 changes or supplements to the SER and its findings to  
14 the ACRS.

15           Second, on about three to four months  
16 prior to the expected date of issuance of a renewed  
17 license, the staff would provide a summary description  
18 of the changes made to the SER after it was presented  
19 in a full Committee meeting.

20           Third, pending the ACRS review of this  
21 information, the ACRS could make known whether it  
22 desires to have a follow-on meeting to discuss this  
23 new information and the staff's findings. If the ACRS  
24 decides not to, the staff would request that the ACRS  
25 agree that the prior letter, decision letter, remains

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1 as the final ACRS decision on the subject of the  
2 License Renewal Application.

3 As I noted earlier, the License Renewal  
4 staff met with the Subcommittee in September, and in  
5 addition to making some minor corrections to the SER  
6 presented at that time the staff provided its summary  
7 and findings regarding the two open items that were  
8 previously discussed. Thus, the staff will only be  
9 addressing its review and findings related to closure  
10 of the open items in today's presentation. Next  
11 slide.

12 As you are aware, the applicant's aging  
13 management programs, which we call AMPs, should  
14 contain the element of operating experience. In this  
15 regard the staff verifies that the applicant has  
16 appropriate programs or processes for the ongoing  
17 review of both plant-specific and industry operating  
18 experience concerning age-related degradation and  
19 aging management.

20 The AMPs should either be enhanced or new  
21 AMPs developed as appropriate when it's determined  
22 through the evaluation of operating experience that  
23 the effects of aging may not be appropriately managed.

24 License Renewal Interim Staff Guidance  
25 2011-05 states that acceptable AMPs should be informed

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1 and enhanced when necessary based on the ongoing of  
2 operating experience. It also states that any  
3 enhancements to the existing operating experience  
4 review activity should be in place no later than the  
5 date the renewed operating license is issued and then  
6 implemented on an ongoing basis throughout the term of  
7 the renewed license.

8 The applicant described several  
9 enhancements to its operating experience program  
10 during the Limerick review, however, it initially  
11 planned to implement them some time after issuance of  
12 the renewed licenses. Therefore, the staff could not  
13 determine whether age-related operating experience  
14 would be fully considered in the period between the  
15 issuance of the renewed licenses and implementation of  
16 the enhancements.

17 In response to this open item, Exelon  
18 stated that all of the enhancements will be  
19 implemented no later than the date when the renewed  
20 licenses are issued, and the associated activities  
21 will be conducted on an ongoing basis throughout the  
22 terms of the renewed licenses.

23 The staff finds this response acceptable  
24 because it's consistent with the guidance in the  
25 Interim Staff Guidance, thus closing out this item.

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1 Next slide, please.

2 This existing AMP was enhanced by the  
3 applicant to address the inspection of the primary  
4 containment components exposed to treated water  
5 environments. The AMP manages loss of material from  
6 corrosion and the possible loss of leak tightness.

7 As detailed in its open item, the staff  
8 had issues with inspection methods, frequency, and  
9 criteria used for selecting locations for recoating.  
10 By that I mean the criteria for coating degradation,  
11 general corrosion, and pitting or local corrosion.

12 In its review, the staff was not clear how  
13 the coating degradation could be effectively  
14 identified for each liner plate under water in the  
15 suppression pool. Further, the staff was concerned  
16 about the quality of the visual examination using  
17 depth gauges underwater to measure the loss of liner  
18 plate thickness due to general corrosion and  
19 pitting/local corrosion.

20 Lastly, the staff noted that the  
21 acceptance criterion for the degradation of the  
22 downcomers was not identified in the AMP or the  
23 associated procedures. In response to the open item,  
24 the applicant enhanced the ASME Section XI Subsection  
25 IWE Aging Management Program, specifically the

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1 enhancements, and again this is somewhat of a repeat  
2 of what Exelon had said in its presentation.

3 First, they increased the frequency of  
4 plate inspection, resulting in the interval between  
5 plate inspections not being more than 48 months rather  
6 than the 120 months allowed by the ASME code. To  
7 manage degradation and corrosion of the liner plate  
8 during the period of extended operation, the applicant  
9 committed to enhance the program by using the results  
10 of the ASME IWE examinations to implement a coating  
11 maintenance plan.

12 Third, the applicant would expedite the  
13 schedule for locally recoating the suppression pool  
14 liner plate in areas affected by corrosion to impede  
15 further corrosion, and more stringent acceptance  
16 criteria for recoating and liner plate repair was  
17 initiated.

18 Fourth, it would add criteria for  
19 augmented inspection of the liner plate and recoating  
20 of the downcomers and committing to perform ultrasonic  
21 thickness examinations to complement liner plate  
22 thickness measured using depth gauges.

23 And lastly, the applicant revised the AMP  
24 to use the results of the ASME IWE inspection of the  
25 submerged portions of the suppression pool downcomers.

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1                   MEMBER SHACK: When I look in Appendix A  
2 at the Commitment 30, I can't find the four years in  
3 there. It just says, you know, each ISI period. And  
4 where is the, the four years is mentioned in the text  
5 but it's not in the Commitment, so where has the  
6 applicant committed to the four years?

7                   MR. MILANO: I'll start out and then I'll  
8 ask Mr. Sheik to further clarify. The commitment is  
9 to do three examinations in a ten-year ISI interval.  
10 Because Limerick is on a 24-month operating cycle that  
11 equates to once every other outage, which is four  
12 years, except that, you know, to get the fourth one in  
13 you're going to have to adjust just when you do a  
14 third inspection.

15                   Do you want to say anything else?

16                   MR. SHEIK: Yes, then you have, you know,  
17 ten years, and they have to three inspections and the  
18 outage is every 24 months. So they would have two  
19 inspections at 48 months and one inspection at 24  
20 months.

21                   MEMBER SHACK: Okay.

22                   MR. MILANO: We're on Slide 7. The staff  
23 reviewed the proposed enhancements to the AMP, and  
24 associated commitments is noted on this slide, and  
25 found them sufficient and acceptable for managing the

1 aging effects of corrosion on the liner plate. The  
2 staff found that the program elements for which the  
3 applicant claimed consistency with the GALL report are  
4 indeed consistent with the corresponding program  
5 elements of the GALL report AMP XI S-1.

6 The staff also found the applicant's  
7 response concerning owner-established criteria for the  
8 recoating of downcomers acceptable because it's based  
9 on the original design calculations and supplemental  
10 analysis.

11 In conclusion, as I indicated at the start  
12 of the presentation, the staff will continue to review  
13 elements of the application following the annual  
14 updates provided by the applicant during the period  
15 until licenses are again issued and when operating  
16 experience dictates the need for the staff to process  
17 Interim Staff Guidance.

18 In conclusion, on the basis of its review  
19 to date, the staff has been able to determine that the  
20 requirements of 10 CFR 54-29(a) have been met for the  
21 License Renewal of Limerick Generating Station. This  
22 concludes my presentation subject to any further  
23 comments or questions from the ACRS.

24 MEMBER SHACK: There are no further  
25 questions. Thank you very much. I'll turn it back to

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1 you, Mr. Chairman.

2 CHAIR ARMIJO: Well, I congratulate  
3 everyone for really moving this through. We're about  
4 an hour ahead of schedule. What I'd like to do is  
5 call for a 15-minute break, and then I'd like the  
6 Committee to meet on some of our own internal stuff to  
7 fill in until we restart on the Component Fabrication  
8 presentation. Maybe we can talk about some letters we  
9 have to do.

10 So let's take 15 minutes. I'll give you  
11 a margin. Come back at ten until. That's well more  
12 than 15 minutes. And thanks everyone.

13 (Whereupon, the foregoing matter went off  
14 the record at 9:34 a.m. and went back on the record at  
15 10:45 a.m.)

16 CHAIR ARMIJO: Okay, let's start. Next  
17 item on the agenda is a review on the Large Component  
18 Fabrication and Vendor Inspection Program. The  
19 Subcommittee Materials, Metallurgy and Reactor Fuels  
20 met on January 16th and received a very detailed  
21 briefing of the staff's work in this area.

22 They covered a vendor inspection program,  
23 a recent inspection findings and trends, international  
24 engagement, which is very important, as well as  
25 various examples of findings and activities on large

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1 component inspections. This was at the request of the  
2 ACRS to bring us up to date on what's going on now  
3 that we're building some power plants.

4 With that I'd like to, we'll have an  
5 abbreviated presentation this morning and this will be  
6 led by Mr. James Luehman of the Office of Fuel  
7 Reactors. Jim, go ahead.

8 MR. LUEHMAN: Thanks. Thank you, Mr.  
9 Chairman, Members. Good morning. My name is Jim  
10 Luehman. I'm the deputy director of the Division of  
11 the Construction Inspection Programs, and vendor  
12 inspection is part of our responsibility.

13 As the chairman said, we previously  
14 provided a version of this presentation at the  
15 Subcommittee level, and we're here to do it at the  
16 full Committee level. We're going to have a number of  
17 presenters, so please excuse us for changing out as we  
18 go.

19 But I'm just going to say we appreciate  
20 this opportunity and then I'm going to turn it over to  
21 Ed, and Ed's going to start us out, and we'll be  
22 rotating through a number of the staff to give you the  
23 full presentation. Ed?

24 MR. ROACH: Thank you. Thank you, Jim.  
25 Good morning, Members, Chairman. I'm Ed Roach, chief

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1 of the Mechanical Vendor Branch of the Office of New  
2 Reactors.

3 I have about 27 years of industry  
4 experience in various aspects of operations including  
5 quality assurance, auditing, health physics,  
6 radioactive waste packaging and shipment, emergency  
7 preparedness and outage management. I've been with  
8 the NRC since about 2006 and I've served in the  
9 offices of NSIR and NRO as an EP specialist, health  
10 physicist, technical reviewer, and branch chief.

11 I'm going to discuss the recent approach  
12 we've taken to maximize our effectiveness in several  
13 areas, but primarily how we're approaching vendor  
14 inspection for nuclear reactor vendors.

15 Just to focus on how important this area  
16 is viewed, the number two goal for the Office of New  
17 Reactors is the following. To implement the agency's  
18 Reactor Vendor Inspection Program, including  
19 inspection, outreach and communication to  
20 stakeholders, and self-assessment in support of  
21 operating and reactor safety and new reactor  
22 construction. Okay.

23 One of the things that I'd like to cover  
24 today in today's briefing, provide a context of our  
25 Vendor Inspection Program and the presentations that

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1 follow by discussing our regulations and guidance and  
2 the types of inspections we perform, our Vendor  
3 Inspection Program plan and the selection criteria.

4 I'll conclude today with a discussion, a  
5 brief introduction to what we call our Center of  
6 Expertise, and NRO is the Center of Expertise for  
7 vendor inspection.

8 The Division of Construction Inspection  
9 and operational programs in the Office of New Reactors  
10 is responsible for construction inspection. For new  
11 reactors, the construction inspection program is  
12 implemented in four main areas.

13 Vendor inspections, quality assurance  
14 implementation inspections, operation of program  
15 inspections and verifications of ITAAC, Inspections,  
16 Tests, Analysis and Acceptance Criteria. Today's  
17 discussion will be focused again as I said on the  
18 Vendor Inspection Program. Thank you.

19 As I'm sure you are aware, the NRC does  
20 not license vendors. However, the NRC does hold power  
21 plant licensees responsible for effective  
22 implementation of the quality assurance program,  
23 oversight of contracted design and construction  
24 activities, and vendor oversight. Therefore, ultimate  
25 responsibility for safety always lies with the

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1 licensee.

2 Licensees accomplish vendor oversight by  
3 directly qualifying their suppliers through audits and  
4 surveys where they use qualification audits and  
5 certifications performed by third-party oversight  
6 organizations such as the Nuclear Procurement Issues  
7 Committee, NUPIC, or ASME, the American Society of  
8 Mechanical Engineering, as long as they verify that  
9 the third-party audit or certification covers the  
10 complete scope of supply and is directly applicable to  
11 what is being procured.

12 First-tier suppliers are responsible for  
13 passing quality assurance and technical requirements  
14 to lower level suppliers through purchase orders, and  
15 ensuring compliance via audits and surveys. Licensees  
16 impose quality assurance requirements of Appendix B of  
17 10 CFR Part 50 to their suppliers of basic components.  
18 And vendors of basic components must meet the Defect  
19 and Noncompliance reporting requirements of 10 CFR  
20 Part 21.

21 Consequently, NRC inspects the vendors to  
22 verify that licensees are meeting their Appendix B  
23 vendor oversight responsibilities and that the vendor  
24 is meeting its contractually imposed quality  
25 requirements.

1           The NRC has had a Vendor Inspection  
2 Program for over 30 years. The program has varying  
3 levels of emphasis corresponding to resource levels  
4 and shifting priorities throughout those years, but  
5 the program remains largely responsible for inspecting  
6 vendors providing components to the operating fleet.

7           With the anticipation of the new reactor  
8 construction, the new reactor Vendor Inspection  
9 Program was established back in 2007. As stated  
10 previously, this program was established to verify the  
11 implementation to quality assurance requirements of  
12 Appendix B to 10 CFR Part 50, and the reporting  
13 requirements of 10 CFR Part 21.

14           As you can see, we increased from 24  
15 inspections in 2011 to 27 inspections in 2012, and  
16 we're currently on track to complete our planned 30  
17 inspections this year.

18           As I alluded to earlier, these are the  
19 regulations that apply to vendors that supply basic  
20 components, Part 21, 10 CFR 50.5, 10 CFR 50.7, and  
21 Appendix B by contract. Suppliers of basic components  
22 must comply with Part 21. If the supplier fails to  
23 meet those requirements a Notice of Violation is  
24 issued.

25           10 CFR 50.55a Codes and Standards, applies

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1 directly to nuclear power plant licensees and requires  
2 them to design, fabricate, erect, construct, test and  
3 inspect structures, systems and components to quality  
4 standards commensurate with the importance of safety  
5 function to be performed. Nuclear power plant  
6 licensees must also meet the requirements of certain  
7 quality standards, ASME codes, and IEEE standards.

8 Appendix B to 10 CFR 50 establishes the 18  
9 quality assurance criteria to nuclear power plants.  
10 Since nuclear power plant licensees are required to  
11 meet codes and standards as described in 10 CFR  
12 50.55a, they must include the applicable technical and  
13 quality requirements included in Appendix B in  
14 purchase orders to vendors.

15 If a vendor does not meet the technical  
16 requirements in the purchase order, the vendor will be  
17 issued a nonconformance against the appropriate  
18 criteria in Appendix B such as design control, special  
19 processes or test controls. Following me, Rich  
20 McIntyre will talk a little bit about some of our  
21 findings that we've established and identified in the  
22 recent inspections.

23 In 2010, the Division of Construction  
24 Inspection and Operational Programs, DCIP, implemented  
25 recommendations to improve the Vendor Inspection

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1 Program. Among those improvements the Vendor  
2 Inspection Program plan was authored, a document that  
3 articulates a clear purpose for the Vendor Inspection  
4 Program, and 2, establishes metrics to evaluate the  
5 program's success.

6 With its development and subsequent  
7 revisions, the Vendor Inspection Program has been  
8 guiding the vendor program ever since. While the  
9 Vendor Inspection Program plan describes how the  
10 program will be established, the actual inspection  
11 process is described in Inspection Manual Chapter  
12 2507, and it's implemented through a variety of  
13 inspection procedures that deal with vendor inspection  
14 and reactive inspections of vendors.

15 Although this is inspection guidance to  
16 the NRC staff, the Inspection Manual and all of its  
17 inspection procedures are always available to the  
18 public. Vendors are encouraged to review this guide  
19 as a preparation for an announced inspection.

20 Our vendor inspections fall into two broad  
21 categories, routine, which the majority of them are  
22 termed routine, that is, a vendor is selected based on  
23 a set of established criteria. That vendor is  
24 notified at least 30 days in advance, and then the  
25 inspection is conducted and a report is generated and

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1 written within 45 days of the exit meeting. Findings  
2 and corrective actions are tracked until resolution.

3 Reactive inspections occur when the NRC  
4 becomes aware of information that a supplier of basic  
5 components may not be meeting contractually imposed  
6 requirements or there is an allegation regarding some  
7 NRC-regulated activity.

8 MEMBER BROWN: Can I ask, in your initial  
9 slide you talked about how you don't look at vendors,  
10 the licensees are responsible for making sure the  
11 vendors do what they're supposed to do under that.  
12 So, but yet as you go through these last couple of  
13 comments, do you actually go to the vendors to see  
14 that they're complying with the basic quality  
15 requirements, or are you just auditing the licensee's  
16 process for looking at the vendors?

17 MR. ROACH: We actually go to the, we  
18 don't inspect every vendor out there. We have a  
19 master list of all the vendors we're aware of and  
20 continue to add to that and our inspections are geared  
21 to verify that the licensees are actually performing  
22 their part of it. However, there are nonconformances  
23 and violations that go to the vendors because --

24 MEMBER BROWN: So you're going to the  
25 vendor to see that the licensee is actually requiring

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1       them to do what they're supposed to do, and you -- I'm  
2       just trying to connect the dots here.

3               MR. ROACH: We do both. We ensure that  
4       the vendor oversight is adequate. At the same time we  
5       evaluate that the vendor is meeting its quality in  
6       purchase requirements.

7               CHAIR ARMIJO: But on a sampling basis.

8               MEMBER BROWN: No, I understand that. I  
9       just was, I got the initial flavor that it was just  
10      via the licensee, which I don't have a problem with  
11      because the licensee obviously has to be responsible,  
12      but you also do that sample basis that the vendors,  
13      regardless, you look at the licensees' process for  
14      auditing as vendors, and then you independently check  
15      that the vendor, on a sample basis, whatever, is  
16      following the processes that they're supposed to do,  
17      and then getting in the right documentation. Okay,  
18      all right.

19              MR. ROACH: That is accurate. You stated  
20      it much clearer than I did. Thank you.

21              (Crosstalk)

22              MEMBER BLEY: I've got another question  
23      then. Only saying basic components, do we include I&C  
24      software and now that we're getting pre-fab stuff,  
25      even structural components if we need to?

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1 MR. ROACH: Yes, we do. There's three  
2 branches that conduct the vendor inspections. The  
3 Mechanical Vendor Branch which looks at structural,  
4 mechanical components, pumps, valves. There's the  
5 Electrical Vendor Inspection Branch which looks at  
6 software, digital I&C, electrical components,  
7 instrumentation.

8 And then the Quality Assurance Branch  
9 which also looks at the programmatic quality assurance  
10 programs and QA implementation of say new programs,  
11 new applications that are coming in.

12 MEMBER BLEY: Just want to push a little  
13 further. Since we have software and I&C sitting in  
14 there and they also have computer security issues, do  
15 inspections about that come under this, or is that  
16 something completely separate?

17 MR. ROACH: At this point we've been in  
18 contact with the cyber security folks but only as  
19 parallel. If we find issues where we think there's  
20 counterfeit, fraudulent, suspect items, we have a  
21 process to make sure that gets elevated and  
22 communicated.

23 MR. LUEHMAN: To answer that a little  
24 further, we are coordinating with NSIR to make sure  
25 that we, you know, in this emerging area of security,

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1 cyber security, that we have a good interface and that  
2 we understand what they're doing and they understand  
3 what we're doing, and that we, you know, we create  
4 areas of responsibility so that there's not something  
5 left in between.

6 We're still working that out. They have  
7 their new cyber regulation in place, and they're  
8 working with the licensees on that. It's a couple  
9 step process. The first step is that they've got,  
10 they're going to have to get licensee implementation  
11 for the existing equipment that's already at the  
12 sites.

13 The second part of that, or at least in  
14 parallel with that, is they're going to have to work  
15 with the vendors of that equipment and the parts for  
16 that equipment and get them to now conform to the  
17 cyber requirements, passing those requirements down  
18 similarly as we do on the safety side through  
19 contractual obligations, to ensure that their vendors  
20 are now complying with those requirements. So they're  
21 working that. We're following them now.

22 Right now one of the --

23 MEMBER BLEY: Do they have their own  
24 inspectors, or when you do inspections you look for  
25 their things --

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1 MR. LUEHMAN: Well, that's what we're  
2 working out right now. That's one of the transitions  
3 we have to make, because right now we have a set of  
4 vendor inspectors that are very conversant on, you  
5 know, Appendix B and the requirements there.

6 We don't have a set of inspectors that are  
7 conversant in all the cyber, I mean we have some  
8 electrical and I&C inspectors that clearly could be,  
9 but we have not taken that on yet. Like I said, we're  
10 in negotiations or discussions with NSIR on how to  
11 best accomplish this agency-wide.

12 The other part of it too is there's a bit  
13 of a change here because you're going from equipment  
14 that's required for safety under Part 50 and Appendix  
15 B to some of that equipment which could have security  
16 issues, you know, the things that have embedded I&C,  
17 et cetera, that are running the plant.

18 But then you also have all just the  
19 security equipment that's in the plant that doesn't  
20 operate the plant but there's to monitor the security.  
21 That's a whole other set of equipment that to this  
22 point we, the Vendor Branch, do not, you know, we  
23 don't have oversight and responsibility for that.

24 So we are working with our counterparts in  
25 the security organization and we have ongoing

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1 discussions on those things.

2 MEMBER BLEY: Okay, great. Thank you.

3 VICE CHAIR STETKAR: Jim, what is the, I  
4 mean you say you have ongoing discussions.

5 MR. LUEHMAN: Yes.

6 VICE CHAIR STETKAR: What's the time frame  
7 for kind of getting a program in place regarding  
8 vendor cyber security inspections, if I can  
9 characterize it that way? The reason I ask is we've  
10 got a couple of plants being built right now --

11 MR. LUEHMAN: Right.

12 VICE CHAIR STETKAR: -- that have digital  
13 I&C systems that I suspect people have orders in for  
14 already.

15 MR. LUEHMAN: You're correct, and the --  
16 yes. I'm going to have to, I'll get Rick to help me,  
17 but one of the things is that the cyber security rule,  
18 and again I won't pretend to be an expert on this, but  
19 the cyber security rule has a multi-year phase-in here  
20 over the next few years, and that applies to the  
21 licensees and the equipment that they presently have.

22 Now I can't speak with firsthand knowledge  
23 as to how we're going to, once they sort of lock down  
24 what they have at the plant and say, okay, we've done  
25 whatever we need to do to ensure that the present

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1 equipment we have at this plant meets all the  
2 requirements, then what the lead-in for additional  
3 purchases when that equipment, does that happen at the  
4 same time?

5 In other words, is there a date certain  
6 that says, okay, the plant equipment is all cyber-  
7 certified, for lack of a better term, and the  
8 additional components that they'll have to be able to  
9 purchase to repair or upgrade that equipment, is that  
10 required on that same day or that same dates to be, in  
11 effect, cyber-certified?

12 We are, again we're working with NSIR to  
13 fully understand their implementation plan so that we  
14 can build our cyber, so we can build some kind of  
15 inspection network. Now whether that's going to be us  
16 or whether that's going to be NSIR, that hasn't been  
17 decided yet either.

18 CHAIR ARMIJO: But we're clearly not there  
19 yet.

20 MR. LUEHMAN: We're not there yet, no.

21 VICE CHAIR STETKAR: And it doesn't sound  
22 like we're going to be there by the time that Vogtle  
23 and Summer actually procure and install their digital  
24 systems.

25 CHAIR ARMIJO: Unless it's --

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1                   MEMBER BROWN: Can I make a comment?  
2                   There's really a couple of pieces to this thing. You  
3                   talk about the cyber part, and that's under NSIR and  
4                   that all comes under 73 point, whatever the number is,  
5                   is it 4, whatever.

6                   But there's also a control of access issue  
7                   that's under the design part of the I&C. Control of  
8                   access falls under the IEEE standards, and it's  
9                   whether it's control of access within the plant, you  
10                  know, the access to hardware, then software that you  
11                  put in the plant, as well as control of access from  
12                  external the plant which has nothing to do with cyber  
13                  security, doesn't deal with all the garbage that's  
14                  going on. It's just control of access from external  
15                  to internal. And that falls under the architecture  
16                  and design part.

17                  MR. LUEHMAN: Yes.

18                  MEMBER BROWN: And so without having to  
19                  deal with cyber plans and all the other nuances that  
20                  come to that, what I was interested in is, do you all  
21                  look at that control of access in terms of the way the  
22                  plant's laid out and the way the networks are set up  
23                  that feed stuff within the plant and their control of  
24                  access from the external world? That's within the  
25                  architecture realm as opposed to, on a control of

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1 access basis not a cyber security basis. It's just  
2 one-way communication type stuff.

3 So somebody needs to be looking at that.  
4 That's the critical part when you're first putting  
5 this stuff, you know, bringing it from vendors and  
6 then everybody's assembling this stuff within the  
7 plants themselves.

8 The other part, that's comment one  
9 relative to the discussion. The other question I had  
10 relative to what Dennis and John brought up was  
11 internal, when you're out looking at the vendors,  
12 there's their own, there's an internal design control  
13 which for both software and hardware, the part of the  
14 designs.

15 In other words, how do engineers get to  
16 modify as their going through the design process? I  
17 mean do they maintain a master design, you know,  
18 whether they're drawings or whether it's a master set  
19 of software versions, et cetera, et cetera, do you  
20 all, and that's a design control issue.

21 The second part of that is how does the  
22 vendor maintain that within the plant in terms of its  
23 control of access to people being accessed to it on,  
24 because the vendors love to put all their stuff -- I  
25 about used the wrong word there -- their stuff on this

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1 network within their plants, and their plants  
2 typically have external connections to the outside  
3 world via the internet, which is just a giant sieve  
4 for people to try to hack in.

5 And if you really want to look at the  
6 vendors' plant communications from a control of  
7 access, put aside all the cyber-weenie stuff, okay,  
8 but the control of access from the outside world into  
9 that from a design control standpoint so if that  
10 people could muck with some features of either the  
11 software, the versions that are being developed, et  
12 cetera.

13 So I'm just bringing that up so that in  
14 your deliberations as you're coming up with how you do  
15 this there's those points, those separations. So NSIR  
16 has their world relative to the cyber part of it, but  
17 still we've got to maintain on a design and an  
18 architecture, from both the vendors as well in the  
19 plant, that control of access so that it's not  
20 susceptible to certain types of access.

21 And those all come under the, what I call  
22 the non-cyber security plan type issues. They're just  
23 literally designed, as well as internal plant vendor  
24 plant network designs, I'm just trying to address the  
25 nuances. Because everybody keeps mixing up, and I did

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1 the same thing for two years here, okay, mixing up the  
2 73.54 cyber issue which says, you know, four or five  
3 years after we get the license agreed to, you know,  
4 the design certification done, that's when we get a  
5 cyber plan.

6 Well, that's got nothing to do with the  
7 control of access and the basic architecture design  
8 requirements that come under the existing 10 CFR Part,  
9 whatever it is, 55 point(a)(h), et cetera, and the  
10 IEEE requirements. So I'm just saying, those are the  
11 things, some things to throw into your, make it more  
12 complicated.

13 MR. LUEHMAN: Well, if I could ask Rick  
14 Rasmussen who's actually our branch chief in the  
15 Electrical and I&C area. Rick, I don't know if you've  
16 got any comments.

17 MR. RASMUSSEN: I'm Rick Rasmussen.

18 MR. LUEHMAN: Help me out.

19 MR. RASMUSSEN: Well, I can definitely say  
20 that we look at the design and control process as it  
21 complies with the IEEE standards. The access of a  
22 vendor facility, at least access to the software from  
23 people, I've never encountered that specific  
24 requirement. I'll have to go back and pulse my staff.

25 MEMBER BROWN: Well, I'll give you an

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1 example in the programs that I came from where I did  
2 this for 22 years. We literally set up within the  
3 vendors' plants specific protocols and places where  
4 that software could be accessed and who was in charge.  
5 In other words, nobody could go in and modify a  
6 program.

7           They could take a sample of that over.  
8 They could take it kind of like the engineering  
9 version, if you will, they could pull it out and say,  
10 okay, we're going to work, but the master stayed the  
11 same and only one person had the ability to then bring  
12 whatever changes in and get them incorporated. And  
13 there was limited access.

14           MR. RASMUSSEN: Yes, and we see that at  
15 facilities. A number of our vendors support work for  
16 our industry, support for the Navy, things like that.

17           MEMBER BROWN: I'm aware of that, yes.

18           MR. RASMUSSEN: And so we see those  
19 systems. To the extent that they're actually required  
20 by our licensees, I don't know. Rich, do you have any  
21 --

22           MR. MCINTYRE: Yes. In a lot of the  
23 safety related computer programs we see exactly what  
24 you're talking about. There's probably one individual  
25 who is the program analyst, is the only person that

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1 can make changes, version control. He maintains the  
2 version control and if there's ever notices of bugs  
3 that he has to address, but he's the one individual  
4 that can make the changes to the program.

5 Otherwise, you're right. You don't want  
6 to have anybody within even a vendor facility being  
7 able to make changes to the computer version. There's  
8 usually an assigned individual.

9 MEMBER BROWN: Yes, a particular version  
10 of the program that they're going to be actually  
11 installing. Okay.

12 MR. RASMUSSEN: And they have a complete  
13 design control program that describes --

14 MEMBER BROWN: And you monitor that?

15 MR. RASMUSSEN: We look at that, yes.

16 MEMBER BROWN: Okay. And the only other  
17 point I'd like to make is that I brought up is, that's  
18 good. I don't have any problem with that. And now  
19 it's, where is that information located and the  
20 control of access to that information, and what does  
21 it connect to?

22 I mean are those programs or the software  
23 that's associated with it's going to be installed and  
24 PROMS, whatever goes out in the plant, is that on an  
25 isolated set of computers or whatever, or does it

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1 have, can it be passed from point to point throughout  
2 the plant via some networks or things of that nature?  
3 That adds another vulnerability to it even though you  
4 have a point of control.

5 MR. BEARDSLEY: Jim Beardsley. I'm chief  
6 of the Construction Inspection Program Branch. Some  
7 of the questions you're asking are really things we  
8 look at through the licensee inspection program under  
9 ITAAC and under the programmatic inspections we'll  
10 look at.

11 So while the vendors, we're looking at the  
12 specific vendor activities and how the requirements  
13 are being passed down, we're looking at a lot of those  
14 types of things and the systematic things. From a  
15 system level with inspections of Vogtle and Summer we  
16 started to bore into the ITAAC and other inspections  
17 there.

18 So this may not be the 100 percent right  
19 forum to ask those specific questions, but I think we  
20 are looking at them, in particular, DAC. The DAC  
21 inspections, we talked about those with the Committee  
22 before. Those inspections we're looking very detailed  
23 requirements, the system development processes, the  
24 software quality assurance processes, all those kind  
25 of things are being evaluated.

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1                   MEMBER BROWN: Okay, I'm really trying to,  
2 I understand that point. I'm still interested in  
3 making sure somebody looks at where is that stuff  
4 located memory-wise. It's in some database. The  
5 programs are installed somewhere where somebody has  
6 access, and then what do those go to?

7                   I understand your other point which are  
8 looking at how is the design internal, like the logic  
9 and all the other type stuff being monitored and the  
10 design checks on the DAC and all that. But that's a  
11 subset.

12                   I mean that's within the overall purview  
13 of where this stuff is located within the computer  
14 systems in the plants, and what type of access other  
15 than, you know, even though one got theoretically  
16 nobody can come in and do it, how is that limited?  
17 What makes sure that guy has that and that there's no  
18 other way to come in and contaminate it?

19                   I just want to throw that on the table  
20 just to --

21                   CHAIR ARMIJO: You know, this is an  
22 interface problem we've been worried about for a long  
23 time and I'm sure the staff is too. And we don't  
24 really see how the cyber security --

25                   MEMBER BROWN: Don't mix up cyber with

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1 control of access.

2 (Crosstalk)

3 CHAIR ARMIJO: Access.

4 VICE CHAIR STETKAR: You don't want some  
5 software vendor's 15-year-old kid having access to --

6 CHAIR ARMIJO: Exactly.

7 VICE CHAIR STETKAR: -- the software.

8 CHAIR ARMIJO: But there's even hardware  
9 that comes in from sources that are not --

10 VICE CHAIR STETKAR: Hardware's a bit more  
11 traceable, yes.

12 CHAIR ARMIJO: Maybe.

13 (Crosstalk)

14 MEMBER BROWN: I just wanted to ask the  
15 question.

16 CHAIR ARMIJO: I think we'll move on.

17 MR. ROACH: Okay, thank you. The NRC  
18 staff is currently not resourced to routinely inspect  
19 all vendors that provide basic components. Currently  
20 there are about 600 vendors, actually more than that  
21 now, in our database, and approximately 100 of those  
22 are foreign vendors. Inspections are biased towards  
23 those vendors supplying basic components for the  
24 AP1000 reactor plants being built at Vogtle and V.C.  
25 Summer.

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1           The Vendor Inspection Program plan  
2           establishes a selection criteria determining the  
3           vendors to inspect. This slide shows the criteria  
4           that are routinely considered in prioritizing vendors  
5           so that we do use operating and construction  
6           experience, previous Part 21s, or reports that come  
7           in, scope of services, whether or not it's a new  
8           first-time component being fabricated for this  
9           facility.

10           And one of our large focuses recently has  
11           been on all the type testing and qualification testing  
12           for the components being fabricated for the AP1000  
13           plants.

14           MEMBER SKILLMAN: Ed, as you described 600  
15           vendors, 100 foreign, of the 600 vendors how many of  
16           them have their own QA program, their own 10 CFR 50  
17           Appendix B program, approximately? A round, just  
18           guess number.

19           MR. ROACH: Rich, what would you think?

20           MR. MCINTYRE: I would say most of them.  
21           And there will be a part of them that will have  
22           commercial programs, but the majority of the Appendix  
23           B QA programs, under Appendix B and QA 1.

24           MEMBER SKILLMAN: Of the 600, the  
25           majority?

1 MR. MCINTYRE: Yes.

2 MEMBER SKILLMAN: Okay, another question.  
3 Of the 100 foreign, how many have an Appendix B 10 CFR  
4 50 program?

5 MR. LUEHMAN: Most of them.

6 MEMBER SKILLMAN: Really?

7 MR. LUEHMAN: I think most or all of them,  
8 yes.

9 MEMBER SKILLMAN: Okay, thank you.

10 MR. MCINTYRE: At least all of the ones  
11 that we've inspected to date have all had Appendix B,  
12 and the heavy component manufacturers have an Appendix  
13 B and QA 1 as part of their ASME certification  
14 process.

15 MEMBER SKILLMAN: Okay, thank you.

16 MR. ROACH: I'll talk a little bit about  
17 the Center of Expertise for vendor inspection. In  
18 recent years the Office of Nuclear Reactor Regulation,  
19 and New Reactors, were looking for ways to be a little  
20 more efficient, and we basically worked together to  
21 establish some centers of expertise. And the one that  
22 exists in the Division of Construction Inspection  
23 programs is the vendor inspection Center of Expertise.  
24 Other ones are listed there that were established.

25 Previously, NRR performed vendor

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1 inspections of operating reactors primarily on a  
2 reactive basis. And we recognized that in the new  
3 reactor paradigm we were doing inspections of vendors  
4 who supplied to both, as well as looking at that, so  
5 there was an opportunity there to be more effective.

6 And so in many cases the vendors we  
7 choose, select and inspect supply to both and we can  
8 evaluate their program in a technical implementation  
9 of the technical requirements. Next slide, please.

10 The purpose of our Center of Expertise, it  
11 provides a better environment for knowledge management  
12 for the vendor inspection staff. Efficiencies are  
13 gained by minimizing the level of duplication of  
14 effort that occurs during the development, revision  
15 and review of guidance and other infrastructure. And  
16 the integration reduces the level of overhead required  
17 to maintain the expertise in both offices.

18 In addition, the integration minimizes the  
19 level, gives us consistent enforcement actions in  
20 inspection effort. The Center for Expertise will  
21 provide junior staff better accessibility to senior  
22 staff for mentoring and on-the-job training so that  
23 they can grow in the areas of expertise. There's  
24 several individuals, who are senior NRC staff, who  
25 have on the order of 20-plus years of vendor

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1 inspection and experience.

2 So I'd like to turn it over to Rich  
3 McIntyre who's the senior reactor operations engineer  
4 in my branch, and he'll talk about recent inspection  
5 findings and trends.

6 MR. MCINTYRE: Thank you, Ed. Good  
7 morning, Mr. Chairman and Members. As Ed mentioned,  
8 I'm Rich McIntyre and I'm a senior reactor engineer in  
9 the Construction Mechanical Vendor Branch, and I'm one  
10 of those guys who have over 25 years.

11 I've been at the NRC 28 years and I've led  
12 inspection activities in the Office of Inspection and  
13 Enforcement, the Office of NRR and the Office of New  
14 Reactors. My background is in civil structural  
15 engineering, and I previously worked at ITT Grinnell  
16 in Providence, Rhode Island, for eight years.

17 I'm the NRC representative on several  
18 industry standards committees such as the ASME NQA-1  
19 Executive and Standards Committees, the ASME Section  
20 III Committee on Nuclear Certification, and I am  
21 presently the chair of the ASME Section III Subgroup  
22 on General Requirements. Next slide.

23 Today I'm going to describe how we  
24 identify our vendors for inspection, what is the  
25 emphasis for the vendor inspectors, and then describe

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1 some of the key inspection results.

2 Currently some of the NRC resources for  
3 vendor information that we use to identify vendors for  
4 inspection include the reporting systems of 10 CFR  
5 Part 21; 50.72 for the notification requirements for  
6 operating reactors; 50.73, which is the licensee event  
7 report system.

8 We also maintain a significant interaction  
9 with industry and standard committee organization such  
10 as NUPIC, which is the Nuclear Procurement Issues  
11 Committee. That's the licensees' auditing suppliers.  
12 The NIAC, Nuclear Industry Assessment Committee, which  
13 is the vendors' auditing each other, and the ASME  
14 Section III Nuclear Certification Survey Process.

15 We maintain formal and informal  
16 communications with licensees, applicants and  
17 engineering procurement and construction EPC  
18 contractors for new reactors, and we continue to have  
19 allegations that often require us to perform vendor  
20 inspections.

21 Some vendor initiatives that are under  
22 development include a Regulatory Issue Summary  
23 requesting voluntary identification of all safety  
24 related suppliers. We're developing an NRC public  
25 website which will allow voluntary entry of vendor

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1 information. We're awaiting OMB clearance on that to  
2 get that started.

3 And we have an internal database to  
4 facilitate communication with suppliers. Ed mentioned  
5 that earlier, and we use that as a big part of our  
6 process for vendor selection. And for anybody who's  
7 gone on the Quality Assurance website, we have a link,  
8 the Quality Assurance for New Reactors has extensive  
9 information related to vendor inspection, our  
10 procedures, our results, our findings and our  
11 interactions with all of the industry organizations.  
12 So we try to maintain that very extensive so people  
13 will have a good understanding of what we're doing in  
14 the inspection process.

15 Vendor inspections are currently being  
16 performed for new and operating reactors and include  
17 inspections at both domestic and international  
18 vendors, as Ed talked about earlier. Most of the  
19 international inspections include observers from  
20 foreign regulatory agencies as part of the  
21 Multinational Design Evaluation Programme, which is  
22 called MDEP. And Rick Rasmussen will provide  
23 additional details related to that program in his  
24 presentation on international engagement.

25 And as far as our inspections go, we

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1 include an emphasis on inspection of in-process  
2 design, fabrication, testing and inspection of  
3 specific components and product lines of interest. We  
4 use a vertical-slice approach as opposed to a broad  
5 programmatic review, often selecting a specific  
6 component and going from beginning to end on that  
7 component and basically tying in all of the 18  
8 criteria.

9 We have an increased use of technical  
10 specialists in the areas of mechanical, materials,  
11 structural, electrical and digital I&C, going to what  
12 the questions you said. So we're doing quite a bit of  
13 the digital I&C, the new platforms for the AP1000 in  
14 all of the new plants.

15 We have an emphasis on the qualification  
16 and type testing and design work associated with  
17 targeted ITAACs, and Ed mentioned the ITAAC  
18 inspections, and Jim Beardsley.

19 And during our inspections we review  
20 general ITAACs for say heavy components just such as,  
21 was the component designed and fabricated in  
22 accordance with ASME Section III code, to more  
23 specific ITAAC activities as reviewing pertinent tests  
24 identified in Section III code such as valve  
25 hydrostatic tests. So we take it right down to the

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1 component level, and also the ASME QME-1,  
2 Qualification in Mechanical Equipment.

3 And as Ed mentioned, we continue to  
4 increase our inspection activity, and we projected 30  
5 for 2013.

6 VICE CHAIR STETKAR: Rich?

7 MR. MCINTYRE: Yes.

8 VICE CHAIR STETKAR: I wasn't at the  
9 Subcommittee meeting. And the second bullet, you  
10 know, I understand the notion of taking a vertical  
11 slice so you can drill down into, you know, the  
12 details. How do you make your selections? Are they  
13 just sort of random?

14 You go into a manufacturer and say, okay,  
15 I want to look at, you know, you're producing a range  
16 of, I don't know, valves, and I'm going to drill down  
17 on this particular valve, or is there a --

18 MR. MCINTYRE: Well, for new reactor  
19 construction it's very easy. It's not a sample. We  
20 already know valves and we're targeting valves that we  
21 want to look at the ITAACs. So like, you know, a  
22 nozzle flow check valve that we looked at Intertech.  
23 We knew they were doing qualification testing. But if  
24 it's not a specific ITAAC, we use a smart sample.

25 VICE CHAIR STETKAR: But I mean do you

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1 look at all of the, every ITAAC component? I mean  
2 that's a lot of stuff.

3 (Crosstalk)

4 MR. MCINTYRE: No. The specific ITAAC's  
5 related to a component, so we will try to identify the  
6 specific component ITAACs that we can at the vendor  
7 facility but obviously there's going to be many that  
8 have to be followed up once they're installed. But we  
9 look at the ones that we can during fabrication.

10 MR. RASMUSSEN: Yes, I would just like to  
11 point out our initial planning, and I think we've been  
12 successful with this so far, is to observe every  
13 vendor that's doing ITAAC qualification work, every  
14 example of that vendor doing the types of  
15 qualification work that they do.

16 So if a vendor is commonly doing a lot of  
17 seismic testing, we go out and we see their seismic  
18 testing of the best sample we can get. We see  
19 basically one week worth of sample even though they're  
20 doing months and months of qualification testing.

21 But we've tried to at least cover the map  
22 so that with some reasonable assurance we can say that  
23 we've seen these vendors performing all of the various  
24 qualification tests that are associated with the  
25 ITAAC.

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1 VICE CHAIR STETKAR: Okay.

2 MEMBER SCHULTZ: You also began to talk  
3 about a smart look approach?

4 MR. MCINTYRE: Yes, what I was going to  
5 say there is if we go into a supplier and say they're  
6 not providing AP1000 new reactor components, we'll ask  
7 for a selection of purchase orders, recent purchase  
8 orders from vendors, I mean from licensees, and then  
9 again we'll take that in. So we're going to be  
10 looking at a component that we know that a licensee is  
11 currently procuring.

12 CHAIR ARMIJO: Or something unique like a  
13 giant squib valve or --

14 MR. MCINTYRE: Exactly. Without a doubt.

15 MR. RASMUSSEN: And I think that's our  
16 current success story.

17 (Crosstalk)

18 MR. RASMUSSEN: We certainly looked at the  
19 squib valves extensively. So far we have a number of  
20 issues associated with the firing circuits. On a  
21 proactive level we've got the licensees, Westinghouse  
22 and the designers coming into a meeting two weeks from  
23 now to talk about those issues. So I think  
24 identifying those safety-significant issues early is  
25 one of our benefits.

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1 MR. MCINTYRE: Marlayna, the next slide,  
2 please. As you can see, this slide identifies the  
3 Appendix B finding criteria from all the inspections  
4 that we completed in fiscal year 2012. That  
5 represents a total findings of Notices of Violation  
6 and Notices of Nonconformance that were cited against  
7 licensees, applicants or vendors.

8 A large percentage of the vendor  
9 inspections, probably close to 75, 80 percent have  
10 been related to the AP1000 design, fabrication and  
11 testing activities. An NOV is cited for failure to  
12 meet 10 CFR Part 21 requirements for evaluating and  
13 reporting of defects, and NON is for failure to  
14 implement the specific Appendix B QA requirements,  
15 and about seven percent of the findings were related  
16 to Part 21.

17 As you can see, the most significant  
18 amount of findings were written for failure to  
19 implement or follow the Appendix B criteria that I'll  
20 go through. And these findings were all consistent  
21 with the scope of our inspections over the past year  
22 that were focused more on design control and  
23 mechanical and electrical equipment qualification  
24 testing activities.

25 As you can see on the pie chart, the

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1 highest percentage of findings were against, first,  
2 was design control and that's including the dedication  
3 of commercial-grade items which is a big issue, and  
4 I'll talk a little bit about that later.

5 And of that percentage of the Criterion 3,  
6 about 68 percent of those were specific to commercial-  
7 grade item dedication. Two was corrective actions.  
8 Three was test control, and with doing a number of  
9 these AP1000 test inspections as Rick was talking  
10 about. And then Number 4 was Criterion 7 for control  
11 of purchase material, equipment and services, which is  
12 essentially our review of supply or oversight.

13 And we had a question during the previous  
14 briefing about what we have done in identifying the  
15 safety significance for dedication issues, and in  
16 2011, February 2011, we issued information Notice  
17 2011-01, and that described commercial-grade  
18 dedication issues identified during recent vendor  
19 inspections.

20 So we realize that it's an issue and we  
21 got the information notice on the street to try, two  
22 years ago, to bring licensees and supplies, let them  
23 know that these are areas of concern with us.

24 Next slide I'm going to talk about some of  
25 the typical inspection findings identified. First,

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1 Part 21, failure to comply for the evaluation,  
2 identification and reporting of defects, and  
3 noncompliance, and that includes inadequate technical  
4 evaluations that support the Part 21 conclusions.

5 Failure to provide appropriate oversight  
6 of subcontractors. Unfortunately in new reactors this  
7 is something we've been seeing more and more. And as  
8 we know, subcontractors must implement their Part 50  
9 Appendix B quality assurance requirements for their  
10 scope of supply. General failure to develop and  
11 implement procedures for all their safety-related  
12 activities.

13 Commercial-grade dedication. As we've  
14 talked about it's an Appendix B activity in many  
15 cases. Commercial-grade items were not adequately  
16 dedicated for their safety-related application as  
17 required by Criterion 3 Design control and Criterion  
18 7 requirements.

19 Specific design control or failure to meet  
20 design requirements as meeting the design  
21 specification and following the design drawing  
22 requirements. Test control findings such as making  
23 changes to a component undergoing testing without an  
24 adequate supporting technical basis. And measuring  
25 and test equipment being used outside of the

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1 calibrated range.

2 MEMBER SKILLMAN: Let's just talk about  
3 that second bullet for a second. Is that bullet  
4 pointed specifically at Summer and Vogtle for their  
5 failure to hold their subcontractors accountable to 10  
6 CFR 50 Appendix B, or is that more aimed at the  
7 subcontractors for Vogtle and Summer failing to hold  
8 their subcontractors accountable to 10 CFR 50 Appendix  
9 B?

10 MR. ROACH: I would say it's the latter.  
11 What we've identified is they take the procurement  
12 documentation, implement it at their facility and then  
13 farm out various pieces without doing the requisite  
14 surveys, audits.

15 MEMBER SKILLMAN: And they is whom?

16 MR. ROACH: They would be the actual  
17 vendor who receives the order for the manufacturing of  
18 a component for Summer or Vogtle.

19 MEMBER SKILLMAN: Yes, okay. Now let me  
20 ask one more question. Is that an issue of capability  
21 of those subcontractors or is that an issue of  
22 resource level? Is the message that this bullet is  
23 communicating that the subcontractors just don't have  
24 the moxie or the talent to do it or is it because they  
25 don't have the resources to do it?

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1 MR. LUEHMAN: I think it's a third reason.  
2 I think a lot of it, and what we're finding is that we  
3 have in many of these areas we have a lot of new  
4 entrants into the supply chain. And in many cases we  
5 find they do have the technical capabilities, they  
6 have the financial resources, but they are not fully  
7 aware of playing in Appendix B.

8 So a lot of it is just an education level.  
9 I think that coming up here in another month or so  
10 when we have the RIC, we're going to have a panel on  
11 vendor oversight, and on that panel we're going to  
12 have a couple of the major vendors.

13 And one of the things that you're going to  
14 hear, would hear in their presentations is the  
15 challenges they have as they move down the supply  
16 chain and as they have to get various smaller and  
17 subcomponents from specialized manufacturers, is  
18 getting the nuclear culture and understanding of all  
19 the requirements of Appendix B and all the associated  
20 technical standards sort of indoctrinated and  
21 inculcated into those organizations.

22 So are there occasions where, yes, you  
23 have somebody that's not really technically qualified?  
24 The answer is yes. But by and large, right now we've  
25 found with a lot of the sub-tier vendors it's a matter

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1 of education and experience that they lack.

2 MEMBER SKILLMAN: It almost sounds like a  
3 lesson that we learned in the procurement initiative  
4 20 years ago coming back to life.

5 (Crosstalk)

6 MEMBER SKILLMAN: Thank you, guys. My  
7 comment was really aimed to be pejorative towards the  
8 two builders. I was just curious, what is this  
9 telling us?

10 MR. MCINTYRE: A comment that our staff  
11 always makes when we go to meetings such as NUPIC or  
12 ASME conferences, that you have to know the  
13 capabilities of your suppliers. So to get just what  
14 Jim's getting at, you have to really know how good  
15 they are. We have so many new suppliers and you have  
16 to do a real in-depth audit when you go into these  
17 suppliers.

18 MEMBER SKILLMAN: Okay, thank you. Thank  
19 you.

20 CHAIR ARMIJO: Well, generally, don't they  
21 have to qualify their suppliers, or are they --

22 MR. MCINTYRE: That's what I'm talking  
23 about, yes.

24 CHAIR ARMIJO: Oh, okay.

25 MR. MCINTYRE: Yes, so during that

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1 qualification process you've got to go in and do a  
2 real in-depth review of their technical capabilities  
3 so we don't get into the scenario like with the squib  
4 valves.

5 MEMBER SKILLMAN: Yes, thank you.

6 MR. MCINTYRE: And last slide in closing,  
7 we wanted to identify areas of concern that we will  
8 concentrate on during our vendor inspections in 2013.

9 We plan to continue to inspect for  
10 weaknesses such as inadequate design control and  
11 commercial-grade dedication; inadequate dedication of  
12 commercial software and computer programs; inadequate  
13 technical evaluations of conditions adverse to quality  
14 as part of the corrective action process; inadequate  
15 justification for substitutions in materials of  
16 construction for both mechanical and electrical type  
17 equipment.

18 And as we move forward, under challenges  
19 and trends you see commercial-grade dedication is  
20 first up. Dedication is now a widely used process in  
21 the nuclear industry. However, not all suppliers  
22 exhibit a basic understanding of or are implementing  
23 sound dedication practices including sub-supplier  
24 qualification and adequate technical evaluations for  
25 identifying safety functions and critical

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1 characteristics.

2 We've identified dedication as an area for  
3 inspection emphasis for both our new reactor  
4 components and testing activities and for operating  
5 reactor replacement parts. And that concludes my  
6 presentation, and Rick will now discuss international  
7 engagement.

8 MR. RASMUSSEN: My name is Richard  
9 Rasmussen. I'm the chief of the Electrical Vendor  
10 Inspection Branch in the Office of New Reactors. And  
11 just as some background, I have about 20 years with  
12 the NRC and 28 years nuclear, so I've seen a couple of  
13 things.

14 I'm going to tell you about the  
15 international engagements we have under the Multi-  
16 National Design Evaluation Programme Vendor Inspection  
17 Cooperating Working Group. So a pretty good title  
18 there.

19 This working group currently has 12 member  
20 countries. We meet a couple times a year face-to-  
21 face, typically in Paris, to work on our plans and the  
22 implementation items that I'm going to talk about.  
23 And I've been the NRC rep for about three years now.  
24 Next slide.

25 So I'm going to tell you about our working

1 group objectives, some of our inspection activities  
2 that we've undertaken and where we're going with the  
3 concept of some multi-national inspections. So the  
4 objectives, the three main ones, facilitating,  
5 understanding and sharing to conduct joint activities,  
6 and then the Holy Grail of trying to harmonize,  
7 Quality Assurance requirements.

8 (Crosstalk)

9 MR. RASMUSSEN: The first one, we've taken  
10 an effort now over a number of years as a working  
11 group to actually understand each other's programs.  
12 It's really a mix of laws, technical requirements that  
13 the different countries have, customs come into play  
14 with some of the countries. And at 50,000 feet, all  
15 the countries have very similar goals from quality  
16 assurance, and it's as you drill down that things  
17 start to diverge and get snaky.

18 And so one of the keys to success of this  
19 working group is finding the right level where you can  
20 have meaningful results to all the member countries  
21 and not get bogged down into individual implementation  
22 steps, and I think we're having some success with  
23 that.

24 Towards our goal of facilitating these  
25 joint and multi-national inspections we've developed

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1 a protocol document. It outlines our rules of  
2 engagement, how we coordinate with each other, how we  
3 interact when we're on inspections with other  
4 countries, and that's been very helpful.

5 It's a public document. If we have a  
6 vendor that we're engaging with an international team  
7 we provide them this document and it lays out what  
8 we're doing and kind of sets them at ease a little  
9 bit. Because it's bad enough when the NRC shows up,  
10 and then we show up with another country too, it  
11 intimidates some.

12 We have a platform for sharing  
13 information, the inspection results that we have and  
14 also documenting feedback that the member countries  
15 give us. And then I'll get to the harmonization on  
16 another slide.

17 So within our protocol document we really  
18 have three types that are currently described. We  
19 have a witnessed inspection which was kind of our  
20 first step. It's very much like it sounds. One  
21 country NRC conducts an inspection, other countries  
22 come and observe.

23 They don't really have a role. The  
24 regulators, they follow us around, they'll ask  
25 questions of us. But it's on a very non-intrusive

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1 basis with the vendor that we're inspecting.

2 VICE CHAIR STETKAR: Rich, again I wasn't  
3 at Subcommittee meeting and I've forgotten. In your  
4 introduction you mentioned kind of somewhere between  
5 five and ten members. What specific countries are  
6 participating in this --

7 MR. RASMUSSEN: Sure, there's 12  
8 countries.

9 VICE CHAIR STETKAR: Twelve, okay.

10 MR. RASMUSSEN: So it's the U.S., Korea,  
11 the U.K., the Russian Federation, China, Finland,  
12 France, Canada, Japan, South Africa, and then we have  
13 two new members which is India and the UAE.

14 VICE CHAIR STETKAR: Okay, good. Thanks.

15 MR. RASMUSSEN: With the joint  
16 inspections, these inspections are led by one country  
17 and then we use members from another country on the  
18 inspection team very much like we would use a  
19 technical specialist within our own organization, a  
20 contracted inspector.

21 Sometimes we go to national labs and get  
22 tech specialists that support us on inspections. And  
23 so these folks play an inspection role, they provide  
24 input to our inspection reports. They're just part of  
25 the team.

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1           The next step that we might get to is  
2 what's called a multi-national inspection, and the  
3 details on that are a little sketchy because we've  
4 never done one and we're still working on all the  
5 decision points. But it will involve members of  
6 multiple countries inspecting at perhaps a slightly  
7 higher level to a common set of QA requirements or  
8 concepts even, if you will.

9           These would most likely be useful to  
10 provide a basic understanding of a vendor's activities  
11 but maybe not details as much as we would want for  
12 some of our considerations. But it would be a good  
13 basis for us to help prioritize our list of 100  
14 international vendors, say, use one of these teams to  
15 at least get a snapshot of them, decide if that's  
16 where we want to spend our international travel  
17 dollars to go back, because we would only be sending  
18 one maybe two people at most.

19           And so we're looking to see what kind of  
20 efficiencies we can gain through these kind of  
21 interactions. A level of activity that we're doing,  
22 2007 and '12 were very similar.

23           CHAIR ARMIJO: Richard, just quick. On  
24 witnessed inspections, are there situations where  
25 another country is a lead on an inspection and we're

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1 the witnesses?

2 MR. RASMUSSEN: Yes.

3 CHAIR ARMIJO: Okay, so it goes both ways.

4 MR. RASMUSSEN: It's gone both ways. And  
5 we've done, we do a lot with the Koreans because we  
6 have very similar regulatory structures. A lot with  
7 the Canadians, French. Some with Finland. Some with  
8 China, mainly them looking at us, I think, is --  
9 there's been a lot of other bilateral activity in  
10 China, but not so much directly attributable to this  
11 program.

12 VICE CHAIR STETKAR: Richard, on the joint  
13 inspections, I understand the witness inspections  
14 because there's a lead team and they're inspecting  
15 according to, you know, your particular requirements.  
16 On the joint inspections you mentioned that each  
17 inspector serves as a technical expert.

18 Are they performing the inspections  
19 according to their country's specific criteria so  
20 that, you know, this inspection doesn't necessarily  
21 have the same criteria applied?

22 MR. RASMUSSEN: Well, the way we play this  
23 out on a joint inspection, the lead country, and so  
24 far we've led and Korea has led. The lead country  
25 develops the inspection plan.

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1 VICE CHAIR STETKAR: Okay.

2 MR. RASMUSSEN: We try to make the  
3 assignments in areas that would be familiar with those  
4 countries, and of our 18 criteria some overlap better  
5 with some countries than others.

6 VICE CHAIR STETKAR: Okay.

7 MR. RASMUSSEN: And so we would try to  
8 make appropriate, you know, best-fit assignments for  
9 those teams. But they actually, the intent is that  
10 they inspect to the lead country's requirements, and  
11 the lead country --

12 VICE CHAIR STETKAR: That helped.

13 MR. RASMUSSEN: Yes. The lead country  
14 really has the translation role of taking that input  
15 and then forming it into something that can be  
16 specifically perhaps adjudicated in Notice of  
17 Nonconformance or something.

18 MEMBER RYAN: I'm just curious, Richard.  
19 Have you run into circumstances where the differences  
20 are significant and it's hard to come to some common  
21 plan?

22 MR. RASMUSSEN: So far the ones that we've  
23 attempted have all worked well. Again they've been  
24 between U.S. and Korea so we share that structure.

25 MS. KAVANAUGH: I can help. We

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1 participated in a joint, or a Korean-led inspection at  
2 Doosan last year. Is it last year? 2011. It would  
3 have been 2011.

4 Since KINS was leading the inspection they  
5 were looking at their components and not necessarily  
6 the U.S. components. However, all the documentation  
7 for the Korean components was in Korean, and the U.S.  
8 members, myself included, are not very good at reading  
9 Korean.

10 So as an alternative we did our role as  
11 that part of the inspection, but looking at the AP1000  
12 plants and those documentations as a feeder into their  
13 inspection. So we're looking at the process using our  
14 components.

15 MEMBER RYAN: Thank you.

16 MR. RASMUSSEN: And I think, you know,  
17 some of the things, the Koreans, their protocols are  
18 a little different than ours. They will write  
19 findings and then they also provide suggestions and  
20 areas for improvement and areas that they did well, as  
21 I recall.

22 And so it was a little different for our  
23 inspectors to provide that kind of input when we've  
24 told them to stop providing that kind of input. But  
25 that's one of the accommodations that we have to make.

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1                   MEMBER SKILLMAN: Let me ask this.  
2                   Several of the countries that you identified have  
3                   built a Quality Assurance program that's very similar  
4                   to our Appendix B to 10 CFR 50. Other countries have  
5                   their own quality assurance standards that in some  
6                   cases exceed the requirements that our 10 CFR 50  
7                   Appendix B has.

8                   Have you run into friction where some of  
9                   the members would suggest that our 10 CFR 50 Appendix  
10                  B is deficient and needs to be strengthened?

11                  MR. RASMUSSEN: Well, there's the French.  
12                  You do get that a little bit, and in those areas like  
13                  in cases with the French we've dealt with some issues  
14                  down at the actual metallurgy level trying to assess  
15                  flaws in piping.

16                  We default to our fundamentals of the ASME  
17                  code. They use their standards. But we've actually  
18                  had very healthy discussions about why it would be  
19                  okay with us, why they're questioning it, doing those  
20                  kind of technical evaluations.

21                  In terms of this program and actually  
22                  doing an inspection with a joint outcome, I think in  
23                  those countries we just have to agree to stay at a  
24                  higher level where we can agree on the facts and not  
25                  go so deep that it bogs us down. But we are

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1 developing an understanding of where those are.

2 MEMBER SKILLMAN: Thank you.

3 MR. RASMUSSEN: It's, you know, it is a  
4 work in progress and we are evolving.

5 MEMBER BROWN: Let me ask a question to  
6 that. Does that, they've got, they inspect to their  
7 process. If we've got parts or a heavy component of  
8 some type from a foreign vendor, I presume we don't  
9 accede to their, use the French as an example, to  
10 their material standard or whatever. We use ours,  
11 right? I mean they build to ours?

12 MR. RASMUSSEN: Yes.

13 MEMBER BROWN: Okay, I just wanted to make  
14 sure I understood that, that's all.

15 MR. RASMUSSEN: Yes. And a lot of the  
16 foreign vendors are trying to assemble programs,  
17 because they deal on a multi-national market, assemble  
18 programs that meet all the standards simultaneously  
19 even, and that's a challenge that the vendors face.

20 CHAIR ARMIJO: We'd probably better keep  
21 moving.

22 MR. RASMUSSEN: Okay, go to the next  
23 slide. Some of our recent experience, the KINS  
24 inspection that Kerri mentioned at Doosan Heavy  
25 Industries, and then in 2012 we led an inspection at

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1 Target Rock. We had two KINS team members on the team  
2 with us.

3 The benefits that we're seeing is  
4 reduction in resources for the two countries. We get  
5 a lot of expertise. There's really good people in  
6 these other countries' organizations and we get access  
7 to them. We get access to engineers, regulators, and  
8 native language all in one package, so that can be  
9 very beneficial.

10 And it also lessens the impact of vendors  
11 to some extent, because when a joint inspection team  
12 comes in they're getting looked at by two countries at  
13 once and it's one less week for them. We've got  
14 another one being planned right now, Qual Tech. I  
15 don't think it's March anymore. I think it's been  
16 pushed back until April.

17 And also this year, recently we observed  
18 a Canadian-led kind of an engineering design  
19 verification type inspection of Westinghouse and we  
20 got a few insights from that. So things are ongoing.

21 The multi-national inspections. I guess  
22 I've talked about a number of these aspects. One of  
23 the things to help facilitate this, we're getting some  
24 dialogue going with the basic, with the standards  
25 development organizations, the folks from ISO, ASME,

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1 GSR, trying to determine if there's areas that we  
2 could converge at least maybe in the guidance and  
3 implementation of these standards, and try to make  
4 things easier for the vendors that are trying to  
5 comply with all of these, and for the inspectors, to  
6 make us a little more harmonized.

7 So those talks are early on. Folks seem  
8 to be a little bit open to it. You know, do I think  
9 I'm going to change Appendix B? I really don't think  
10 so, so we'll see how far we can go with this. So  
11 that's all I had.

12 CHAIR ARMIJO: Okay, thank you. Kerri?

13 MS. KAVANAUGH: All right. I know we're  
14 on a time constraint so I will go fast, but I'm the  
15 one with the pictures.

16 CHAIR ARMIJO: Yes. That's what I wanted  
17 to get to.

18 MS. KAVANAUGH: My name is Kerri  
19 Kavanaugh. I'm the chief of the Quality Assurance  
20 Branch. I've been with the NRC going on 21 years. My  
21 background is in reactor systems, plant systems, tech  
22 specs, and the vendor inspections.

23 I also serve as one of the agency's  
24 representatives on several ASME Section III  
25 committees, the Board of Conformity Assessment and

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1 NQA-1 subcommittees. Prior to my current position  
2 I've served as the team leader for many of these  
3 inspections that we're going to highlight today.

4 And I just want to make sure that we're  
5 aware. We had some discussions earlier about other  
6 types of inspections. My presentation is just only on  
7 the large component inspections that we've done. Next  
8 slide.

9 The purpose of my presentation is to  
10 highlight the NRO DCIP standard inspection activities  
11 at a variety of large component manufacturers both  
12 foreign and domestic.

13 NRO DCIP has been conducting technically  
14 focused and programmatic vendor inspections since the  
15 Office of New Reactors stood up in 2007. The vendor  
16 inspection teams consist of both vendor inspectors and  
17 technical specialists from NRO or the Regions or  
18 specifically Region II.

19 During the vendor inspections the  
20 inspectors conduct observations of the manufacturing  
21 process including special processes such as non-  
22 destructive examinations, welding, and in some cases,  
23 forging. The inspectors also conduct a thorough  
24 records review of the components being inspected.

25 The vendor inspection branches have

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1 performed two inspections at Babcock & Wilcox  
2 facilities. In 2007, NRR staff performed an  
3 inspection of the Palisades replacement reactor vessel  
4 head at the B&W-Canada, our facility in Ontario,  
5 Canada. 2008, NRO staff conducted an inspection of  
6 the replacement reactor vessel heads for Diablo Canyon  
7 at the B&W facility in Mount Vernon, Indiana.

8 NRO DCIP has conducted two inspections at  
9 Mitsubishi Heavy Industries in Kobe, Japan. In 2008,  
10 a vendor inspection evaluated MHI's manufacturing  
11 process for reactor vessels, steam generators, and for  
12 the other reactor internals. The picture on the left  
13 is a replacement steam generator for a U.S. operating  
14 plant.

15 In the picture on the right, NRO vendor  
16 inspectors are evaluating the NDE indications on the  
17 steam generator nozzle. In 2012, a reactor vendor  
18 inspection was conducted at MHI to evaluate the SONGS  
19 tube-wear issues.

20 MEMBER POWERS: The question is those  
21 pictures always elicit --

22 MS. KAVANAUGH: I'm sorry?

23 MEMBER POWERS: The question that always  
24 comes to mind when I look at that picture is, will our  
25 current inspection capabilities catch the dwell vessel

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1 problem or the AREVA steam generator problem?

2 MS. KAVANAUGH: Well, as part of our  
3 inspection selection for the different vendors we take  
4 in operating experience as part of one of the  
5 criteria. As for the dwell problem, I mean it's a  
6 timing. It's definitely a timing. We look at the  
7 records associated with the components that we're  
8 inspecting. Whether or not we would catch it, you  
9 know, I think it's a matter of luck whether we're  
10 there and looking at the records at the right time.

11 MEMBER POWERS: Well, certainly for dwell,  
12 what we had was a case of good records for a couple of  
13 the rings, and somewhat marginal records for a couple  
14 more rings. And what I'm wondering is, suppose we're  
15 looking at those post-forging records and you found  
16 good records for a couple of rings, and then records  
17 that probably were described as, then we did it the  
18 same way for the others. How do you react to those  
19 when you're doing the inspection?

20 MS. KAVANAUGH: Well, you actually have to  
21 look at the requirements that they have to meet, and  
22 if the requirements and the documentation doesn't meet  
23 the requirements then you start pulling the string and  
24 looking at broader sample size. It really depends on  
25 the inspectors' skills and the team leader's skills

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1 that are on the inspection and their capabilities of  
2 making sure that they understand what that means in  
3 the big picture.

4 Hopefully we have our inspectors ready for  
5 the inspection such that they understand the operating  
6 experience that is out there so that they can identify  
7 where this may be an issue.

8 MEMBER POWERS: I think I agree with you  
9 in what you've said in that it really depends on  
10 tenacity or the determination in this particular case.

11 MS. KAVANAUGH: Right.

12 MEMBER POWERS: Because I think you could  
13 get snowed at every stage in the process. Now if you  
14 start pulling the string and you came up short they'd  
15 say, well, we've been doing this since Northrop  
16 Industries was started and we know what we're doing  
17 and we just did it that way.

18 MS. KAVANAUGH: Right.

19 MEMBER POWERS: Yes, well, they didn't.

20 (Crosstalk)

21 MR. RASMUSSEN: I would argue that's a  
22 common element to all inspections.

23 MEMBER POWERS: Yes, I think so.

24 MR. RASMUSSEN: Entirely dependent on the  
25 skill and training of our folks.

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1 MEMBER POWERS: So you have to hire a  
2 bunch of people that really have bad personalities.

3 MS. KAVANAUGH: They are definitely mean-  
4 spirited.

5 MEMBER POWERS: Suspicious.

6 (Crosstalk)

7 CHAIR ARMIJO: Okay --

8 MEMBER POWERS: As we look at your  
9 requirement records we think we may have some  
10 candidates for membership here.

11 MS. KAVANAUGH: Next slide. The Vendor  
12 Inspection Branches have performed two inspections at  
13 Doosan Heavy Industries in Changwon, South Korea.  
14 Prior to 2009, Doosan manufactured reactor pressure  
15 vessels, steam generators, and reactor internals for  
16 operating reactors in AP1000 reactors using forgings  
17 from Japan's Steel Works.

18 In 2009, Doosan began pouring their own  
19 forgings. During the 2009 inspection, the inspection  
20 team witnessed the pouring of the AP1000 reactor  
21 vessel upper shell for the V.C. Summer site.

22 In the picture on the left, the NRC  
23 inspectors are evaluating reactor head J-groove weld  
24 inspections. In the picture on the right, the NRC  
25 inspection team is joined by representatives of

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1 Doosan, the Korean regulator KINS, Westinghouse,  
2 Souther Nuclear, and SCANA in front of a steam  
3 generator destined for the Vogtle site.

4 NRO DCIP conducted an inspection at  
5 Japan's Steel Works in Muroran, Japan on the island of  
6 Hokkaido. JSW has a 14,000 ton press in operation and  
7 can produce a single ingot of 600 tons. JSW  
8 manufactures large steel forgings and castings for  
9 reactor pressure vessels, heads, and steam generators  
10 for all reactor designs for new and operating  
11 facilities.

12 During the inspection, the team observed  
13 non-destructive examinations of the South Texas  
14 Project Unit 3 and 4, an ABWR design, reactor pressure  
15 vessel bottom head dome and bottom head ring. In the  
16 pictures, the inspectors are reviewing NDE indications  
17 with the JSW authorized nuclear inspector on the steam  
18 generator bottom forgings.

19 The inspection report for the JSW  
20 inspection is available in ADAMS and on our NRC  
21 Quality Assurance Public Web site along with all the  
22 NRO vendor inspection reports and quality inspection  
23 reports.

24 NRO DCIP conducted an inspection of  
25 Creusot Forge in Le Creusot, France. Creusot Forge

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1 manufactures reactor pressure vessel and steam  
2 generator forgings for EPRs. Creusot Forge also  
3 manufactured the reactor coolant piping for EPRs in  
4 Finland and France.

5           During the Creusot Forge inspection, the  
6 inspectors verified manufacturing activities such as  
7 non-destructive examinations and machining operations  
8 for a U.S. EPR reactor pressure lower head, EPR steam  
9 generator lower shell, EPR reactor pressure vessel  
10 upper head, and U.S. EPR steam generator upper shell.

11           Sumitomo, there are there three  
12 manufacturers of steam generated tubing in the world.  
13 NRO DCIP performed an inspection at Sumitomo Metal  
14 Industries in Yokohama, Japan. Sumitomo manufactures  
15 the steam generator tubing for AP1000 in U.S.  
16 operating reactors.

17           Sandvik Material Technology in Sanviken,  
18 Sweden is also a manufacturer of steam generator  
19 tubing for the EPR in U.S. operating reactors. NRO  
20 DCIP conducted an inspection of Sandvik in 2010  
21 focusing on the manufacturing process and related  
22 records. In this picture the NRC inspection team is  
23 in front of a steam generator bundle that was being  
24 prepped for shipping.

25           NRO DCIP has conducted two inspections at

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1 two locations at Mangiarotti SPA in Italy. in 2010 a  
2 vendor inspection evaluated Mangiarotti's  
3 manufacturing process for AP1000 pressurizers and  
4 passive residual heat removal exchangers. In 2012 a  
5 vendor inspection evaluated the manufacturing process  
6 for AP1000 chord makeup tanks and the cumulatives.

7 In 2010, NRO DCIP conducted a vendor  
8 inspection at IHI Corporation in Yokohama, Japan. The  
9 inspection team evaluated the manufacturing process  
10 for the South Texas ABWR reactor pressure vessel and  
11 the AP1000 containment vessel, which is currently  
12 being assembled at Vogtle.

13 In the picture on the left is the STP  
14 reactor pressure vessel head. The picture on the  
15 right is the NRC inspectors standing next to a  
16 personnel hatch. These pictures show the rolling of  
17 the AP1000 containment vessels. The inspection report  
18 for IHI inspection is available in ADAMS and on our  
19 NRC QA Web site.

20 NRO DCIP performed a vendor inspection at  
21 Westinghouse Newington in Newington, New Hampshire.  
22 Westinghouse Newington manufactures AP1000 control rod  
23 drive mechanisms and reactor vessel internals. In  
24 this picture members of an amped up vendor inspection  
25 team is standing in front of an AP1000 core shroud,

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1 which is on the left. And the APR-1400 core shroud,  
2 which is on the right, and is the Korean design.

3 Last but not least, NRO DCIP conducted a  
4 vendor inspection in SPX Copes-Vulcan in Erie, PA.  
5 SPX is responsible for the design and manufacture of  
6 the AP1000 squib valves as shown in the picture. This  
7 concludes my portion of the presentation.

8 CHAIR ARMIJO: You actually witnessed some  
9 testing also, didn't you, of the squib valve?

10 MS. KAVANAUGH: Our teams have witnessed  
11 a variety of different testing for the squib valves,  
12 both EQ and seismic at this point.

13 MR. RASMUSSEN: EQ, seismic, and also of  
14 the actuator assemblies, the explosives.

15 CHAIR ARMIJO: So an actual, or just the  
16 subcomponent package.

17 MR. RASMUSSEN: Just the subcomponent so  
18 far.

19 CHAIR ARMIJO: Yes, but not the actual  
20 valve --

21 MR. RASMUSSEN: Right.

22 MS. KAVANAUGH: Well I don't think they've  
23 gotten to that point to do that demonstration.

24 MR. RASMUSSEN: Yes, we're selling tickets  
25 but --

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1 CHAIR ARMIJO: Take pictures.

2 MR. ROACH: This is Ed Roach, we did, when  
3 we visited SPX for our inspection, they did have a  
4 video of some of their early prototypes of the SPX, I  
5 think it was the 14 inch squib valve testing, and they  
6 did do the full operations with the section of pipe  
7 that was pressurized to about 200 pounds. And they  
8 shot water over 100 feet when they did shear. And  
9 they had a video of that but that was proprietary and  
10 they wouldn't let us have a copy.

11 CHAIR ARMIJO: Good. Okay.

12 MEMBER BROWN: Can I ask a question?

13 CHAIR ARMIJO: Go ahead, yes.

14 MEMBER BROWN: All right, in all these  
15 inspections, joint inspections of the Quality  
16 Assurance Programs, were there every any violations or  
17 defects noted or non-conformances found?

18 MS. KAVANAUGH: Do you want me to go over  
19 all that?

20 MEMBER BROWN: Well, I'm just asking if  
21 you all did, that's all.

22 MS. KAVANAUGH: Yes.

23 MEMBER BROWN: Okay.

24 MS. KAVANAUGH: I have a whole listing if  
25 you'd like.

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1 MEMBER BROWN: No, I'm just curious. I  
2 mean, I didn't expect you to, I just, that was a yes  
3 or no questions.

4 MS. KAVANAUGH: Yes.

5 MEMBER BROWN: And I presume that the  
6 interchange, I mean some of these with the foreign  
7 manufacturers, how did that interchange work out in  
8 terms of resolution? I mean, were they --

9 MS. KAVANAUGH: Actually, they're actually  
10 much more responsive than our domestic suppliers.

11 MEMBER BROWN: Is that right?

12 MS. KAVANAUGH: Yes.

13 MEMBER BROWN: Very interesting.

14 MS. KAVANAUGH: We generally do not have  
15 too much of an issue.

16 MEMBER BROWN: They want to be in the  
17 market then. Okay. Okay, thank you.

18 MS. KAVANAUGH: You're welcome.

19 MR. LUEHMAN: Just to follow up on your  
20 earlier question about the segregation or isolation of  
21 the software platforms?

22 MEMBER BROWN: Yes, for development of  
23 software, not the platforms, right.

24 MR. LUEHMAN: Well yes, but I mean the  
25 isolation of the platform that it's being built on.

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1 MEMBER BROWN: Oh, okay, yes, got it, got  
2 it.

3 MR. LUEHMAN: And we did verify with some  
4 of our inspection team members that yes, we do in fact  
5 verify that.

6 MEMBER BROWN: Okay, good.

7 CHAIR ARMIJO: Anyone, any other  
8 questions? I had a question, it's a follow up from  
9 the subcommittee meeting and Dr. Powers brought up the  
10 question of a mechanism for assessing the adequacy of  
11 the NRC's vendor inspection program. You know, either  
12 benchmarking with programs that maybe other countries  
13 have, some metrics that you might say we're doing  
14 enough or we're not doing enough, or we're overdoing  
15 it. Is there, and the question was asked, have you  
16 thought about that and do you think you're about right  
17 or --

18 MR. LUEHMAN: We did some homework on that  
19 and Ed Roach is going to answer.

20 CHAIR ARMIJO: Oh, okay.

21 MR. LUEHMAN: Yes, Ed's back here.

22 CHAIR ARMIJO: I'm glad Dana's back, I  
23 thought he didn't --

24 MR. LUEHMAN: Yes.

25 MR. ROACH: I think in one of our --

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1 MEMBER POWERS: Just following up, I just  
2 requested the inspection reports from Creusot Forge.

3 MS. KAVANAUGH: They're available on our  
4 Web site.

5 MEMBER POWERS: We're going to get them.

6 MS. KAVANAUGH: Yes, sir.

7 MEMBER POWERS: We're going to take you,  
8 Kerri.

9 CHAIR ARMIJO: Dana, I raised the question  
10 since you weren't here about this point you brought up  
11 about the, assessing the adequacy of the vendor  
12 inspection program that the NRC has, whether it's  
13 adequate or not, whether it needs to be increased, or  
14 whether it's overdoing it, you know, how do you  
15 measure that?

16 MR. ROACH: And I think, following the  
17 subcommittee meeting, we did sit down and I think we  
18 took an initiative to evaluate how best to establish  
19 a metric that could possibly measure this and give us  
20 feedback. We don't have something that's quantifiable  
21 yet, however we do benchmark other entities to inspect  
22 based on our experience with NUPIC, the international  
23 community, as well as, it's quite common for us on our  
24 inspections to pull the licensees, or the higher tier  
25 vendors inspection and audit reports to see exactly

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1 what they've looked at, to see if they're getting to  
2 it or they're just doing pro forma.

3 So there's several ways we are trying to  
4 inform our program to make it better. Our vendor  
5 inspection program performance plan has metrics, and  
6 sometimes the best thing you can say is you are what  
7 you measure. And what we're trying to do is steer  
8 those metrics, that our inspections add value.

9 And part of that is to get us to where we  
10 get feedback from the actual vendors and the licensees  
11 on it. And you know, we may not like what we hear  
12 sometimes, but we also expect to get that feedback in  
13 a transparent environment so that we can take action  
14 to improve it.

15 Our indicators also measure and perform an  
16 annual assessment of the notices of violations and  
17 notices of non-conformances so that we can see whether  
18 or not, you know, we're losing our effectiveness,  
19 we've lost our edge, and we're actually, you know, if  
20 we're finding more significant items we would again,  
21 escalate those to our management within the NRC so  
22 that they can, if we need additional resources we  
23 would expect to identify that.

24 MR. LUEHMAN: Mr. Chairman, the biggest  
25 thing I think that we've, and of course obviously at

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1 this point it's all anecdotal, but the one thing that  
2 we have heard back in feedback from vendors is, as  
3 compared to the past is that in the past, I think that  
4 their view of some of our inspections were that they  
5 were very programmatically based paperwork exercises.  
6 I mean, that's my words not theirs, but I think that,  
7 you know, that we came in and looked at the general  
8 program and the state of the program.

9 I think that the feedback that we've  
10 gotten in the past few years from those vendors that  
11 wanted to give us feedback has been much more along  
12 the line of that they were surprised at the technical  
13 depth that we've gone into. I think that the addition  
14 of technical specialists, of routinely using a  
15 technical specialist either from the region or from  
16 our technical divisions has been a real plus.

17 And where those people weren't available,  
18 that we at least had the benefit of their expertise in  
19 the preparation of the inspection plan and their  
20 availability on the phone when we went and did the  
21 inspection, so if they didn't go along that they told  
22 us what some things that they thought we needed to  
23 look for in a specific case. And then obviously if we  
24 had questions based on what we found, that we got back  
25 to them.

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1           So anecdotally, I think that what we've  
2 gotten back from the vendors that we've inspected is  
3 that they've seen the change in emphasis over the last  
4 ten years or so from the much more higher level  
5 programmatic based vendor inspections to more  
6 technically focused.

7           And I think as we used in one of the  
8 slides, a vertical slice, looking at a specific  
9 component and looking at the 18 criteria through the  
10 lens of that component rather than just looking at  
11 their paper program and seeing if they have all the  
12 words to the, the right words to meet the 18 criteria.

13           Having said that, we do think the  
14 program's important because, and one of the things  
15 that we do when we find a problem on the floor is we  
16 will examine well, okay, this procedure, we'll examine  
17 how the person's doing it. He appears to be doing it  
18 correctly. Is that because he's experienced or is  
19 that because he's been trained well?

20           And sometimes it's great if you're  
21 experienced, but if you leave, if tomorrow another guy  
22 is doing that very same job, if he doesn't have the  
23 benefit of a good procedure and he's not as  
24 experienced as the person, because we again only do  
25 sampling, that was there yesterday, and they don't

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1 have an adequate procedure, then you're probably not  
2 going to get the same quality of product the very next  
3 day.

4 So I think anecdotally, the information  
5 we've gotten from the vendors is that our focus has  
6 moved the right direction. As Ed said, I think that  
7 we were asked a very difficult question I mean, and  
8 coming up with, are there quantitative criteria we can  
9 measure this against? We're going to look at that,  
10 but we do think that there are some qualitative  
11 criteria including benchmarking with the other  
12 organizations both domestically and internationally to  
13 do this kind of work.

14 CHAIR ARMIJO: Yes, well I was thinking of  
15 following up on Dana's question after the subcommittee  
16 meeting. I was thinking, how would I look for data?  
17 And some things you can measure are just the number of  
18 inspections or the size of your inspection group  
19 compared to the number of components, let's say  
20 reactors that are being built, compare yourself to the  
21 French. Do they have armies where you have, you know,  
22 companies? Are we about right around the world, are  
23 we understaffed or underfunded?

24 MR. RASMUSSEN: Yes, from the  
25 international perspective, two pieces of feedback

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1 really. For the folks that have observed or  
2 participated in our inspections, everyone tells us  
3 they're impressed with our inspectors, the training,  
4 the level of expertise that they have and the depth  
5 that they probe, no questions there, they're top-  
6 notch.

7           However, NRC and its intrusiveness,  
8 there's a pretty wide gambut out there, from  
9 regulators that actually license the vendors, so  
10 they're in direct control of them. You've got  
11 countries like Finland that go out and establish hold  
12 points for key operations at vendor sites, so the  
13 regulator must and will be there. That's certainly a  
14 level of intrusiveness beyond us.

15           There's other examples like the French who  
16 operate almost like an ASME/ANI and inspect and stamp  
17 the heavy components. And so there's all those  
18 different categories. So in regulatory impact, we are  
19 far from the top but not the bottom.

20           MEMBER RYAN: Are there any unannounced  
21 inspections?

22           MR. RASMUSSEN: Yes. The majority are  
23 announced, but for cause we can do unannounced and  
24 have, even recently.

25           MEMBER RYAN: For cause, but not as a

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1 routine.

2 MEMBER RAY: Well the biggest problem --

3 MR. RASMUSSEN: Right. It's not typically  
4 efficient to do it as a routine, a lot of reasons not  
5 to do that.

6 MEMBER RYAN: Yes, okay.

7 MEMBER RAY: The discussion that's been  
8 going on here the last few minutes, though I think  
9 illustrates a problem which is, holding the licensee  
10 responsible in the first place for the quality  
11 programs of the vendors. And, you know, it's a very  
12 difficult job because they lack the expertise often  
13 the regulator has. But on the other hand, they're the  
14 ones that are, in theory at least, supposed to be  
15 responsible for these programs being effectively  
16 implemented.

17 And from my experience, they don't get  
18 hammered enough for the deficiencies that get  
19 identified. And the best way to do that is the old  
20 way that now is passe, and that is the effectiveness  
21 of the program, the programmatic assessment will  
22 better identify shortcomings in the licensees  
23 following up on their vendors or making sure that the  
24 vendors are doing what they should. That's the easier  
25 way for the regulator to find that the licensee isn't

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1 doing the job than by the inspections that you've been  
2 talking about.

3 And, you know, my judgment is that we have  
4 become more technically focused and therefore tend to  
5 supplant what the licensees should be doing. And, so  
6 that's for what it's worth, my two cents' worth.

7 If we, so you get into a position where  
8 the licensees tend to back off because the regulator  
9 is being much more effective in the inspections that  
10 they're doing, but on the other hand, the regulator  
11 can't ensure that all of the vendors have the programs  
12 in place that are effectively being implemented just  
13 by sampling inspections on particular critical  
14 functions that are being performed, big forgings or  
15 weldments or radiography or whatever the case may be.  
16 It's a dilemma I think and I don't see it getting  
17 resolved because they say the licensees typically  
18 don't have the skill set.

19 CHAIR ARMIJO: Well, but their suppliers  
20 do, like Westinghouse would do it for Vogtle, you  
21 know?

22 MR. LUEHMAN: Yes, I don't want to portray  
23 that our inspection has gone, that we've gone  
24 completely away from that. I mean, I think our  
25 emphasis now is more on the technical side because of

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1 the new, you know, the new components that are being  
2 developed, and the squib valves which we have on the  
3 screen right now being a good example, which is a new  
4 design, a new, you know, something completely  
5 different than has been used before in the plant. So  
6 obviously it does warrant a certain amount more of our  
7 resources to look at the technical aspects of that  
8 valve versus the overall programmatic.

9 That's not to say that we don't spend any  
10 time on the programmatic. And in fact, in those cases  
11 where we find sub-tier vendors or vendors or sub-tier  
12 vendors where we have significant problems with their  
13 program, we will engage up the chain. In fact we're  
14 considering right now, such a case. I mean we still  
15 have it under, it's still preliminary and we're still  
16 reviewing our inspection results, but we did find a,  
17 you know, we do have a sub-tier supplier where we  
18 found the program was so lacking in our judgment that  
19 we are going to raise that potentially with the  
20 supplier who certified that they were able to provide  
21 that sub-tier service or product. And so I don't  
22 think it's all or nothing. We've --

23 MEMBER RAY: Well, but look, the licensee  
24 procures a lot of stuff that's not provided by the  
25 NSSS supplier. And I'll just leave it at that. I

1 mean I think that there's a problem of being focused  
2 on just the technical aspects of the most critical  
3 evolutions. And yet you've got this enormous supply  
4 chain, not all of which goes through Westinghouse or  
5 whoever, and you need to have somebody holding  
6 accountable, the suppliers for effective  
7 implementation of programs, not just the performance  
8 of particularly critical technical functions. That's  
9 why there are 18 criteria to start with.

10 MR. LUEHMAN: You'll get no disagreement  
11 from me. Our key message to the industry, especially  
12 to the new-builds is that the licensee is responsible.  
13 We've heard --

14 MEMBER RAY: Well that's the main point  
15 I'm trying to make, yes.

16 MR. LUEHMAN: Well, and we've made that  
17 point to the two licensees that are presently  
18 constructed. In fact, you know, our Director, Laura  
19 Dudes, was just down at the two sites the last couple  
20 of days. And that message was made at meetings again  
21 with both of the utilities, that in the final analysis  
22 of licensees --

23 MEMBER RAY: Well they're hard and costly  
24 to do and so it, you know, you tend to drift away from  
25 it and like I say get into just little niches of end-

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1 stamping or something when in fact, there's a lot more  
2 going on that needs, can only be implemented by  
3 licensees. The agency can't do it, it's just too big,  
4 too broad.

5 CHAIR ARMIJO: Okay, any other questions  
6 or comments by the members? Well we have a bridge  
7 line, is the bridge line open? And do we have anyone  
8 on the bridge line that would like to make a comment?

9 MR. BROWN: The bridge is open.

10 CHAIR ARMIJO: Okay, bridge is open,  
11 anyone out there that would like to make a comment?  
12 Okay, hearing no one, I think we will adjourn this  
13 session. I'd like to thank the staff for a very good  
14 presentation. And we will reconvene at 1:15 and Mr.  
15 Stetkar will open it for us.

16 MALE PARTICIPANT: Thank you very much.

17 (Whereupon, the meeting in the  
18 above-mentioned matter went off the record at 12:20  
19 p.m. and went back on the record at 1:15 p.m.)

20 CHAIR ARMIJO: Okay, we're going to  
21 reconvene the session and I think Mr. Skillman is  
22 going to lead us through the presentation on  
23 Construction Reactor Oversight Process.

24 MEMBER SKILLMAN: So Mr. Chairman, I will  
25 proceed but we are waiting for the copies, and they

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1 should be here momentarily.

2 CHAIR ARMIJO: In the meantime --

3 MEMBER SKILLMAN: Let's go ahead.

4 CHAIR ARMIJO: -- we've got them on the  
5 screen.

6 MEMBER SKILLMAN: Okay, Mr. Chairman, the  
7 purpose of this session is to hear presentations from  
8 the NRC staff regarding the new Construction Reactor  
9 Oversight Process called cROP, program applicable to  
10 construction oversight of new plants and results of  
11 the cROP pilot program conducted at Vogtle and Summer.  
12 Mr. Girija Shukla has been the ACRS technical staff  
13 member supporting this activity.

14 The staff briefed the subcommittee on  
15 March 6, 2012, regarding the new Construction  
16 Assessment Program applicable to construction  
17 oversight of plants that are being constructed under  
18 10 CFR Part 52, and any future plants under 10 CFR  
19 Part 50 process except for Watts Bar Unit 2, which is  
20 covered by its own construction inspection program.

21 The staff developed the New Construction  
22 Assessment Program as directed by the staff  
23 requirements memorandum SRM SECY-10-0140. The cROP  
24 program includes a regulatory framework and the use of  
25 a construction Significance Determination Process to

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1 determine the significance of findings identified  
2 during the construction inspection program.

3 The staff has implemented the pilot  
4 program at Vogtle Units 3 and 4 on January 1, 2012,  
5 and at V.C. Summer Units 2 and 3 in March 2012 upon  
6 issuance of their combined license. The SRM also  
7 directed the staff to provide the pilot program  
8 results to the ACRS for review. Now I call upon the  
9 NRO management to begin their presentation please.

10 MR. FRYE: Okay, we thought we would have  
11 Jim Luehman here who's our Deputy Director for the  
12 Division of Construction Inspection, but we actually  
13 have several meetings going on so I believe he's at a  
14 public meeting.

15 My name is Timothy Frye, I'm the Chief of  
16 the Construction, Assessment, and Enforcement Branch  
17 in NRO, and I had responsibility for the development  
18 and the pilot of the cROP, and so I guess I'll get us  
19 started. So let's see if I can figure this out.

20 And that was an excellent introduction.  
21 I think you've probably covered a lot of the stuff I  
22 was going to cover, so I'll try to pare mine down and  
23 not be too repetitive. But again, the purpose of this  
24 briefing is to discuss the results of the recently  
25 completed 12 month pilot of the new Construction

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1 Reactor Oversight Process or cROP as we call it.

2 And our focus today will be on discussing  
3 the pilot results, the staff evaluation of lessons  
4 learned, key procedure revisions, and the staff  
5 conclusion on the readiness of the cROP for full  
6 implementation.

7 I will provide a brief and high level  
8 overview of the cROP and the pilot. Tom Kozak, who's  
9 up here sitting with me, has been the Project Lead for  
10 cROP development for the last several years and will  
11 discuss specific pilot results and our lessons  
12 learned.

13 So again, we covered a lot of this. As  
14 was mentioned, Commission Paper 10-0140 provided the  
15 background and detail of the development of the cROP.  
16 Subsequent to that Commission Paper, we did develop an  
17 especial manual chapter that provides a lot of  
18 background and basis for the processes. And you  
19 should have a copy of that and, you know, if you feel  
20 like referring to it feel free to.

21 And the reason why I mention that is  
22 because the purpose of this briefing is to discuss the  
23 pilot results and our assessment, and we have no  
24 planned presentation to review specific details of any  
25 of the processes, but certainly any questions that you

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1 have that will help you understand how we've reached  
2 our conclusions and completed our evaluations, we're  
3 more than happy to, you know, address those. And, you  
4 know, referring to manual chapter 2506 probably will  
5 be a great help in understanding the processes as  
6 needed.

7           So I'm trying to see what was already  
8 discussed, so I think we got everything on that slide,  
9 based on that good introduction. So again, as you can  
10 see, we developed the Construction Reactor Oversight  
11 Process using, as the Reactor Oversight Process for  
12 power reactors as a starting point, mainly because it  
13 has been very successful in the ten or 12 years that  
14 it's been used.

15           So we wanted to use the regulatory  
16 framework as a starting point. And we did that. The  
17 major difference is that we have identified six  
18 cornerstones of construction safety, and so just like  
19 the ROP, the reason for this framework is, you know,  
20 we use construction inspection to verify adequate  
21 licensee performance and meeting each of those  
22 cornerstones of construction safety. And that gives  
23 us assurance that a plant is being built as per the  
24 licensing basis and operating procedures have been  
25 developed and implemented as required by the licensing

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1 basis.

2 And on this diagram you can see that  
3 again, the basic components of the Construction  
4 Reactor Oversight Process are very similar to the  
5 Reactor Oversight Process. And those are inspection,  
6 assessment and enforcement for the most part.

7 Some of the key differences and challenges  
8 that we'll talk a little bit about that we had with  
9 developing construction oversight had to do with, one  
10 of the big differences is that a key part of our  
11 construction inspection program is inspecting the  
12 operational programs.

13 You know, operational program inspection  
14 is just not part of the Reactor Oversight Process, but  
15 it is a big part of construction inspection program  
16 because we need, there's about 19 key operating  
17 programs that have been identified in the licensing  
18 basis that we need to inspect before they're  
19 implemented to verify that they have been developed in  
20 accordance with the ASME, the industry standards or  
21 the regulations. So that's a very important part of  
22 our inspection program and that's a key differences  
23 between construction oversight and reactor oversight.

24 Also we have a very close tie to vendor  
25 inspections, which we'll talk about a little bit. So

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1 that has been a challenge and will continue to be a  
2 challenge, coordinating vendor inspection results with  
3 the construction inspection program.

4 And finally, one of our most significant  
5 challenges was finding a simple and reasonable way to  
6 assess, I'm not sure what that is. I don't think it's  
7 somebody in here --

8 (Off microphone discussion)

9 MR. FRYE: Okay, so anyway, yes, so  
10 assessing the, finding a way to determine the, apply  
11 risk insights into evaluating the safety significance  
12 of construction findings to get some measure of their  
13 significance was a challenge and that's probably one  
14 of the biggest differences between us and  
15 construction, the Reactor Oversight Process and I  
16 think we were very successful in doing that.

17 So before I turn it over to Tom, I just  
18 wanted to kind of wrap up my overview by saying, at  
19 the end of this brief we hope to leave you with a good  
20 understanding of why the staff has concluded that the  
21 Construction Reactor Oversight Process was  
22 sufficiently exercised to provide reasonable assurance  
23 that the program is sound and ready to go forward with  
24 full implementation. So with that, I'll turn it over  
25 to Tom.

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1 MEMBER SHACK: Did you go through the  
2 Significance Determination Processes too in this  
3 pilot?

4 MR. FRYE: Yes, we had a couple of chances  
5 to exercise it pretty well, and we can talk about that  
6 in more detail.

7 MR. KOZAK: Good afternoon. I'm Tom  
8 Kozak, I work in Tim's Branch in Office of New  
9 Reactors and Division of Construction, Inspection of  
10 Operational Programs, and had primary responsibility  
11 for developing the Construction Reactor Oversight  
12 Process and Significance Determination Process and  
13 everything else that went into the program.

14 (Off microphone discussion)

15 MR. KOZAK: The way we conducted the pilot  
16 is we issued a pilot guidance document that included  
17 the purpose, scope, objectives, and acceptance  
18 criteria that we had developed. And in that document  
19 we listed a number of manual chapters that we prepared  
20 that were for the pilot program. They were designated  
21 with a P, they're listed here on the slide, manual  
22 chapter 0613P is our findings screening and inspection  
23 report manual chapter, 2505P is our performance  
24 assessment manual chapter, 2519P is our construction  
25 Significance Determination Process manual chapter. I

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1 believe those were all provided to you ahead of time.

2 Those were our primary guidance documents  
3 that we issued for the staff's use during the pilot.  
4 And they supplanted our normal manual chapters that  
5 were in place before the pilot and before, you know,  
6 when the Commission directed us to develop this  
7 program that mirrored the ROP, including those various  
8 programs that are in the ROP.

9 Also in manual chapter 2506 which Tim  
10 mentioned, it's our oversight process guidance and  
11 basis documents, so as Tim mentioned, it's a good  
12 history of what we've done as a staff to develop our  
13 oversight process, and also contains the guidance. So  
14 it's kind of two purposes in one, both the basis of  
15 the program and the guidance. And in that manual  
16 chapter it also described our approach for the pilot.

17 We conducted a detailed, you know, day and  
18 a half training sessions, two of them down in Region  
19 2. We also trained our headquarters staff and made  
20 our training available to the industry as well. We  
21 put it on our public Web site and the industry used,  
22 I believe, our training as a basis to train their  
23 staff as well on what we developed.

24 This was a collaborative effort with the  
25 industry by the way, NEI had developed or put together

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1 a task force, a cROP task force. We had a cROP  
2 working group and we met with them on several  
3 occasions at least 15 times as we developed the  
4 program. And so they were, you know, very involved  
5 with developing the program with us and provided good  
6 input.

7           Anyway, we trained the staff. We also  
8 issued Enforcement Guidance Memorandum, 11-06. What  
9 that Enforcement Guidance Memorandum did was give us  
10 authorization to disposition findings using colors  
11 like we do in the ROP and the Significance  
12 Determination Process, and issue notice of violations  
13 without severity levels. It essentially was our  
14 temporary guidance to provide the staff authorization  
15 to disposition findings like we do in the ROP. And as  
16 was mentioned earlier, we implemented the pilot at  
17 Vogtle on January 1st and at Summer in March when the  
18 COL was issued.

19           To date we've issued, actually it's been  
20 updated since our slides were prepared, I have an  
21 older version. We have seven Vogtle inspector reports  
22 and two Summer inspection reports. There's a third  
23 Summer inspection report that's coming out in the next  
24 few days that will cover the fourth quarter of  
25 inspection activities at the site. Included in that

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1 report is the Corrective Action Program team  
2 inspection that we conducted at Summer.

3 My understanding is the results of the  
4 Corrective Action team inspection were basically  
5 positive with no big findings associated with that,  
6 that are of greater than very low significance. But  
7 that report is still in a draft stage and hasn't been  
8 issued.

9 MEMBER SKILLMAN: Tom, may I ask you  
10 please, to reinforce the point that you just made for  
11 both Vogtle and Summer let me make a statement. The  
12 cROP program depends on the sites or the owners  
13 corrective action program. And so there are  
14 approximately ten findings right now among the two  
15 plants.

16 But for us to have confidence that those  
17 findings are meaningful, we need to be confident that  
18 the corrective action program at each site is robust  
19 and healthy. And the CATI results will give us that  
20 confidence. So I would like you to say a little more  
21 about Vogtle and Summer and the CATI inspection or  
22 Corrective Action Program inspections that have been  
23 conducted in this past year.

24 MR. KOZAK: Sure. The baseline inspection  
25 program that we have requires the resident inspectors

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1 to do daily reviews of Corrective Action Program  
2 documents, any things that are entered into the  
3 licensee's Corrective Action Program. And they do  
4 that and have done that throughout the course of the  
5 pilot.

6 They also do a focused look at, around  
7 five specific issues that have been entered into the  
8 Corrective Action Program and do an independent review  
9 of the corrective actions that are developed to  
10 address those issues.

11 Also required by our Corrective Action  
12 Program inspection procedure, and that procedure is  
13 Inspection Procedure 35007, Appendix 16, that's where  
14 our requirements are for our inspection. We also are  
15 required to do a team inspection. We conducted a team  
16 inspection earlier this year at Vogtle with a couple  
17 of findings that were of very low safety significance  
18 or green, and found in general that the licensee's  
19 program was adequately developed and implemented.

20 We're going to be conducting another  
21 Corrective Action team inspection at Vogtle in the  
22 next couple of weeks, I don't know the exact date when  
23 that will occur, but it's coming up in the near  
24 future.

25 We conducted the Corrective Action team

1 inspection at Summer in October I believe it was, and  
2 also found that the program was adequately developed  
3 and implemented. But like I said, the results of that  
4 inspection are yet to be documented.

5 Region 2 decided to combine the results of  
6 that inspection into the Quarterly Integrated  
7 Inspection Report and that report isn't due to be  
8 issued until February 15th is the due date, and I know  
9 they're in the final stages of putting that report  
10 together and issuing it.

11 But my understanding is that there were no  
12 findings that are of any greater than very low safety  
13 significance, and found that the program is working  
14 adequately to meet the regulations in Criterion 16 of  
15 Appendix B to Part 50.

16 MEMBER SKILLMAN: Tom, thank you.

17 CHAIR ARMIJO: Can I just conclude that  
18 you didn't find anything that was missed by the  
19 Corrective Action Program at these two sites?

20 MR. KOZAK: No, I don't think that, we had  
21 findings that there were for instance, an issue that  
22 was identified by one Corrective Action Program and  
23 put the corrective actions deferred to another  
24 Corrective Action Program. At the sites, the licensee  
25 has a Corrective Action Program, Westinghouse has a

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1 Corrective Action Program, Shaw has a Corrective  
2 Action Program. And at times, well that's been a  
3 little bit of a challenge at the sites.

4 CHAIR ARMIJO: Yes, is there overlap,  
5 duplication, or everybody thinking the other guy is  
6 taking care of it?

7 MR. FRYE: Yes, so I think there was a May  
8 inspection at Vogtle and that was some of the findings  
9 that the different programs had different thresholds,  
10 they weren't communicating well findings and so, you  
11 know, with that Region 2 is not ready to say that they  
12 felt the program was effective at that time. You  
13 know, it was not effective to warrant non-standard  
14 violations, which is one of the reasons that we do the  
15 Corrective Action Program effectiveness inspection.

16 And the other reason that we do it is just  
17 because it's important to establish that we have  
18 confidence in their Corrective Action Program as was  
19 said, that that was one of the fundamental tenets of  
20 the Reactor Oversight Process and the green band is  
21 that we have confidence that they can identify and  
22 correct, you know, items of low safety significance.

23 So yes, so those were some of the results  
24 in the last year of doing the inspection. One  
25 challenge, we do have David Ayres here from Region 2

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1 who can jump in as needed, but one of the challenges  
2 is that in order to inspect and evaluate the  
3 effectiveness of the program, you have to have a  
4 certain amount of throughput. They have to actually  
5 be, you know, exercising the program so that we can  
6 see if it's effective.

7 And with the amount of construction  
8 activity that's occurred in the last year, that was  
9 one of the challenges that Region 2 had in, you know,  
10 determining when they could go out and get a good look  
11 at the program.

12 And then another aspect of that, as we  
13 went through the year we realized that there were some  
14 improvements we could make in our guidance for how we  
15 inspected and assessed the effectiveness of the  
16 program. And part of Our Construction Experience  
17 Program, which is a subset of the Agency's Operating  
18 Experience Program, which I also have responsibility  
19 for, did a lessons learned review of how we assess the  
20 Corrective Action Program and we identified some  
21 changes to, in the future make this additional  
22 evaluation easier.

23 So we changed our guidance and we, you  
24 know, we streamlined it and provided some additional  
25 guidance to the regional management to help them, give

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1       them more guidance and criteria about how to make that  
2       determination as to when they felt the Corrective  
3       Action Program was effective.  So that's --

4                   MEMBER SKILLMAN:  Have any of the findings  
5       from either of the Corrective Action Program  
6       inspections caused you to conclude that either is  
7       deficient?

8                   MR. FRYE:  No.

9                   MEMBER SKILLMAN:  Okay.  Thank you.

10                  MR. FRYE:  Yes.

11                  MR. KOZAK:  So I'll continue on with the  
12       slides here.  The reason why we have more inspection  
13       reports at Vogtle than Summer is one, the combined  
14       license wasn't issued until the end of March so we  
15       didn't have a quarterly inspection report for the  
16       first quarter at Summer.  And we separated out a  
17       couple of inspections from the Integrated Reports.

18                  But the same amount of inspection and  
19       types of inspections have been occurring at both  
20       facilities since the combined license were issued.  So  
21       it may be misleading a little bit that we have more  
22       inspection reports at Vogtle than we do at Summer.

23                  All of our findings identified to date  
24       were very low safety significance.  We process the  
25       findings through Our Significance Determination

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1 Process. We determined that the safety, the  
2 Significance Determination Process is sound, it's a  
3 good approach we think, but we do have some  
4 improvements to make, you know, we tried to think of  
5 all of the different scenarios that we could ahead of  
6 time and the different ways that the words would be  
7 interpreted by the staff.

8 And there have been questions that have  
9 come up during the course of the year, and that will  
10 be one of the things that we address as we come out of  
11 the pilot and finalize our guidance documents. We  
12 received feedback, we've heard it and will be  
13 incorporating those types of things into our guidance  
14 documents.

15 MEMBER SCHULTZ: Tom, could you give us an  
16 appreciation for the level of effort, the resources  
17 that have been applied with regard to the pilot  
18 inspections? Just in general terms, it doesn't have  
19 to be in inspection hours or anything like that.

20 MR. KOZAK: Well in general terms, we have  
21 three resident inspectors assigned to each facility,  
22 specifically for construction. We also --

23 MEMBER SHACK: Is that per unit?

24 MR. KOZAK: No, it's per site.

25 MEMBER SHACK: It's per site.

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1 MR. KOZAK: Right. So three at Summer for  
2 Units 2 and 3, and three at Vogtle for Units 3 and 4.  
3 And they've been there throughout the course of the  
4 year and they conduct inspections just like, you know,  
5 the resident inspectors at the operating units. As we  
6 have a daily presence there onsite.

7 And we also have in the region, Division  
8 of Construction Inspection, which is similar to the  
9 DRS type inspectors that we have on the operating  
10 side, specialists. And we've had primarily welding  
11 engineering inspections out there and structural  
12 inspections, looking at rebar for things like, you  
13 know, the basemat is the big thing that's going on  
14 onsite right now and so those are the types of  
15 inspections that we've been doing at both sites from  
16 a specialist standpoint.

17 MEMBER RAY: You had a site visit,  
18 subcommittee did and public meeting out there looking  
19 at this separation between oversight of operations and  
20 oversight of construction so.

21 CHAIR ARMIJO: Yes, I had a question on  
22 the, do the inspectors have access to the various  
23 Corrective Action Programs, list of corrective actions  
24 ongoing from each of the, is there a master list  
25 available so that you know it's --

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1 MR. KOZAK: I don't know that there's a  
2 master list --

3 MR. FRYE: We're speculating right now, I  
4 don't know if David has an answer, but yes --

5 CHAIR ARMIJO: I'm not sure it should be  
6 but, you know, if I walked in there I'd like to see  
7 all of the things that are cooking for each --

8 MR. FRYE: Well, you know, that is one of  
9 our concerns is that it's, you know, having an  
10 integrated program is not a requirement of Criterion  
11 16 of Appendix B, but it's, you know --

12 CHAIR ARMIJO: It could spot some overlap  
13 or unnecessary, or some gap.

14 MR. FRYE: -- the segregation of  
15 Corrective Action Programs has historically caused  
16 many challenges so --

17 CHAIR ARMIJO: Okay.

18 MR. AYRES: Yes, hi, this is David Ayres  
19 from Region 2, Division of Construction Projects. And  
20 there is no real big master list, but our inspectors  
21 do have access to all the different programs and all  
22 the different corrective action lists.

23 CHAIR ARMIJO: So they just work it that  
24 way.

25 MR. AYRES: It's working that way.

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1 Sometimes you have to go a little circuitous route to  
2 get to some of it, but we're able to get to it.

3 CHAIR ARMIJO: Okay.

4 MR. KOZAK: Also during the pilot this  
5 year we implemented our Assessment Program. We  
6 conducted assessments after the first, second, and  
7 third quarters, the second quarter one being a mid-  
8 cycle assessment where mirroring the Reactor Oversight  
9 Process so the terms and types of assessments that we  
10 do will be familiar to you. It's the same idea we  
11 issued mid-cycle assessment letter, as I mentioned  
12 above, the findings were of very low safety  
13 significance and all of the units were in the licensee  
14 response column of our action matrix.

15 The action matrix is essentially identical to  
16 the Reactor Oversight Process's action matrix with the  
17 exception that we don't have performance indicators in  
18 construction. We had mentioned in our paper to the  
19 Commission that we were not able to come up with any  
20 performance indicators for constructions that would  
21 provide meaningful insights to performance and so we  
22 do not have that as an input to our action matrix. So  
23 the lone input into our action matrix is the  
24 significance of the inspection findings that we have.

25 We'll be conducting our end-of-cycle

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1 assessment this coming Monday and excuse me, and we'll  
2 be issuing our End-of-Cycle Assessment Letter March  
3 4th. It will be issued the same day as the Operating  
4 Reactors Assessment Letters.

5 We'll also be conducting public assessment  
6 meetings in the vicinity of the sites. And those are  
7 targeted for mid to late March or early April,  
8 although they don't really have to be completed until  
9 six months after the letter comes out, but our  
10 preference is to do them sooner rather than later.

11 MEMBER SKILLMAN: Have you conducted  
12 public assessment meetings before?

13 MR. KOZAK: We conducted a public  
14 assessment meeting at Vogtle because we had  
15 implemented our Corrective Action Program, or excuse  
16 me, our Construction Inspection Program at Vogtle when  
17 the limited work authorization was issued a couple  
18 years ago, so we have had a public assessment meeting  
19 at Vogtle.

20 We did not have a public assessment  
21 meeting at Summer, although we have conducted two  
22 public outreach meetings at Summer to reach out to the  
23 public, let them know what our inspection program is,  
24 you know, composed of, and show the public where  
25 information is located on our Web sites and that. So

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1 we've had meetings, but the assessment meeting only at  
2 Vogtle so far.

3 MEMBER SKILLMAN: May I ask, for those  
4 three meetings, what the attendance has been and what  
5 the tone has been?

6 MR. KOZAK: Well, just to clarify, we had  
7 another meeting at Vogtle so for the oversight process  
8 we've had four meetings, two at each site.

9 MEMBER SKILLMAN: Okay.

10 MR. KOZAK: And the attendance was fairly  
11 good I would think. I would say about 50 or so  
12 members of the public at each site. And there's  
13 interest from local public in what activities are  
14 going on at the site. They're aware of the findings  
15 that we've had from looking at them on the Web site.  
16 They are also aware of license amendments that have  
17 been submitted.

18 Overall the tone I would say, has been  
19 questioning us, finding out what we're doing, but no  
20 real, nothing very negative I would say. So I think  
21 that, what I would say at the end of the meetings,  
22 several people approached us and thanked us for coming  
23 out and providing the information to the public and,  
24 you know, requested that we do this on a routine  
25 basis.

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1 MEMBER SKILLMAN: Thank you.

2 MR. KOZAK: So once we finished the pilot  
3 December 31st, we solicited stakeholder feedback. We,  
4 actually at the end of the pilot, towards the end, we  
5 issued internal and external surveys. Quite frankly,  
6 we haven't had a lot of interest from external  
7 stakeholders outside of the, obviously the licensees  
8 responded to our survey, but no other responses from  
9 any other, say public interest groups or members of  
10 the public or anything like that. And we have  
11 attempted to generate interest, we've sent  
12 invitations, done press releases and --

13 MEMBER SHACK: Free pizza!

14 MR. KOZAK: Yes.

15 MR. FRYE: We were as creative as we could  
16 be.

17 MR. KOZAK: Right. And it's just not on  
18 the radar screen right now for a lot of people. So it  
19 is what it is. We received, about half of the  
20 inspectors took the time to respond to our internal  
21 survey and we've got a good feedback from that.

22 And then we'll be conducting, we're in the  
23 process of conducting a self assessment, and that self  
24 assessment will include an evaluation of the pilot and  
25 will be reported to the Commission in a SECY paper

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1 that's due mid-April.

2 And we'll be doing that in support of the  
3 Agency Action Review Meeting, and that is done in  
4 parallel to the Reactor Oversight Process, it's self  
5 assessment. Not as detailed, we only have four  
6 plants, so resident demographics and things like that  
7 aren't as, you know, you don't learn a lot from them.  
8 So we don't have all that type of information in  
9 there.

10 But we do a very thorough look at how  
11 we've implemented the program, the findings we've had,  
12 and how we're spending our resources and things like  
13 that.

14 MEMBER SKILLMAN: For the participation  
15 that you have had from the public in the locality, has  
16 it crossed your mind to discontinue the meetings  
17 because there isn't amount of participation you might  
18 have wanted, or is the idea, let's keep doing this?

19 MR. KOZAK: No, the idea is to continue  
20 doing it. And like I said, we had about 50 members of  
21 the public at the meeting so that's a pretty good  
22 turnout. What I meant when I said we haven't gotten  
23 quite the responses that we expected to our surveys  
24 and things like that, the members of the public while  
25 they do come to our meetings, they're not taking the

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1 time to respond to our surveys and that sort of thing.

2 And, you know, even though we reached out  
3 to various interest groups, they were not interested  
4 in being part of the development of the Construction  
5 Reactor Oversight Process. If you recall, Reactor  
6 Oversight Process was a large involvement with various  
7 different representatives from all different types of  
8 stakeholders. Even though we reached out, we didn't  
9 get that same type of interest for the Construction  
10 Reactor Oversight Process.

11 MEMBER SKILLMAN: Okay, thank you.

12 MR. FRYE: And just to add to what Tom  
13 said, one thing that we will always continue to do is  
14 go out at least once a year as part of our public  
15 meeting, that's part of our assessment process, where  
16 we will discuss the results of the assessment for the  
17 last prior year. We also discuss the program in  
18 general so that's just built into the program. And so  
19 we will always be going to the site in a public  
20 meeting at least once a year for that reason.

21 MEMBER SKILLMAN: Thank you.

22 MR. KOZAK: So during the pilot we had a  
23 number of initial lessons learned. We put out  
24 revisions to our pilot documents to incorporate these  
25 lessons learned. I'll go through a couple of them

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1 right now. We modified our guidance for our  
2 Corrective Action Program effectiveness reviews.

3 What we learned, we did a, through our  
4 Construction Experience Program, we did a review of  
5 why we hadn't done our Corrective Action Program  
6 effectiveness review early on in construction. And we  
7 learned that some guidance that we had in our  
8 inspection procedure and our manual chapter had an  
9 unintended consequence of delaying that effectiveness  
10 review because we had put in there that we weren't  
11 going to do the effectiveness review until the  
12 licensee told us they're ready for that review and  
13 there was enough throughput through the program.

14 And we also had assigned that evaluation  
15 to the annual Corrective Action Program inspection  
16 team. And through feedback from the inspectors and  
17 our own review through our Construction Experience  
18 Program, we determined that that review should be done  
19 on a management level, and it should be done as part  
20 of our assessment program, reviewing the record of our  
21 inspections of the Corrective Action Program, because  
22 there's more than as I mentioned earlier, more than  
23 just the team inspection. We have the residents  
24 looking on a daily basis at issues that are entered in  
25 the Corrective Action Program. We look at specific

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1 issues.

2 Every one of our baseline inspection  
3 procedures has a Corrective Action Program element to  
4 it so we look at it continuously, it's not just  
5 through the annual team inspection. And so we changed  
6 our guidance to move the Corrective Action Program  
7 effectiveness review to the mid-cycle and end-of-cycle  
8 assessment meetings.

9 And it will be done by management in  
10 Region 2 based on what is on the inspection record for  
11 the Corrective Action Programs. And we think that  
12 that will be a better approach than we had initially  
13 thought of doing when we put our guidance together.

14 We provided additional guidance for our  
15 assessment letter contents. If you're familiar with  
16 the Reactor Oversight Process, on our assessment  
17 letters the only inspection findings we ever talk  
18 about are those that are greater than green.  
19 Otherwise we say, we conducted our baseline inspection  
20 program, all findings were green and the licensee is  
21 in the licensee response column.

22 We felt that for the construction program,  
23 when we first put our guidance out we had the same  
24 type of guidance. For the Construction Inspection  
25 Program though we thought, since we have greater

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1 flexibility in our baseline inspection program to  
2 increase and decrease samples especially within ITAAC  
3 area, that we thought that it would be good to  
4 summarize the results of our baseline inspection  
5 program even if we didn't have greater than green  
6 findings, if we were going to use those results to  
7 focus our future baseline inspections in a certain  
8 area.

9 For instance, if we had findings in a  
10 design control area and we were going to increase our  
11 look and our baseline program and design control, we  
12 could put that into our mid-cycle or end-of-cycle  
13 assessment letter. And we think that that  
14 communicates better to the public what our inspection  
15 program is identifying and where we're going to focus  
16 our efforts. And not only to the public, but to the  
17 licensees.

18 VICE CHAIR STETKAR: Tom, does it have an  
19 unintended consequence to the public that, you know,  
20 in the normal Reactor Oversight Process they don't see  
21 anything, any of the details of things that are judged  
22 to be green. Here they see the details of everything  
23 which gives the impression that, my God, you're  
24 finding a lot of things during construction, that  
25 there's a lot of problems. What's wrong?

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1 MR. KOZAK: Well we're not, our guidance  
2 --

3 VICE CHAIR STETKAR: Because you don't  
4 have that differentiation, you don't have that metric.

5 MR. KOZAK: Right. Our guidance isn't to  
6 discuss every finding that we've had.

7 VICE CHAIR STETKAR: Okay.

8 MR. KOZAK: Our guidance is to briefly  
9 discuss an area where we may be focusing our baseline  
10 inspection program. So we're not --

11 VICE CHAIR STETKAR: Okay.

12 MR. KOZAK: -- we're not doing a rehash of  
13 all the findings that we had.

14 VICE CHAIR STETKAR: Thanks.

15 MR. KOZAK: We provided additional  
16 guidance for ITAAC finding documentation, this was  
17 based on feedback we received from the licensees and  
18 reading our inspection reports, that we weren't as  
19 specific as we could have been in tying our finding to  
20 an ITAAC acceptance criteria. And we thought that was  
21 good feedback and it will help us also when we go to  
22 close the issues, to make sure that our findings are  
23 tied directly to the acceptance criteria if we do have  
24 an ITAAC finding.

25 We added a requirement to track licensee-

1 identified violations. Typically if we document a  
2 licensee-identified violation we don't track that. We  
3 don't assign a tracking number to it. But if it's  
4 involved with an ITAAC, we thought it would be most  
5 efficient for us to assign a tracking number to  
6 licensee-identified violation and enter it into our  
7 information technology system so that when we get the  
8 ITAAC closure notification, anything that we have  
9 documented that's associated with that ITAAC will come  
10 up when we do a search and will make our ITAAC closure  
11 notification verification more efficient. So that's  
12 why we did that.

13 We clarify the role of vendor inspections  
14 and ITAAC verification, we just added some guidance to  
15 manual chapter 2506 so that when our vendor inspectors  
16 are out at a vendor facility and they're looking at  
17 something that's associated with an ITAAC, that we  
18 make sure that we get that information that if there  
19 are any findings, to the inspectors in Region 2 so  
20 that when that component or whatever it is comes from  
21 the vendor and goes to the site, the inspectors are  
22 aware of any findings that we might have as a part of  
23 our vendor inspection program.

24 And then we attempted to clarify the  
25 difference between vendors and suppliers and

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1 contractors working on behalf of the licensees. This  
2 is an area that we're doing some, making sure that  
3 we're clear in our guidance documents, when we  
4 consider work being conducted as a vendor and when  
5 work is being conducted on behalf of the licensee by  
6 contractor, the people that they have contracted to  
7 help them build the plant in accordance with its  
8 design.

9 The way we evaluated the pilot program  
10 results is we had eleven metrics in four different  
11 areas. These were the metrics that were in the memo  
12 that I mentioned at the beginning that we issued for  
13 the pilot with the objectives, scopes, and acceptance  
14 criteria. The four areas we had were the risk  
15 informed baseline inspection program, the assessment  
16 --

17 MEMBER BLEY: I guess this is a point I'd  
18 like to ask a question. I see you have some backup  
19 slides maybe I'd like you to get to. But can you walk  
20 us through what the different colors actually mean and  
21 what do we mean by risk-informed in these inspections?

22 MR. KOZAK: The colors?

23 MEMBER BLEY: Green.

24 MR. KOZAK: Oh, sure. Well green  
25 represents the significance of very low safety

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1 significance. White --

2 MEMBER BLEY: Measured how?

3 MR. KOZAK: Okay, the --

4 CHAIR ARMIJO: Got that chart.

5 MEMBER BLEY: I'm trying to get him to go  
6 there.

7 MR. KOZAK: Oh yes, you want us to go  
8 through the SDP, to show how we get to a certain  
9 color?

10 CHAIR ARMIJO: Yes, go to the backup.

11 MR. KOZAK: All right, do we have the  
12 backup?

13 MEMBER SHACK: You knew you were going to  
14 get to the SDP when you put it in.

15 MR. KOZAK: Well I told him, but he made  
16 me take it out.

17 MR. FRYE: I didn't want to talk about it.  
18 So is it the backup?

19 CHAIR ARMIJO: Yes.

20 (Off microphone discussion)

21 MR. FRYE: You know, while we're trying to  
22 get set up, one of the things that is consistent with  
23 the ROP is that the green, white, yellow, and red,  
24 while they have a risk-informed basis to them, they're  
25 also defined by the type of regulatory reaction that

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1 we want to have. So sometimes we use deterministic or  
2 expert judgment but, so the common theme between the  
3 green, white, yellow, red, between ROP and  
4 Construction ROP is how concerned we are, the  
5 indications of how pervasive the performance  
6 deficiency is by the licensee and what our response  
7 should be. So that is one common factor between --

8 MEMBER BLEY: I don't want to be flippant  
9 about this, but that almost sounds like, if we think  
10 they ought to get their wrists slapped, we'll give  
11 them a different color, and they don't need to know  
12 the systematic path.

13 MR. KOZAK: No, that's not the way it  
14 works.

15 MR. FRYE: No, that, yes. I may not have  
16 explained it as well as I could have, but --

17 MR. KOZAK: Want me to go through this?

18 MR. FRYE: Yes, go ahead, please.

19 MR. KOZAK: The flow chart here that we  
20 have up on the screen is where we begin our  
21 Significance Determination Process. Tim mentioned  
22 earlier that we have a unique thing in construction  
23 where we have to look at the adequacy of programs. So  
24 that's what this flowchart is, is it basically is  
25 asking if the finding is part of an operational

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1 program or a construction program. And if there's a  
2 critical attribute of that program that's missing,  
3 then if we have not previously identified it it's  
4 green, and if we have previously identified it it's  
5 white.

6 And what I mean by a critical attribute  
7 would be, a good example is, in Criterion 16, the  
8 requirement is to identify and correct conditions  
9 adverse to quality. If we went and reviewed a  
10 licensee's Corrective Action Program, and it did not  
11 have a requirement in it to enter conditions adverse  
12 to quality, in other words identify them and correct  
13 them, then that would be an omission of a critical  
14 attribute in the program.

15 And so if that was the first time that we  
16 identified it, you look on the bottom left where it  
17 says, the Circle Number 5, if we have not previously  
18 identified it, it would go to green. However, if we  
19 identified a finding and we went back and did another  
20 look at their Corrective Action Program and found that  
21 they had still not fixed that and had not entered that  
22 requirement into the program, then that would be a  
23 white finding.

24 So we think that it's, you know, we should  
25 only have to do, the idea behind that is if there is

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1 a, there would be a problem with their internal  
2 controls if they haven't successfully identified a  
3 problem that we --

4 MEMBER SHACK: They corrected a problem  
5 you identified then.

6 MR. KOZAK: Right. So that's why it's a  
7 simple green, white threshold there. So that's the  
8 left part of the, most of the findings are going to  
9 screen right out of this and go into the technical  
10 finding SDP because the programs, usually the programs  
11 have those attributes they just fail to implement them  
12 adequately, of the types of findings we get. So, but  
13 we had to have this part and it's really  
14 deterministic, there's no --

15 MEMBER BLEY: Let me ask you a question  
16 then. If you spot something during construction, I'm  
17 looking at the second box up there coming down, and  
18 it's related to a safety system in the plant, such  
19 that if the plant were operating, that system might  
20 not function properly, does that then shift you off?  
21 Because it looks to me like you would then go to the  
22 regular ROP and evaluate the actual risk associated  
23 with that --

24 MR. KOZAK: Right, in the second box  
25 there, the idea is if the operational program has

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1 already been implemented, we would use the ROP SDP to  
2 evaluate the finding. If the finding's associated  
3 with construction, the third box says, is the finding  
4 only a programmatic issue, no technical issue? If the  
5 answer to that is no, meaning there is a technical  
6 issue, that kicks us off into the technical finding  
7 SDP.

8 MEMBER BLEY: And even for the technical  
9 finding it's got to be repetitive before --

10 MR. KOZAK: No it does not.

11 MR. FRYE: So keep in mind that this left  
12 hand side of this SDP deals with the unique situation  
13 for construction where I talked about briefly at the  
14 beginning, where we need to do programmatic  
15 inspections of the 19 key operational programs that  
16 are identified in the licensee basis that need to be  
17 developed and implemented, need to be developed and in  
18 place by a certain point prior to fuel load for  
19 example, but may not have been implemented yet.

20 So it's that case where it hasn't been  
21 implemented yet but we need to go out, we go out and  
22 inspect it and we find some fundamental flaw that they  
23 have not, you know, addressed a critical attribute.  
24 And so that's really, that scenario that that left  
25 hand side gets in. And as you can see, we decided

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1 pretty early on that if the program hasn't been  
2 implemented, it's really hard to get above a white  
3 finding because just really, it's not any more safety  
4 significance than that because it was not implemented  
5 so it's not an associated technical impact.

6 CHAIR ARMIJO: Go to the next slide.

7 MR. KOZAK: So we have a technical finding  
8 that goes through to the right there, Block 6 into  
9 Block 7. And if we can associate it with a system or  
10 a structure, then it goes to our technical finding  
11 SDP. And our technical finding SDP is based on a  
12 matrix that you can see in front of you. On the y-  
13 axis, it's a measure of quality of construction. And  
14 that's a deterministic look at the finding.

15 And what this is, is Row 1 would be, the  
16 finding has no impact on the design function of the  
17 system or structure that we have the finding  
18 associated with. Row 2 would be, if you have an  
19 impact on a portion of the system or structure that  
20 the finding's associated with. Row 3 is if the  
21 finding results in the whole system or structure not  
22 being able to meet its design function. Row 4 is  
23 reserved for if there's a repetitive, significant  
24 condition adverse to quality associated with the  
25 finding. So you escalate one row if you have a

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1 repetitive, significant condition adverse to quality.  
2 And that's how the matrix works.

3 On the x-axis, you see very low, low,  
4 intermediate, and high. And what that refers to is  
5 the safety significance of the structure of the system  
6 that's involved.

7 VICE CHAIR STETKAR: How is that  
8 calculated?

9 MR. KOZAK: We did it with, we had an  
10 expert panel that we put together that yes, were PRA  
11 experts, if you recall Don Dube who used to be with  
12 the NRC and retired recently, he was one of our  
13 experts with --

14 VICE CHAIR STETKAR: Really difficult if  
15 I have a core damage frequency on the order of pick a  
16 number, ten to the minus six, for any expert to  
17 differentiate risk achievement worths less than four,  
18 four to 40, 400 to, I mean that's kind of, the  
19 numerical precision that's implied by that x-axis is  
20 misleading, let me just say that.

21 MR. KOZAK: Well, yes. And it was meant  
22 to be kind of a high level look on a way to  
23 distinguish between the more safety significant  
24 systems in the plant and the least safety significant.

25 VICE CHAIR STETKAR: But what I'm hearing

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1 you say, and maybe there's more, is that you got a  
2 bunch of people together and said yes, I think this is  
3 probably important, yes, this is probably not so  
4 important.

5 MEMBER SHACK: Well no, they used the SPAR  
6 model and they used the --

7 VICE CHAIR STETKAR: Okay, they used the  
8 SPAR model. Okay now, what's the basis for the SPAR  
9 model?

10 MR. KOZAK: You know, I have to defer to  
11 PRA experts there. I'm not prepared to answer.

12 VICE CHAIR STETKAR: I'm aware of some  
13 PRAs that were done for new designs that didn't model  
14 at all some systems, didn't model them at all. Hence,  
15 by definition their risk achievement worth is zero  
16 because they're not even in the model. So they won't  
17 even fall on your radar. And the SPAR models are  
18 simplified models of the licensees or the applicants  
19 here.

20 MEMBER BLEY: Not so simplified anymore  
21 actually.

22 VICE CHAIR STETKAR: For the new plants  
23 though, they are. These are new designs. So I'm  
24 curious about this numerical precision.

25 MEMBER SHACK: I'm not arguing. Let's say

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1 he's got a much --

2 MEMBER SHACK: Once you get the RAWs from  
3 the PRAs, then they go back to the expert panel and,  
4 you know, then they end up with again, they go system  
5 by system using engineering judgment.

6 MR. FRYE: I don't think we're advertising  
7 this as a risk-based, you know, approach. It's risk  
8 informed and it's --

9 VICE CHAIR STETKAR: You're using  
10 numerical values though and my question is what's the  
11 basis for that numerical value?

12 MR. KOZAK: Well, the approach is detailed  
13 in the main body of the manual chapter 2519P. But we  
14 would have to get back to you, we're not prepared to  
15 address your questions.

16 VICE CHAIR STETKAR: In principle though,  
17 well not in principle, in practice, especially for the  
18 new designs that have a fair amount of redundancy and  
19 a fair amount of diversity, I think it would be really  
20 hard pressed to get anything but green, regardless of  
21 this completeness issue.

22 MR. KOZAK: Well there's, are you really,  
23 are you talking about when the plants are operating?

24 VICE CHAIR STETKAR: No, no, no, no, I'm  
25 talking about, you know, I'm still hanging up a bit on

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1 your use of what you're calling a risk-informed  
2 approach with these numerical criteria.

3 MR. FRYE: Well, we have a firm finding  
4 right now that is in our high column.

5 VICE CHAIR STETKAR: So by implication of  
6 this, that was judged to have a risk achievement worth  
7 greater than 400.

8 MR. FRYE: Correct.

9 VICE CHAIR STETKAR: Because that's the  
10 only way you can get up to that corner is that --

11 MR. FRYE: -- high at any rate, you have  
12 your other table.

13 MR. KOZAK: Right. Go on to the next  
14 slide. This is the systems where we assign to the  
15 various columns and they were done with experts from  
16 Westinghouse, from Southern Nuclear Company from, you  
17 know, South Carolina Electric and Gas, and from the  
18 NRC through a meeting and these were the systems and  
19 what columns they were assigned to based on the risk  
20 achievement worth that they assigned to those various  
21 systems. And so we covered all of the systems during  
22 the expert panel, and there was consensus reached  
23 between the various parties that were there. And that  
24 was the approach that we took to assign.

25 VICE CHAIR STETKAR: The only thing I'm

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1 questioning is not a bunch of smart people sitting  
2 around a table saying yes, I think spent fuel system  
3 is very low. Or I think containment isolation is  
4 probably low as far as risk is concerned because it  
5 doesn't affect core damage frequency. Maybe, maybe  
6 not. And, you know, maybe the containment  
7 recirculation might be high. Those are qualitative  
8 judgments made by experts. That's no problem with  
9 doing that as long as that's the way you sell it.

10 If you're saying you're using risk models  
11 to come up with quantitative estimates, that requires  
12 a certain amount of quality in those risk models, a  
13 certain amount of completeness.

14 MR. FRYE: Well again, I think we're  
15 saying that we're using a risk-informed approach to  
16 use risk models to inform our expert panel. I mean,  
17 I don't think we're advertising this as risk-based in  
18 any way.

19 MR. KOZAK: We used the PRA that was  
20 submitted with the Design Certification.

21 VICE CHAIR STETKAR: Yes?

22 MR. KOZAK: And it is what, you know, the  
23 quality of, it is what it is and that's what we used  
24 to come up with the risk achievement words through  
25 calculations done by the, you know, by Don Dube

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1 primarily and agreed upon with the other PRA experts.

2 VICE CHAIR STETKAR: You can crucify Don  
3 because he's retired.

4 (Off microphone discussion)

5 MEMBER BLEY: On the other hand, given the  
6 alternatives for ways to rank these things, to me this  
7 feels like a good step forward.

8 VICE CHAIR STETKAR: It's okay, I'm just,  
9 as I said, I don't have any problem with --

10 MR. FRYE: I don't think we're trying to  
11 oversell it for, you know, trying to make it any more  
12 robust than it is or any more risk-based than it is.

13 MEMBER BLEY: And the right column isn't  
14 empty, which --

15 VICE CHAIR STETKAR: The right column  
16 isn't empty and there's probably good reason for that.  
17 It's just that the numerical values that you showed on  
18 the previous side are quite honestly, very surprising.

19 MALE PARTICIPANT: Well that was --

20 VICE CHAIR STETKAR: People have used, yes  
21 let me finish then I'll --

22 MALE PARTICIPANT: I'm sorry.

23 VICE CHAIR STETKAR: People have used the  
24 PRAs to identify either RTNSS for AP1000 or DRAP  
25 equipment. And they use criteria of, for example,

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1 risk achievement worth greater than two as being risk  
2 significant versus non-risk significant. And they  
3 come up with a very modest amount of risk significant  
4 stuff by doing that. And yet you're expanding that  
5 scale out to risk achievement worths on the order of  
6 400 and populating things with a fairly large amount  
7 of --

8 MEMBER BLEY: On the other hand if you  
9 look, it looks like what they've done, shame Don's not  
10 here, it looks like what they've done is they've taken  
11 out the whole function associated with whatever was  
12 failed, which pushes you to the higher end --

13 VICE CHAIR STETKAR: Pushed you to the  
14 higher end.

15 MEMBER BLEY: -- which gets attention to  
16 it. And in fact, once these things are spotted, I  
17 assume most get fixed. Certainly the ones at the high  
18 end but almost everything, I mean you're doing the  
19 inspection program, you find it and the plant's not  
20 operating yet.

21 MR. KOZAK: And the ideas are, we have a  
22 sampling inspection approach. And if we find that the  
23 quality of construction on a high, on a system  
24 assigned to the high column has, you know, has  
25 affected the design function of that, we want to

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1 engage with the licensee and respond to that to look  
2 and see what's going on on lower significant areas.  
3 And that's why we would do a supplemental inspection,  
4 and that was kind of the concept behind this.

5           So since we do the sampling, we felt that,  
6 and if you look at the matrix, if you back to the  
7 matrix, you know, you can see that if you only, on Row  
8 2 there, if you've affected a portion of a high,  
9 system that's been assigned to the high column, you  
10 get a white finding and we're going to do a  
11 supplemental inspection with the idea that, you know,  
12 if there's deficiencies identified with the higher  
13 risk systems, what's going on with the other ones, you  
14 know? So that's the concept that we had and that's  
15 why we say it's risk-informed, this is how it's risk-  
16 informed.

17           And it's also risk-informed through our  
18 targeting process for ITAAC. That was a consideration  
19 that was taken into account on the ITAAC that we're  
20 inspecting. That's why our inspection program is also  
21 considered risk informative. That was the  
22 consideration given when we ranked the ITAAC and  
23 determined which ones we were going to be inspecting,  
24 again as sampling program we look at approximately 30  
25 to 35 percent of the ITAAC in our baseline inspection

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1 program.

2 So that's how our SDP works. It's, we  
3 hope repeatable and, you know, there's some  
4 subjectivity that goes into the y-axis. The x-axis is  
5 already predetermined so the inspectors aren't doing  
6 any type of calculations or anything like that.  
7 That's been working well, it's easy to identify where  
8 it goes, what's been, you know, where we need to work  
9 on is clarify what is meant by the rows on the quality  
10 of construction, the measure of quality of  
11 construction on the y-axis and that's what we're  
12 working on.

13 MEMBER SHACK: Yes, the words you were  
14 using are a little different than the words that are  
15 in the document. Now I don't know whether that's just  
16 your casual thing or you actually have some changes in  
17 mind from the, you know --

18 MR. KOZAK: Probably a little of both.

19 MEMBER SHACK: -- at least the draft  
20 document we were looking at.

21 MR. KOZAK: Manual chapter 2519, I think  
22 if you look in Appendix A, which is the AP1000 --

23 MEMBER SHACK: Right, that --

24 MR. KOZAK: -- and you look at the AP1000  
25 SDPs, if you go to the steps, and I believe it's Step

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1 12, I think that's where it mentions the --

2 MEMBER SHACK: Okay, so this is where we  
3 can get the definitions of Row 1, 2, and 3, 4 in the  
4 text.

5 MR. KOZAK: The main, right.

6 MEMBER SHACK: Yes.

7 MR. KOZAK: That's kind of the overall  
8 concept.

9 MEMBER SHACK: Okay, so look at the detail  
10 in the appendix, okay.

11 MR. KOZAK: Right, right, and it would be  
12 the design function of the system or structure that is  
13 in question. And we've defined the design function,  
14 we've pulled it out of the DCD and it's right in our  
15 manual chapter, so that's right there as well.

16 MR. FRYE: And we had the opportunity to  
17 exercise this at least two or three times during the  
18 pilot. And I think --

19 MR. KOZAK: Well no, we've exercised it  
20 for every finding so, the ten findings.

21 MR. FRYE: Well, I don't know, you know,  
22 okay.

23 MR. KOZAK: No really, I mean --

24 MR. FRYE: All right thank you, yes. And  
25 I think the feedback we got from the regional

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1 inspectors is that the tool has been successful at,  
2 you know --

3 MEMBER SHACK: Well wait until you get  
4 your first white or yellow finding and then you'll --

5 MALE PARTICIPANT: Right, take another  
6 look.

7 MR. FRYE: Yes, but yes, so, you know, and  
8 we're not saying that it's right, that there aren't  
9 changes to make in the future, and that's just a key  
10 aspect of this whole presentation is that we realize  
11 that, you know, even though we're ready for full  
12 implementation, that we will continue to assess this  
13 program and identify changes to make it better.

14 MR. KOZAK: Now the key I think is that we  
15 determined that the Significance Determination Process  
16 can be applied to construction. And it's working.  
17 Clearly today, in the ROP the Significance  
18 Determination Processes are being revised to address  
19 issues that come up and people hadn't thought about  
20 and it's 12, 13 years later.

21 So we're just in the first year, we  
22 certainly have things to incorporate in the quality of  
23 construction for sure. So far we're comfortable with  
24 what the risk importance determinations were, it seems  
25 to be working okay. We're focused more on clarifying

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1 when a finding can affect the design function of a  
2 system or a structure and what row it should go into.  
3 That's where our focus is right now on improving our  
4 SDP.

5 But it's not just a, you know, by putting  
6 this together, that was our attempt to be repeatable  
7 and predictable. And I think that really, the debate  
8 centers around the row right now and we need to hone  
9 in on that. That's where our improvement needs to be.

10 But when we conclude that we're ready to  
11 go fully implement the program, we do that because we  
12 believe that the approach is sound. And at first we  
13 didn't know that we could apply a Significance  
14 Determination Process to construction, but we think it  
15 works, it's working.

16 MEMBER SKILLMAN: Let's go back to Slide  
17 12 and continue please.

18 MR. FRYE: If I can figure out how to do  
19 that.

20 MR. KOZAK: It's the same --

21 MEMBER BLEY: Type 12 and hit return.

22 MR. FRYE: Oh, okay.

23 (Off microphone discussion)

24 MR. KOZAK: So we evaluated our eleven  
25 metrics, they were in that memo that I mentioned

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1 earlier in these four areas, and we had a public  
2 meeting yesterday, invited whatever stakeholders  
3 wanted to attend. We had NEI members, SCANA, and  
4 Souther Nuclear representatives. And we went through,  
5 and we also had a person from Dominion who was on the  
6 task force. And we went through the eleven metrics  
7 and agreed that we had met all eleven metrics and  
8 there was agreement between the industry and us that  
9 we should fully implement the program.

10 A question that we asked in our survey  
11 was, has there been sufficient activity during the  
12 pilot? We wanted to make sure that we had exercised  
13 the program enough through the pilot. And the  
14 consensus both internally and externally was that we  
15 did. We had enough throughput to conclude that the  
16 structure of the program is sound.

17 I mentioned some lessons learned that we  
18 incorporated and will continue to do that. It will be  
19 a living process, but the consensus is that yes, we're  
20 comfortable with moving forward with the program that  
21 the regulatory framework is good, the Significance  
22 Determination Process is, you know, works. A  
23 construction action matrix can be applied to  
24 construction. So from that standpoint we feel we're  
25 ready to implement fully.

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1           Some additional feedback that we received,  
2           I have already talked about this with the SDP, the  
3           first bullet, clarify when a performance deficiency  
4           can be considered to affect the system or structure  
5           design function as used in the SDP, we're working on  
6           that. We've had suggestions to add a chapter to the  
7           enforcement manual for construction, we're working on  
8           providing input to OE, our Office of Enforcement for  
9           that.

10           Cross-cutting aspects, we have cross-  
11           cutting aspects in construction. We're going to take  
12           a longer term look at the cross-cutting aspects to  
13           make sure we have the right ones for construction, but  
14           that's going to be on the heels of what the ROP does  
15           to address the Commission's Safety Culture Policy  
16           Statement.

17           What our approach was is we looked at the  
18           aspects that were in the ROP and we eliminated the  
19           ones that clearly didn't apply to construction and  
20           kept the other ones, and just used those moving  
21           forward. So we think we can do some work in this area  
22           but it will probably be a year off into the future  
23           before we do anything significant in this area.

24           MEMBER RAY: Wait, why is that? I guess,  
25           let me put it to you this way, if you find a whole

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1 bunch of greens like you have so far, and they were  
2 all due to a common reason, would you have recognized  
3 that?

4 MR. KOZAK: Yes, because we do have cross-  
5 cutting aspects and we do apply them to the findings.  
6 What we're talking --

7 MEMBER RAY: What are you putting off  
8 then?

9 MR. FRYE: Well, we think there's areas  
10 for improvement. We think that there might be some  
11 cross-cutting aspects that are more relevant to  
12 construction that we don't have yet.

13 MR. KOZAK: We've had some suggestions  
14 that we could possibly have cross-cutting aspects in  
15 the area of quality assurance because primarily,  
16 that's where we do our inspections in construction.  
17 So we could have aspects in the various criterion of  
18 Appendix B. So it might be more relevant to  
19 construction. But the aspects that we are using  
20 identify things such as procedural, you know,  
21 adherence, resources, those types of things, work  
22 control. So we still have the ability to tag the  
23 findings and identify trends.

24 MEMBER RAY: Well what about the, for  
25 example, ineffective internal oversight? Not

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1 implementing an Appendix B program in other words.

2 MR. KOZAK: Right, we could capture that  
3 with aspects that we have today. However, I think  
4 that we could probably develop some that are more  
5 directly related to construction. So it might be, you  
6 know, addressed specifically what you just brought up.  
7 But we can tag the finding with the aspects we have  
8 now and get a trend in an area like that.

9 MEMBER RAY: Yes, I mean, I think it  
10 should always be assumed that because the Agency can,  
11 at the end of the day ever only do sampling, that what  
12 you're really trying to do is not find the really bad,  
13 red finding, but to find something that could and  
14 might have, without your knowing it, resulted in a  
15 condition that's like a red finding.

16 MR. FRYE: Yes, leading indicators, that's  
17 our goal.

18 MEMBER RAY: Yes, and I just, when you  
19 said it was being put off, it didn't sound like you --

20 MR. FRYE: Well, let me just add to that.  
21 We are actually, we've had numerous design control  
22 findings in our first year of construction. And we  
23 have a, again, we've taken the construction experience  
24 program is looking at those to determine if we are  
25 evaluating those and acting on those properly. And

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1 one of the key areas that we're looking at is the  
2 cross-cutting aspects. Are we assigning the right  
3 cross-cutting aspects to these design control issues  
4 so that we can identify a trend and act on it. So,  
5 you know --

6 MEMBER RAY: Well, I don't know if trend  
7 is the right --

8 MR. FRYE: Well, that might not be the  
9 right term but --

10 MEMBER RAY: -- term, but I mean it's  
11 really a question of, you have to assume you can't do  
12 enough inspection to find a really serious problem.  
13 The best you can ever do is do enough inspection to  
14 determine that the program isn't being implemented  
15 effectively and as a result of that there may be a  
16 serious problem. That's the best you can ever do.

17 MR. FRYE: I think we would agree with  
18 that and that's what we're trying to get out of the  
19 cross-cutting aspects.

20 MR. KOZAK: I didn't mean to leave you  
21 with the impression that we're not able to use cross-  
22 cutting aspects to categorize our findings, if you  
23 will.

24 MEMBER RAY: Well, I guess I just would  
25 have said, and I realize I'm not, maybe being a little

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1 harsh here, but have you found any yet?

2 MR. KOZAK: Yes.

3 MEMBER RAY: I mean, you reported that all  
4 of the findings so far were of very low safety  
5 significance. But the more important issue is, did  
6 any of them identify, or a number of them taken  
7 collectively, identify a programmatic problem or what  
8 we choose to call a cross-cutting issue.

9 MR. KOZAK: Right. We have not identified  
10 a substantive cross-cutting issue at either site so  
11 far. We do have the criteria in place to do so if we  
12 get four aspects in the same, or four findings with  
13 the same aspect --

14 MEMBER RAY: Is that a trigger for you?

15 MR. KOZAK: Yes.

16 MR. FRYE: Yes, that's a trigger.

17 MEMBER RAY: Four findings with the same  
18 aspects.

19 MR. FRYE: Right, so it's important to  
20 realize that we have identified cross-cutting aspects  
21 for the majority of our findings that we've had. They  
22 have not reached the triggers for us to take  
23 additional action, one of the triggers being four  
24 related, you know, four of the same cross-cutting  
25 aspects, which indicates some sort of adverse trend

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1 which we will then pursue with the licensee to make  
2 sure that they have identified it.

3 MEMBER RAY: I don't know, my first  
4 reaction is well, gee four is a pretty high threshold.

5 MR. FRYE: Well, and that's why we're  
6 taking it as an action that requires some additional  
7 review. We do have our process right now, it works,  
8 it could be better, and that is one reason why I  
9 opened a Construction Experience Review, to see if  
10 there's any lessons learned based on all the design  
11 control issues that we identified in the first year.

12 MR. KOZAK: I'll just mention that we have  
13 the same threshold for construction that they have in  
14 the Reactor Oversight Process. Their four aspects,  
15 four findings with the same aspect is one of the  
16 criteria for us from stand of cross-cutting issues.  
17 So we use the same threshold as they have in the  
18 Reactor Oversight Process, the other criteria being  
19 that the licensee has failed to recognize the trend  
20 and not taken adequate action to address it.

21 But, so we use the same approach, we use  
22 primarily the same aspects that are in the ROP, the  
23 only ones we eliminated were ones that had to do with  
24 operational performance, which is clearly not  
25 applicable. But we used all the rest of the same

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1 aspects, we have the same criteria, we just haven't  
2 had, we've only had six findings at Vogtle and four at  
3 Summer, so we don't really have the throughput --

4 MEMBER RAY: Yes, well I guess all I'm  
5 saying is that measuring the significance of the  
6 finding to me isn't nearly as important as seeing a  
7 common cause among them.

8 MR. FRYE: Oh yes.

9 MR. KOZAK: I think we agree completely.  
10 And we --

11 MEMBER RAY: Make them whatever color you  
12 want, I don't care, but do they have any common theme,  
13 you know?

14 MR. KOZAK: And that's, it gets back to  
15 one of the things that I mentioned earlier about our  
16 assessment letter, where we're talking about areas  
17 that we have found a number of issues in our baseline  
18 inspection program, where we would focus our baseline  
19 inspection programs. So in addition to the cross-  
20 cutting aspects, if we don't get a substantive cross-  
21 cutting issue, we are still looking for areas where  
22 we're seeing deficient performance during our  
23 assessment process, and focusing our baseline  
24 inspection program in those areas.

25 MEMBER RAY: Okay.

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1 MR. FRYE: So just to maybe wrap it up, I  
2 think all's we're saying is that we recognize that  
3 this is an area that we can continue to evaluate for  
4 improvement because, you know, there's area for  
5 improvement that we've seen so far.

6 MEMBER SKILLMAN: Let's proceed.

7 MR. KOZAK: Next slide please, thanks. So  
8 one thing we did when we developed our program is we  
9 think we sliced the types of findings a little too  
10 thin. We have a lot of different types of findings,  
11 an ITAAC finding, an ITAAC-related construction  
12 finding, programmatic findings, technical finding, and  
13 we thought when we were developing the program that  
14 this was a good idea, but instead it's introduced a  
15 lot of confusion and so we're going to eliminate all  
16 these different types of findings and have a  
17 construction finding, or a construction ITAAC finding,  
18 that ITAAC finding being, you know, the finding is  
19 associated with the acceptance criteria of the ITAAC,  
20 and we need to separate that out for the ITAAC closure  
21 notification process so that we're able to pull those  
22 up readily at the end, so that's a lesson that we  
23 learned.

24 MEMBER SKILLMAN: Let me ask you this,  
25 before you make that change and unknowingly throw out

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1 the baby with the bath water, is it too soon to make  
2 that change?

3 MR. KOZAK: I don't think so, we've  
4 thought about that and we're not really losing  
5 anything by, the only reason we have, for instance, a  
6 programmatic finding was because we had that  
7 programmatic SDP that we went through. So if you end  
8 up in a programmatic SDP you have a programmatic  
9 finding. But it doesn't really add anything.

10 MR. FRYE: No value added, so --

11 MEMBER BLEY: If it's yellow it's  
12 important.

13 MR. KOZAK: Right. If we have a white  
14 finding in a programmatic area it's a white finding,  
15 but having it designated as a programmatic finding  
16 added no value. So it was only introducing confusion  
17 when the inspectors would have a finding they're like,  
18 do I have a programmatic finding or do I have a  
19 technical finding or an ITAAC, what do I, you know?  
20 And it was not necessary to distinguish between that  
21 because you start at the very beginning of the SDP  
22 anyway every finding. And if it ends up being  
23 programmatic, it ends up being programmatic.

24 So the one thing we didn't want to throw  
25 out was the ITAAC finding because that serves a

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1 specific purpose for us and when we looked at it, that  
2 was the one that we needed to keep.

3 MEMBER SKILLMAN: So now you have two,  
4 construction and ITAAC?

5 MR. KOZAK: Correct, that's what it will  
6 be. Well, we haven't made the change yet but we're  
7 planning to upon full implementation.

8 MEMBER SKILLMAN: Thank you.

9 VICE CHAIR STETKAR: So, Tom, what's an  
10 example of a construction finding that wouldn't be an  
11 ITAAC? Do you have any from --

12 MR. KOZAK: It could be anything, any  
13 finding, it could be for instance, a Corrective Action  
14 Program, failure to properly implement Corrective  
15 Action Program, where you --

16 VICE CHAIR STETKAR: Okay.

17 MR. KOZAK: -- something like that.

18 VICE CHAIR STETKAR: Would it be  
19 dedication receive instruction that's just not tied to  
20 a specific ITAAC?

21 MR. KOZAK: One other thing we learned is  
22 we received some feedback about our vendor inspection  
23 reports where we have discussed ITAAC. We mentioned  
24 earlier that we're with the vendors, inspectors are  
25 going to vendors and looking at issues that are

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1 associated with an ITAAC.

2 And if they identify a finding, the detail  
3 in the inspection reports wasn't matching the detail  
4 that we had in the licensee inspector reports. And so  
5 we worked internally on that trying to get our  
6 guidance for both vendor inspection reports and  
7 licensee reports the same, so that we document the  
8 ITAAC findings the same way. So that was another  
9 lesson learned that we had.

10 MEMBER SKILLMAN: I'm confused about the  
11 text in that second bullet, the ability for the NRC to  
12 meet the applicable ITAAC. Actually it's the --

13 MR. KOZAK: Right. That, I'm sorry, is a  
14 typo, it should be the licensee.

15 MEMBER SKILLMAN: That's a typo, bingo,  
16 thank you.

17 MR. KOZAK: Yes.

18 MEMBER SKILLMAN: Thank you, okay.

19 MR. KOZAK: So those are the primary  
20 things we're going to, lessons learned and the results  
21 of the pilot. Key revisions that we think will  
22 support full implementation is to develop and revise  
23 the enforcement policy and a chapter in Enforcement  
24 Manual for construction, that's going to be done in  
25 parallel to implementation, it takes a long time to

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1 get a policy change out in a manual, an Enforcement  
2 Manual change out so we'll leave the Enforcement  
3 Guidance Memorandum in place, but work on getting a  
4 chapter added to the Enforcement Manual and get the  
5 Enforcement Policy up to date to match how we process  
6 findings, get the guidance in our Enforcement Guidance  
7 Memorandum 11-06 into the policy.

8 We want to revisit cross-cutting aspects  
9 for construction in order to make them, as I  
10 mentioned, more relevant to construction though it's  
11 going to take significant stakeholder input. We want  
12 to be aligned with the ROP as they address the  
13 Commission Safety Culture Statement, so this will also  
14 be done in parallel, but like I said, I don't think  
15 we're going to be doing anything major in this area  
16 until probably about a year from now. And that's  
17 based on what's going on in the Reactor Oversight  
18 Process. And I'd like again, I think that we do have  
19 a workable process in place now, we just want to  
20 improve it.

21 We'll eliminate the different types of  
22 inspection findings, that's key. We want to make sure  
23 we do that before we fully implement. And then make  
24 sure that our guidance manual chapter 2506 clearly  
25 describes how we're approaching vendors and suppliers

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1 and contractors as they pertain to the licensee, and  
2 how we evaluate our findings.

3 The exit strategy for our pilot, as I've  
4 mentioned, we believe the new assessment and  
5 enforcement approach is sound. We don't have to make  
6 any changes to what we told the Commission we were  
7 going to do. We need to continue to learn and improve  
8 the processes, but the processes themselves I think  
9 apply to construction, we learned that.

10 We're going to leave the latest revisions  
11 of the pilot manual chapters in place until we come up  
12 with final manual chapters and final guidance. And  
13 the last bullet there, I think I have them a little  
14 bit out of order, we're shooting for getting the final  
15 guidance documents out by July 1st, incorporating all  
16 the feedback that I mentioned during this meeting.

17 MEMBER SKILLMAN: Let me ask what that  
18 means. Presently you have put a P in front of your  
19 three IMC chapters. Is the practical effect of the  
20 second bullet, at some point you will remove the P and  
21 the new non-P version supercedes what were the old  
22 versions?

23 MR. FRYE: Correct.

24 MR. KOZAK: Yes.

25 MEMBER SKILLMAN: Thank you, I understand.

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1 MR. FRYE: Yes, exactly.

2 MR. KOZAK: Right.

3 MR. FRYE: And just to add on to the last  
4 bullet, our goal is to write up the paper, present it  
5 to the Commission, which is April, discuss it at the  
6 Agency Action Review Meeting, and then brief it at the  
7 Commission. So the Commission, although it's an  
8 information paper, the Commission would then have a  
9 chance to comment on the staff proposal. And assuming  
10 they don't, then we'll be ready for full  
11 implementation after the Commission brief.

12 MEMBER SKILLMAN: Thank you.

13 MR. KOZAK: Right, so going back up to the  
14 third bullet, we have one more Commissioner  
15 assistants' briefing that we're required by the SRM to  
16 complete by March 21st. We've briefed the  
17 Commissioners' assistants two or three times?

18 MR. FRYE: At least two.

19 MR. KOZAK: At least twice during the  
20 course of the pilot. And we do it every six months,  
21 so we'll have one more briefing to them. It will be  
22 similar to what we've presented to you today. And  
23 they've been very supportive of the program going  
24 forward so far. So I expect that, I don't expect  
25 anything different in the next briefing that we have

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1 with them.

2 And of course, Tim just mentioned the Self  
3 Assessment Paper, all of these results will be  
4 incorporated into there, and that's required by the  
5 SRM that we received. And again, the Commission  
6 requested an information paper from us, and letting  
7 them know how the pilot went and what our plans are,  
8 any changes we need to make before full  
9 implementation. And that concludes what I was  
10 prepared to present to you today.

11 MEMBER SKILLMAN: Let me ask my colleagues  
12 if they have any comments. Joy?

13 MEMBER REMPE: No.

14 MEMBER SKILLMAN: Charlie? Bill? Mike?  
15 John? Sam?

16 CHAIR ARMIJO: Nothing.

17 MEMBER SKILLMAN: Harold?

18 MEMBER RAY: Nothing more than I said  
19 already.

20 MEMBER SKILLMAN: Dana? Dennis? Steve?  
21 Tom and Tim, thank you very much.

22 MR. FRYE: Okay, thank you for the chance  
23 to --

24 MEMBER SKILLMAN: Mr. Chairman, back to  
25 you, sir.

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1 CHAIR ARMIJO: We didn't have anybody on  
2 bridge line or anything, as far as we know?

3 MR. FRYE: I hope not.

4 (Off microphone discussion)

5 CHAIR ARMIJO: Is the bridge line open?

6 MALE PARTICIPANT: Not to my knowledge.

7 CHAIR ARMIJO: We'll check just quickly  
8 and then we'll --

9 (Off microphone discussion)

10 CHAIR ARMIJO: If somebody's listened in  
11 and wanted to make a statement, I didn't want to cut  
12 them off. Nobody on? Okay, all right. Well thank  
13 you very much. We're ahead of schedule so we're going  
14 to recess the meeting now and the members are invited  
15 next door to our Caucus Room for coffee and cake to  
16 honor the birthday of Mr. Charles Brown.

17 (Off microphone discussion)

18 (Whereupon, the meeting in the  
19 above-mentioned matter was concluded at 2:42 p.m.)

20

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# Limerick Generating Station License Renewal Application

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**ACRS Full Committee Presentation  
February 07, 2013**

# Introductions

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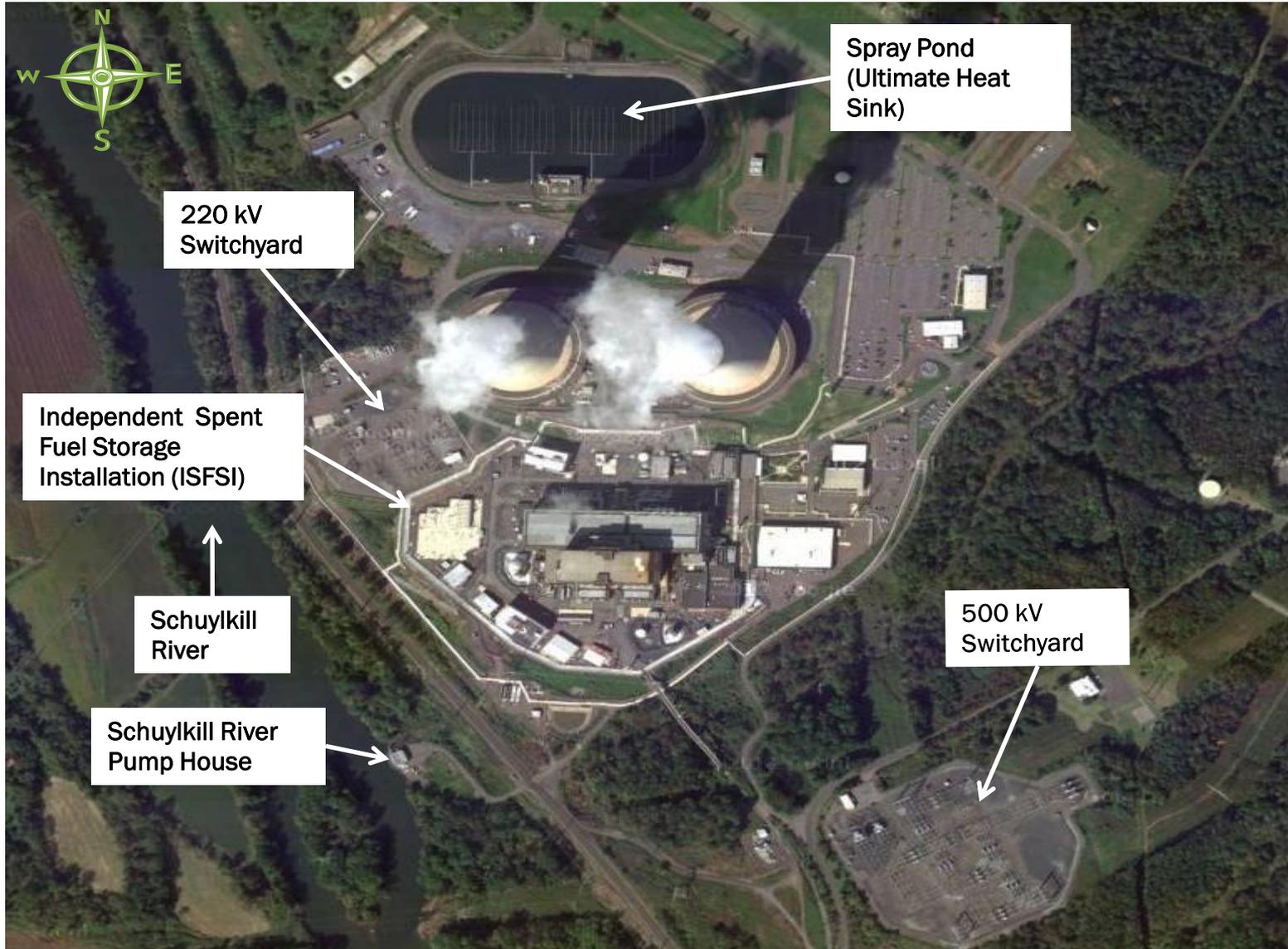
- Mike Gallagher VP, Exelon License Renewal
- Gene Kelly License Renewal Manager
- Dan Doran Limerick Engineering Director
- Mark DiRado Limerick Engineering Programs Manager

# Agenda

---

- Introductions Mike Gallagher
- Site Description Dan Doran
- Limerick Overview Dan Doran
- GALL Consistency & Commitments Gene Kelly
- SER Open Items
  - Operating Experience Gene Kelly
  - Suppression Pool Liner Mark DiRado
- Questions and Close Mike Gallagher

# Limerick Generating Station



# Limerick Overview

---

	<u>Unit 1</u>	<u>Unit 2</u>
Initially Licensed to 3293 MWt	10/26/84	6/22/89
5% Power Uprate to 3458 MWt	1/24/96	2/16/95
Turbine Rotor Replacements	1998	1999
Digital Feedwater Control	2004	2005
Independent Spent Fuel Storage Installation (ISFSI)	2007	2007
1.65% Measurement Uncertainty Recapture (MUR) 3515 MWt	4/8/11	4/8/11
Main Transformer replacements	2014	2011
Recirculation Pump Adjustable Speed Drive Units (ASD)	2012	2013
Next scheduled Refueling Outage	March 2014	March 2013
Current License Expiration	10/26/24	6/22/29



## GALL Revision 2 Consistency and License Renewal Commitments

# GALL Consistency and Commitments

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- Submittal based on GALL Revision 2
- Aging Management Programs – 45
  - 34 existing and 11 new programs
  - One exception to GALL
- License Renewal Commitments
  - UFSAR Supplement (Appendix A of the LRA)
  - Managed by Exelon Commitment Tracking program based on Nuclear Energy Institute 99-04, "Guidelines for Managing NRC Commitment Changes"
  - Total of 47 Commitments
    - 45 associated with aging management programs
    - Operating Experience program enhancement
    - Unit 1 Recirculation Nozzle flaw re-evaluation



## Open Items & Resolution

# Open Item 3.05 -1 - Operating Experience

---

## Open Item

- The staff needs additional information to determine whether operating experience will be considered in the period between issuance of the renewed licenses and implementation of the program enhancements

## Resolution

- The Commitment and UFSAR Supplement have been revised to require that enhancements to the LGS Operating Experience program are implemented no later than the date that the renewed operating licenses are issued and are conducted on an ongoing basis throughout the terms of the renewed licenses.

## Open Item 3.0.3.2.13-1 - Suppression Pool

---

### Open Item:

- Prioritized approach to implementation of Coating Plan
- Methods for underwater examination
- Expected corrosion mechanism
- Requirements for augmented examination
- Downcomer recoat criteria

### Resolution:

- Updated IWE Commitments to specify prioritized approach for Coating Maintenance Plan and conduct of ultrasonic exams
- Additional information provided on examination methods and corrosion mechanism
- Downcomer criteria added to UFSAR Supplement and IWE program procedures

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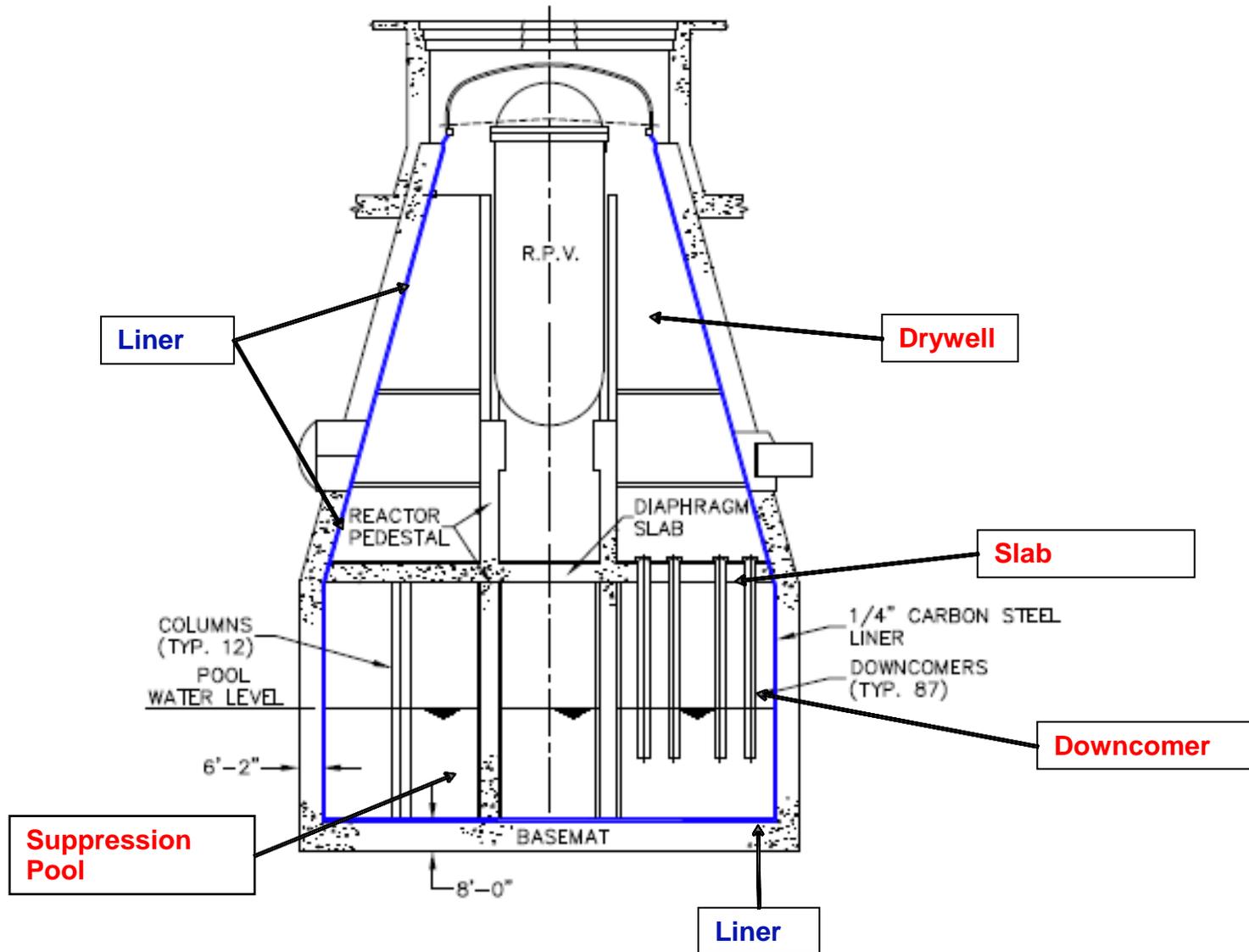
# Suppression Pool

# Key Points

---

- Robust MARK II reinforced containment design
- 100% liner thickness margin
- Environment minimizes corrosion
  - Inerted atmosphere
  - Excellent water chemistry
  - Low corrosion rate
- Material condition well understood
- Enhancements to Aging Management Program initiated in 2012 well before PEO in 2024
- Suppression pool liner intended function will be maintained through PEO

# MARK II Containment



# MARK II Containment - Suppression Pool

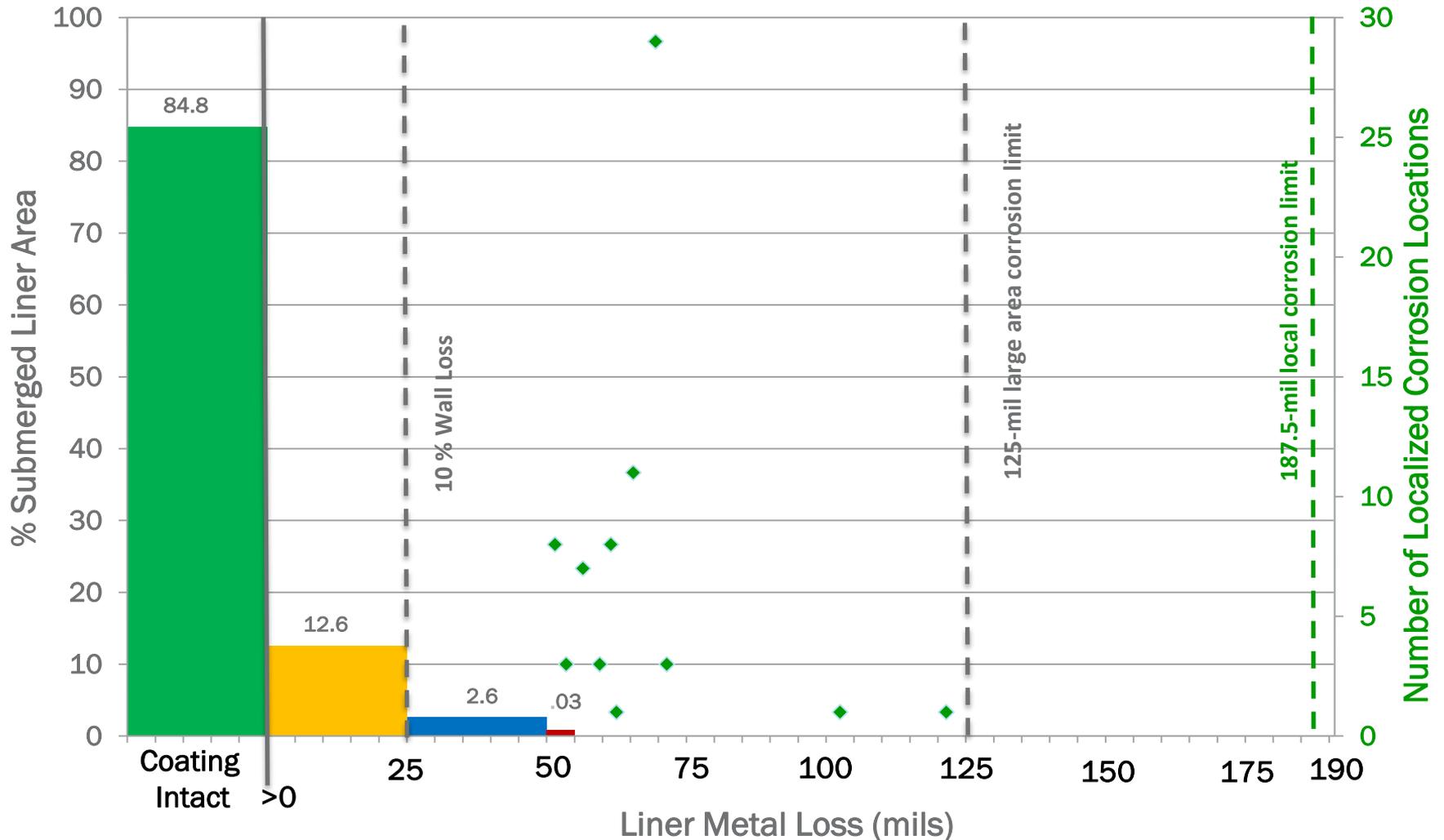
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- 250-mil continuous carbon steel liner
- Liner structural integrity limits
  - 125 mils minimum large area thickness
  - 62.5 mils minimum local area thickness
- Service Level I inorganic zinc sacrificial coating
- Service life sustained by Coating Maintenance Plan
- Suppression pool water quality meets BWRVIP-190, “BWR Water Chemistry Guidelines”, EPRI 1016579
- General corrosion rate < 2 mils per year

# Unit 1 Liner Condition

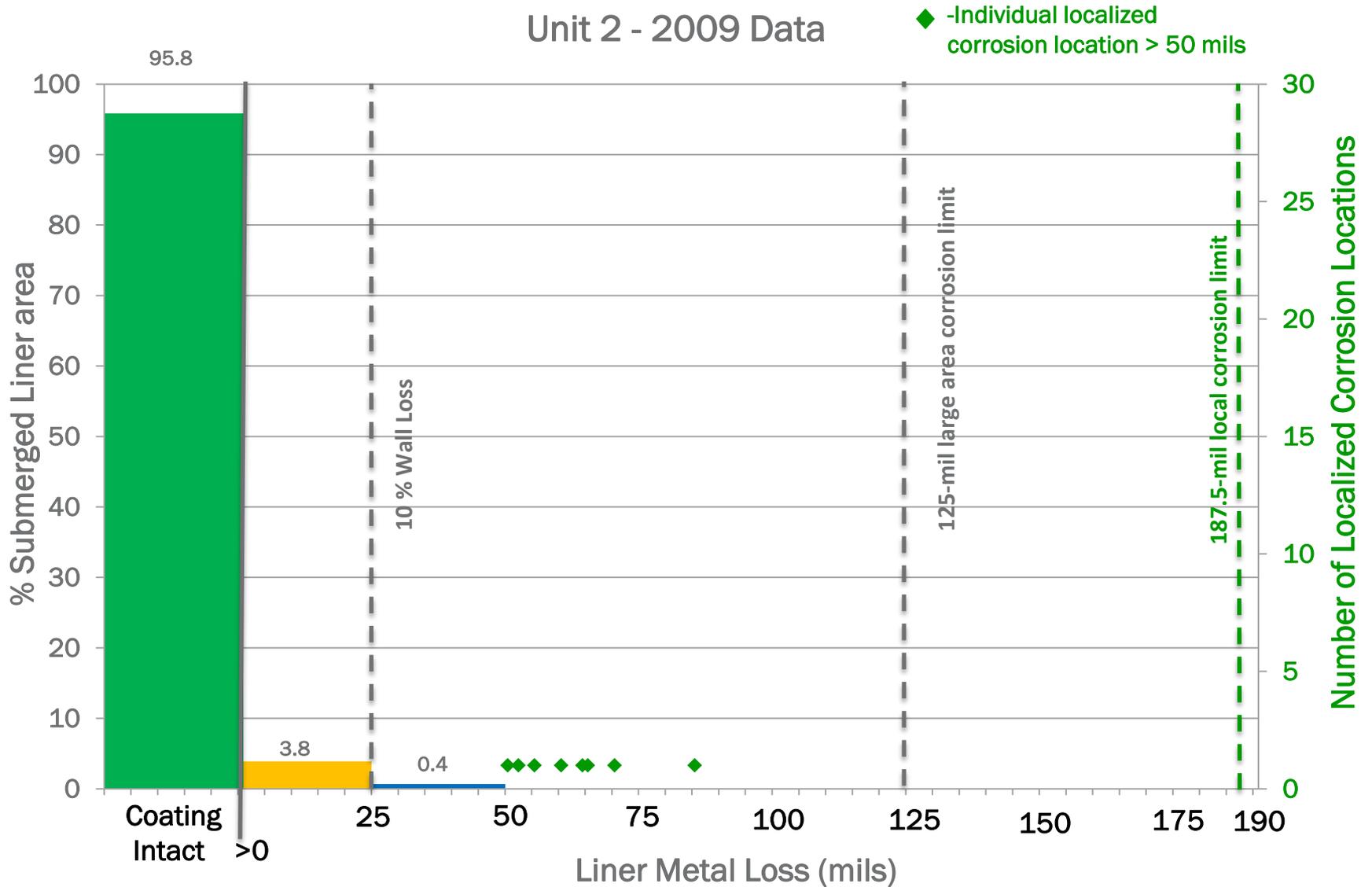
Unit 1 - 2012 Data

◆ - Individual localized corrosion location > 50 mils

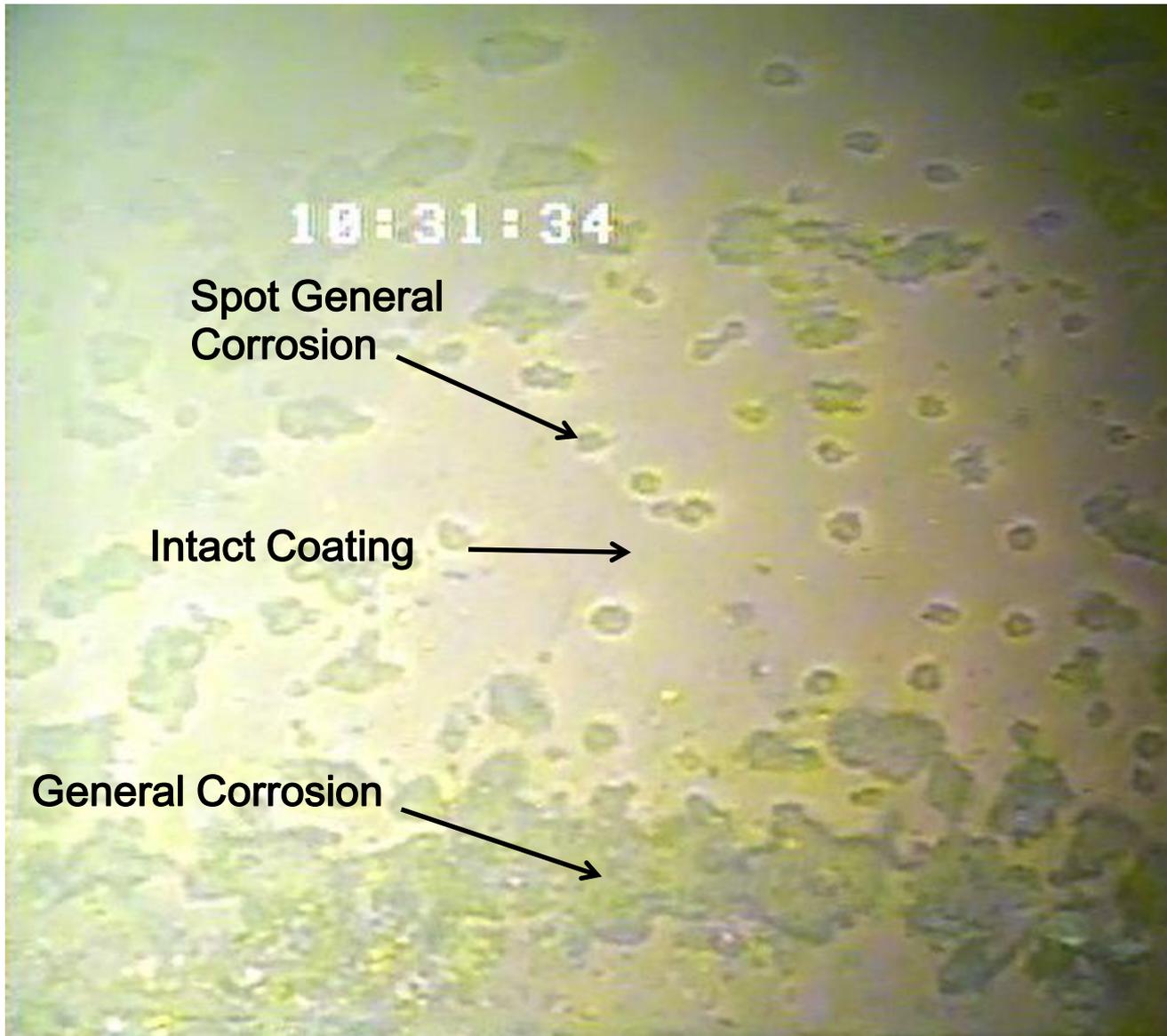


# Unit 2 Liner Condition

Unit 2 - 2009 Data



# Unit 1 Suppression Pool Plate



- Examination from Unit 1 2010 refueling outage
- Visible area approximately 1 ft<sup>2</sup>

# Suppression Pool IWE Enhancements - Liner

- Remove accumulated sludge every refueling outage
- Perform ASME IWE examination of submerged portion each ISI period
- Perform ultrasonic thickness measurements on four areas of the liner affected by corrosion, whenever exams are conducted
- Implement the Coating Maintenance Plan for the submerged liner

## Coating Maintenance Plan - Submerged Liner

	Local Areas > 50 mils corrosion	Large Areas > 25 mils corrosion	Plates > 25% coating depletion
<b>Augmented Inspection Criteria</b>	X	X	
<b>Prior to PEO</b>	Recoat in the outage identified	Recoat by PEO based on ranking of affected surface area	Recoat by PEO based on ranking of affected surface depleted and metal thickness loss
<b>During PEO</b>	Recoat in the outage identified	Recoat in the outage identified	Recoat no later than the next scheduled inspection

# Suppression Pool IWE Enhancements - Downcomers

---

- Local areas (< 5.5 inches) with 40 mils or more metal loss will be recoated
- Larger areas with 30 mils or more metal loss recoated
- Same criteria used to for augmented inspection
- Criteria documented in UFSAR Supplement
- No downcomers currently meet these criteria

# Summary and Conclusions

---

- Robust MARK II reinforced containment design
- 100% liner thickness margin
- Environment minimizes corrosion
  - Inerted atmosphere
  - Excellent water chemistry
  - Low corrosion rate
- Material condition well understood
- Enhancements to Aging Management Program initiated in 2012 well before PEO in 2024
- Suppression pool liner intended function will be maintained through PEO

# Closing Comments

---

Questions?



# **Construction Reactor Oversight Process**

## **Overview and Pilot Results**

Jim Luehman  
Office of New Reactors

Briefing for ACRS  
February 7, 2013

# Construction Reactor Oversight Process

## Overview and Pilot Results

- Construction Reactor Oversight Process (cROP) Overview Mr. Timothy Frye
- cROP Pilot Results Mr. Thomas Kozak



# **Construction Reactor Oversight Process Overview**

**Timothy Frye**

**Construction Assessment and Enforcement Branch**

**Office of New Reactors**

**Division of Construction Inspection and Operational Programs**

**301-415-3900**

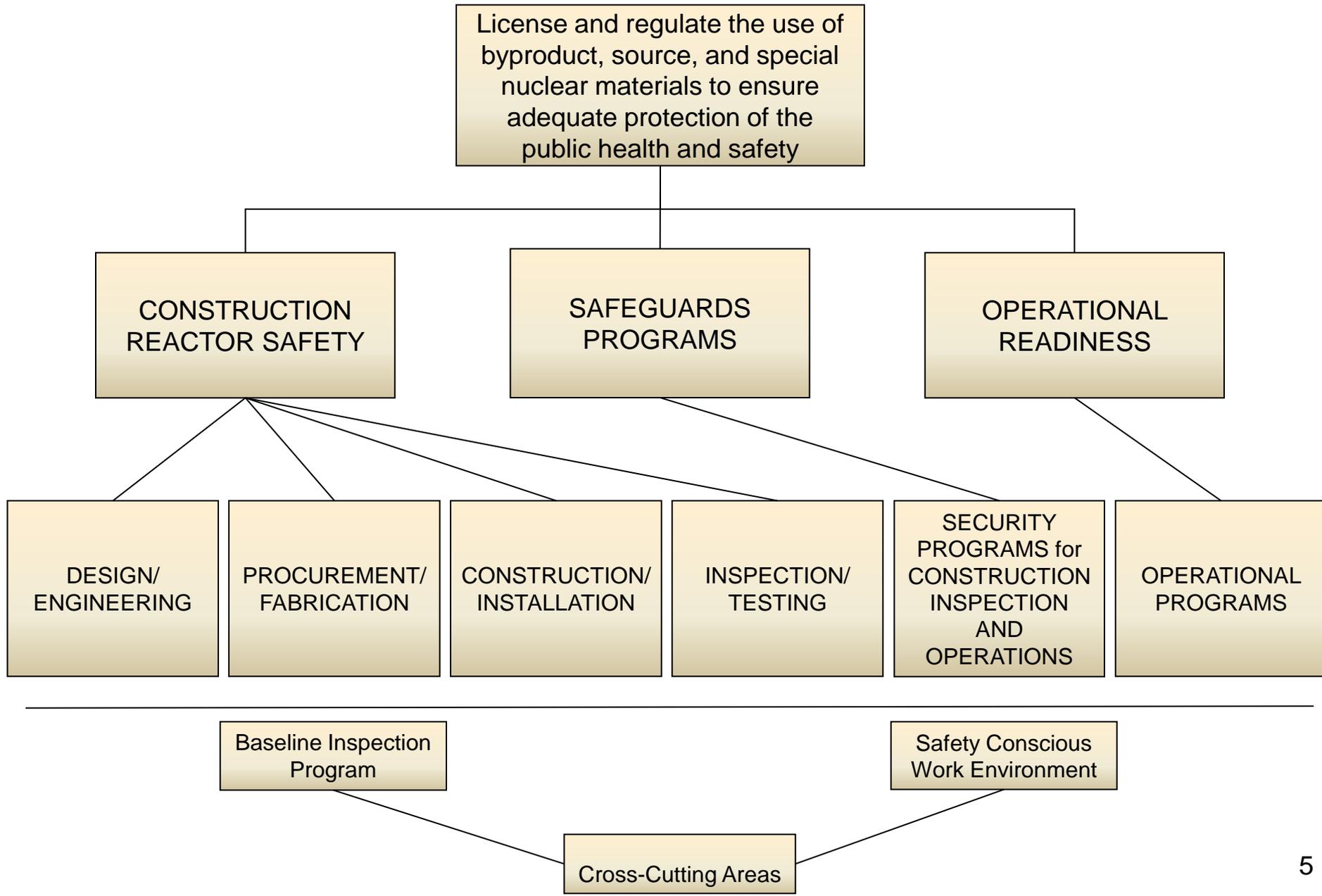
**Briefing for ACRS**

**February 7, 2013**

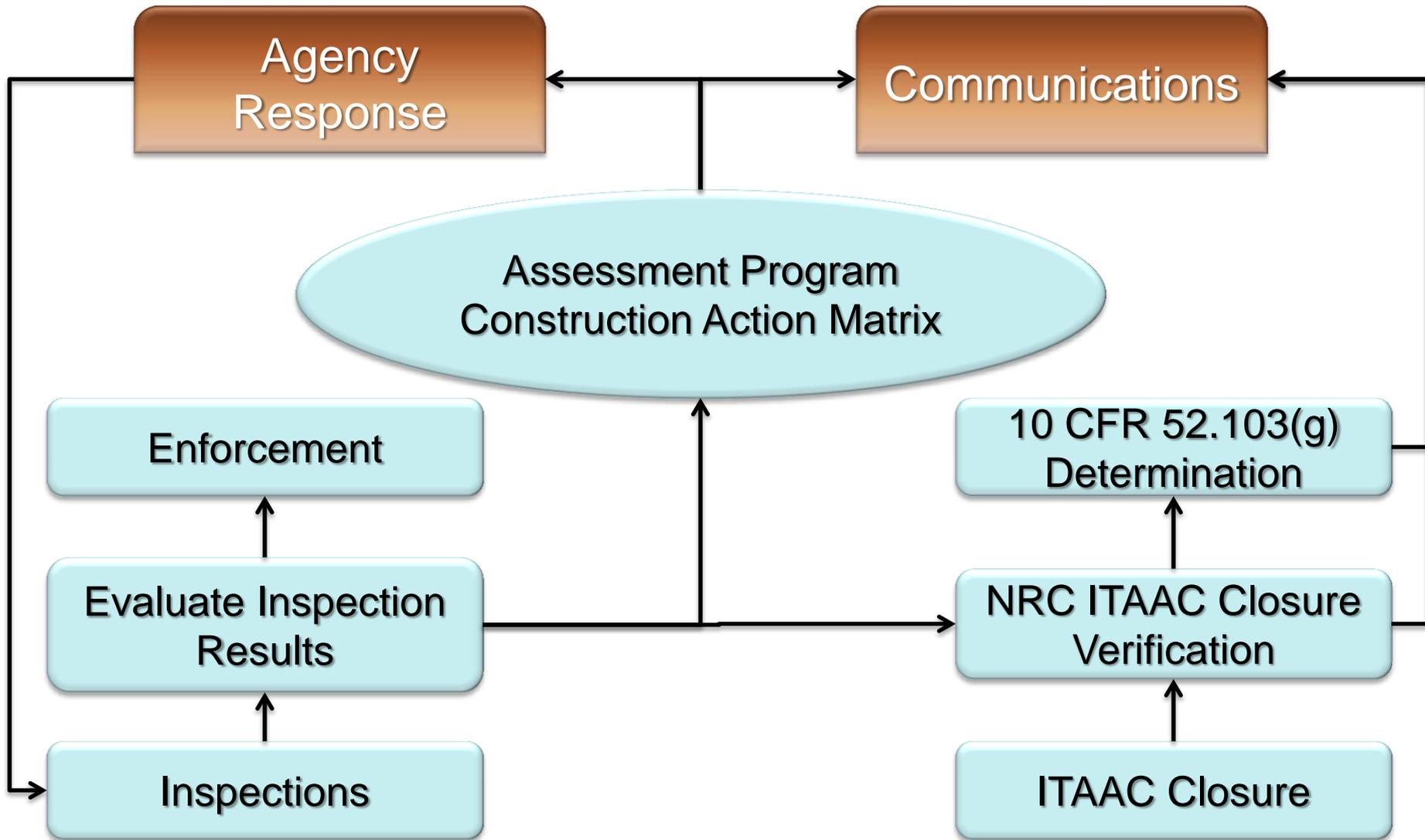
# Background

- In Staff Requirements Memorandum SECY-10-0140, the Commission approved the staff's recommendation to develop a construction reactor oversight process that includes the following:
  - Regulatory Framework
  - Construction Significance Determination Process (SDP), and
  - Construction Action Matrix
  - Pilot new program for 1 year
- The Commission directed the staff to provide the pilot results to the ACRS for review.
- Due to the stage of Watts Bar Unit 2 construction, the new process is not applicable to this site.

# cROP Regulatory Framework



# cROP Overview





# **Construction Reactor Oversight Process Pilot Results**

**Thomas Kozak**

**Construction Assessment and Enforcement Branch**

**Office of New Reactors**

**Division of Construction Inspection and Operational Programs**

**301-415-6892**

**Briefing for ACRS**

**February 7, 2013**

# cROP Pilot

- Issued pilot guidance document including pilot purpose, scope, objectives, and evaluation and acceptance criteria
- Issued pilot versions of IMCs
  - IMC 0613P (Finding screening and report writing)
  - IMC 2505P (Performance Assessment)
  - IMC 2519P (Construction SDP)
- Trained staff in October and November, 2012
- Issued Enforcement Guidance Memorandum 11-06
- Implemented pilot at Vogtle on January 1, 2012; Implemented pilot at Summer upon issuance of combined licenses in March 2012

## cROP Pilot

- To date, issued 7 Vogtle and 2 Summer inspection reports
  - 4<sup>th</sup> quarter inspection reports to be issued soon for Vogtle and Summer
- All findings identified to date were of very low safety significance (green)
  - 6 findings at Vogtle
  - 4 findings at Summer
- Conducted 1st quarter, mid-cycle, and 3rd quarter assessments for each unit

## **cROP Pilot**

- **All units in licensee-response column of construction action matrix**
- **End-of-cycle assessment to be conducted in February and assessment letters to be issued in early March**
- **Public assessment meetings to be conducted in late March/early April near both sites**
- **Solicited stakeholder feedback**
  - **Internal and external surveys conducted through the end of CY 2012**
  - **Public meetings in vicinity of sites in early CY 2013**
- **Conducting a cROP self-assessment with results reported to the Commission via SECY paper in mid-April.**

## **Initial Lessons-Learned Incorporated Into Guidance Documents**

- Modified guidance for corrective action program effectiveness reviews
- Provided additional guidance for assessment letter contents
- Provided additional guidance for ITAAC finding documentation
- Added requirement to track licensee-identified violations that are material to ITAAC acceptance criteria
- Clarified role of vendor inspections in ITAAC verification
- Clarified the difference between vendors/suppliers and contractors working on behalf of licensees

## **Evaluation of Pilot Program Results**

- **The pilot program was evaluated using 11 metrics in 4 different areas**
  - **Risk-informed Baseline Inspection Program**
  - **Assessment**
  - **Enforcement**
  - **Information Management Systems and Staff Training**
- **All metrics were met.**

## **Has there been sufficient activity during the pilot to end the pilot and fully implement the new construction assessment and enforcement approaches?**

- **Consensus both externally and internally is that the pilot was a success and that enough activity occurred to show that the process is sound**
- **The staff should continue to engage stakeholders as lessons are learned and incorporated into the various cROP programs**

## **ADDITIONAL FEEDBACK**

- **Clarify when a performance deficiency can be considered to affect a system/structure design function as used in the SDP**
- **A construction chapter of the enforcement manual should be developed.**
- **Cross-cutting aspects should be revisited for construction**

## **Additional Feedback**

- **There is confusion between the difference between the types of findings (i.e., ITAAC finding, ITAAC-related construction finding, construction finding, programmatic finding, technical finding).**
- **NRC should clarify statements in Vendor inspection reports where it states that if an issue identified is not corrected it might impact the ability for the NRC to meet the applicable ITAAC.**

## **Key cROP Revisions to Support Full Implementation**

- **Develop a construction chapter in the enforcement manual and revise the Enforcement Policy to reflect guidance in EGM 11-06 (will develop in parallel to implementation).**
- **Revisit cross-cutting aspects for construction**
  - **Interactions with stakeholders will be necessary**
  - **Align with ROP actions to address Commission Safety Culture Statement**
- **Eliminate different types of inspection findings**
- **Consider additional guidance as needed to better define roles and responsibilities of vendors/suppliers and contractors**

# Pilot Exit Strategy

- New assessment and enforcement approach is sound
- Latest revision of pilot guidance documents will remain in effect into 2013
- Commissioner Assistant's briefing prior to 3/21
- Results reported in cROP self-assessment SECY Paper in mid-April
- Goal is to incorporate feedback and issue final guidance documents by 7/1



# **Construction Reactor Oversight Process Overview and Pilot Results**

**Jim Luehman**  
**Office of New Reactors**

**Briefing for ACRS**  
**February 7, 2013**



# **Large Component Fabrication and Vendor Inspection**

**James Luehman**  
**Office of New Reactors**

Briefing for ACRS  
February 7, 2013

## **Large Component Fabrication and Vendor Inspection**

- **Vendor Inspection Program** Mr. Edward Roach
  - Vendor Inspection Program Plan
  - Vendor Selection Methodology
  - Centers of Expertise
  
- **Recent Inspection Findings / Trends** Mr. Richard McIntyre
  
- **International Engagement / MDEP** Mr. Richard Rasmussen
  
- **Large Component Inspection** Ms. Kerri Kavanagh



# **Vendor Inspection Program**

**Edward Roach**

**Construction Mechanical Vendor Branch**

**Office of New Reactors**

**Division of Construction Inspection and Operational Programs**

**301-415-1973**

Briefing for ACRS

February 7, 2013

# Overview

- New Reactors and the Construction Inspection Program
- Oversight of Vendors
  - Key Regulations and Guidance
  - Types of Inspections
  - Vendor Inspection Program Plan
  - Vendor Selection Criteria
- Centers of Expertise



# Construction Inspection Program

Vendor  
Inspections

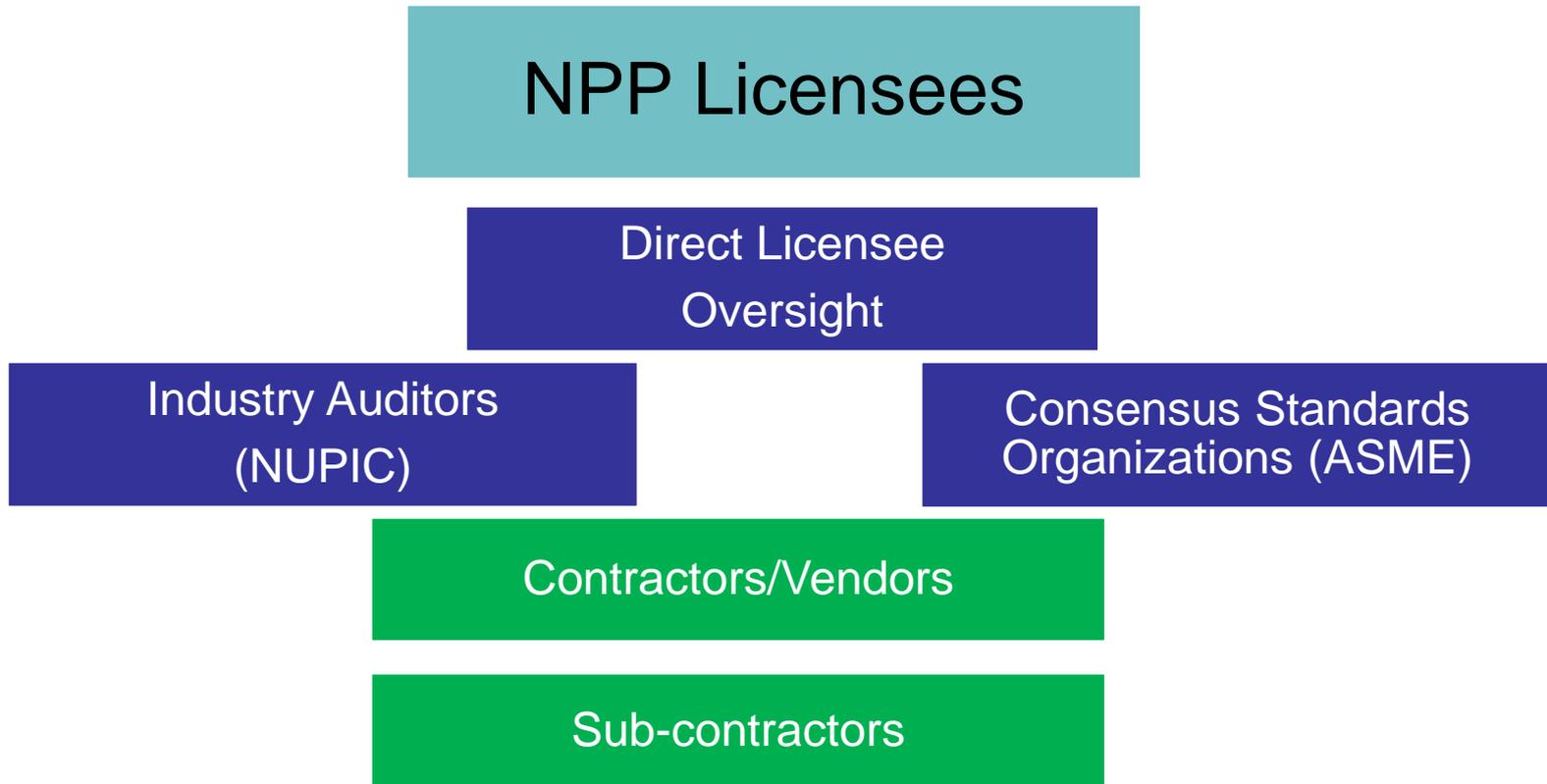
QA  
Implementation  
Inspections

Operational  
Program  
Inspections

Inspections,  
Tests, Analyses, and  
Acceptance Criteria



# Oversight of Vendors



- The ultimate responsibility lies with the licensees
- NRC verifies licensees meet their responsibilities

# Vendor Inspections

- Vendor inspection program for new reactors was established in 2007
- To verify effective implementation of
  - Appendix B to 10 CFR Part 50 (Quality Assurance requirements)
  - 10 CFR Part 21 (Reporting of Defects and Noncompliance)
- NRO conducted 24 inspections 2011
- NRO conducted 27 inspections in 2012
- NRO plans to conduct 30 inspections in 2013

# Vendor Regulations

- **Directly – NRC issues Violations**
  - 10 CFR Part 21, “Reporting of Defects and Noncompliance”
  - 10 CFR 50.5, “Deliberate Misconduct”
  - 10 CFR 50.7, “Employee Protection”
- **By Contract – NRC issues Nonconformances**
  - Appendix B to 10 CFR Part 50, “Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants”

# Vendor Inspection Guidance

- Vendor Inspection Program Plan (VIPP)
- Inspection Manual Chapter (IMC) 2507, “Vendor Inspections”
  - Establishes the inspection program for vendors providing safety-related materials, equipment, and services in support of new reactor construction
  - Provides requirements and guidance to NRC inspectors for conducting inspections at vendor facilities.
  - Implemented through six inspection procedures

# Routine and Reactive Inspections

- **Routine** - Verify that vendors supplying basic components have implemented an effective QA program that complies with the requirements of Appendix B to 10 CFR Part 50.
- **Reactive** - In response to reported problems involving vendor-supplied products or services.

# Vendor Selection

- Safety significance of components and services
- Scope of components and services
- Construction Inspection Program insights related to ITAAC
- First-of-a-kind component fabrication
- Vendor experience with component fabrication
- Operating and construction experience
- Insights from international vendor oversight activities
- Insights from third party audit organizations
- Resources available based on licensing workload

# Centers of Expertise (COE)

- COE established within DCIP for vendor inspection
- Additional COEs established within NRO and NRR in the areas of:
  - Allegations
  - Operating Experience/Construction Experience (OpE/ConE)
  - Electrical engineering

# Centers of Expertise

The Vendor Inspection COE conducts inspections:

- To verify the effective implementation of vendor QA programs
- To assure the quality of materials, equipment, and services supplied to the commercial nuclear industry (both Part 50 & 52)
- To support the Allegations COE
- To lead efforts to address and deter the potential use of CFSI in safety-related applications



# **Recent Inspection Findings and Trends**

**Richard McIntyre**  
**Construction Mechanical Vendor Branch**  
**Office of New Reactors**  
**Division of Construction Inspection and Operational Programs**  
**301-415-3215**

Briefing for ACRS  
February 7, 2013

# Outline

- Vendor Identification
- NRC Vendor Inspections
- Inspection Results



# Vendor Identification

## Current Sources of Vendor Information

- Reporting systems: 10 CFR Part 21, 50.72, 50.73
- Industry and standards organizations
- Communication with licensees, applicants, and engineering, procurement, and construction (EPC) contractors
- Allegations

## Initiatives

- RIS requesting voluntary identification
- NRC public web site
- NRC internal database



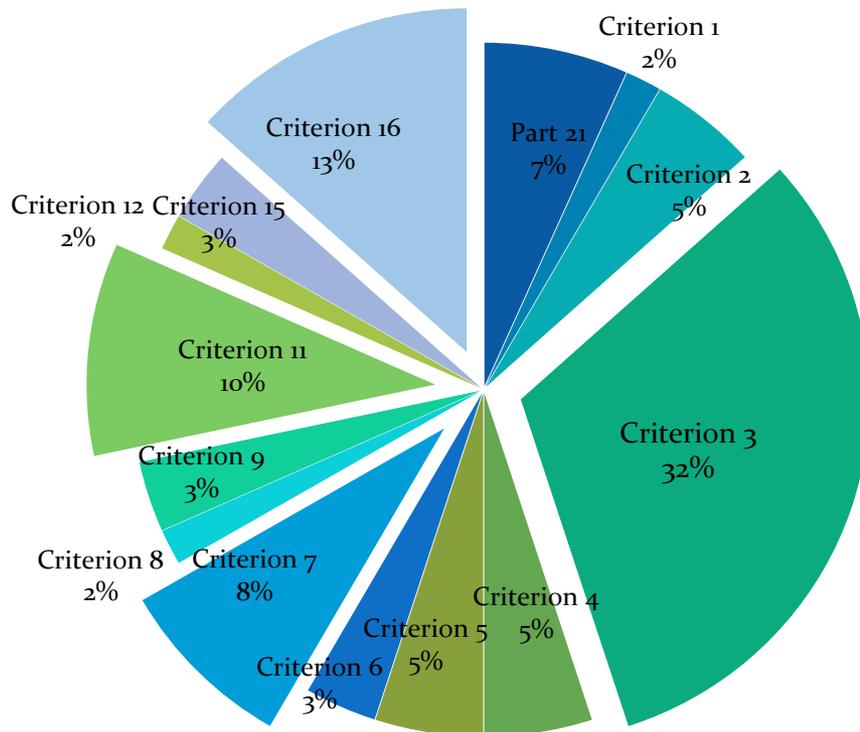
# Recent NRC Vendor Inspections

- Emphasis on inspection of in-process design, fabrication, testing and inspection of specific SSCs and product lines of interest
- “Vertical-Slice” approach as opposed to a broad programmatic review
- Increased use of technical specialists in areas of mechanical, materials, structural, electrical, digital I&C
- Emphasis on qualification and type testing and design work associated with Targeted ITAAC SSCs
- Increase inspection activity to a projected 30 inspections in 2013

# Recent Inspection Results

- III - Design Control
- VII - Control of Purchased Material, Equipment and Services
- XI - Test Control
- XVI - Corrective Actions

**FY12 NOVs and NONs**  
**60 total findings**



# Typical Inspection Findings

- Compliance with 10 CFR Part 21 - Identification and Reporting of Defects and Noncompliance
- Failure to provide appropriate oversight of subcontractors
  - Subcontractors must implement 10 CFR Part 50, Appendix B Quality Assurance requirements
- Procedural adherence and documentation
- Commercial grade items not adequately dedicated
- Failure to meet design requirements
- Test Control - Configuration changes made without a technical assessment
- M&TE used outside of calibrated range

# Typical Inspection Findings (cont'd)

- Summary
  - Inadequate design control and CG dedication
  - Inadequate dedication of commercial software
  - Inadequate technical evaluations of conditions adverse to quality
  - Inadequate justification for substitution of materials of construction
- Challenges and Trends
  - Commercial Grade Dedication
  - Licensee and Supplier Oversight





# **International Engagement MDEP Vendor Inspection Cooperation Working Group**

**Richard Rasmussen  
Construction Electrical Vendor Branch  
Office of New Reactors  
Division of Construction Inspection and Operational Programs  
301-415-1340**

Briefing for ACRS  
February 7, 2013

# International Efforts Overview

- MDEP VICWG Objectives
- VICWG Inspection Activities
- Multinational Inspections



# MDEP VICWG Objectives

- To facilitate the understanding and sharing of vendor inspection results
- To facilitate Joint and Multinational Inspections
- Harmonization of Quality Assurance requirements

# VICWG Activities

- 2011
  - 7 witnessed inspections and 1 joint inspection were conducted
  - Observing countries gained additional information and added confidence in the inspection results
  - MDEP regulators are sharing inspection practices
  
- 2012
  - 7 witnessed inspections and 1 joint inspection completed
  - Multinational Inspections
    - Definition currently under development
    - Intent is to develop a multinational inspection team working to common requirements

# Joint Inspection Experience

- 2011: KINS Lead – Doosan Heavy Industries
- 2012: NRC Lead – Target Rock
- March 2013: NRC is planning to lead Qual Tech



# Multinational Inspections

- Assessment of Member Country Regulations
- Discussions with Standards Development Organizations (SDO's)
- Goal is harmonization of standards



# **Large Component Inspection**

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**Quality Assurance Branch**  
**Office of New Reactors**  
**Division of Construction Inspection and Operational Programs**  
**301-415-3743**

Briefing for ACRS  
February 7, 2013

# Large Component Inspection

- Vendor inspection renewed focus on large components with creation of the Office of New Reactors (2007)
- Direct technical vendor oversight
- Approximately 14 NSSS/heavy component inspections performed since 2007
- Global supply chain presents challenge of inspecting international vendors

# Babcock and Wilcox (foreign and domestic)

- *Components inspected:* Replacement reactor vessel heads (Palisades and Diablo Canyon)
- NRC Inspection Report Nos. 99900067/2007-201 (performed by NRR) ADAMS Accession No. ML072850014
- NRC Inspection Report Nos. 99900042/2008-201
- ADAMS Accession No. ML082680271

# Mitsubishi Heavy Industries



- *Components inspected:* Reactor Vessels, Steam Generators, and Reactor Internals
- NRC Inspection Report No. 99901030/2008-201
- ADAMS Accession No. ML081890043

# Doosan Heavy Industries



- *Components inspected:* Reactor pressure vessels, steam generators, and reactor internals for operating and AP1000 plants
- NRC Inspection Report No. 99901373/2008-201 ADAMS Accession No. ML081930582
- NRC Inspection Report No. 99901373/2009-201 ADAMS Accession No. ML091380474

# Japan Steel Works, LTD



- *Components inspected:* Large steel forgings and castings that are used for reactor pressure vessels, heads, and steam generators

# Japan Steel Works, LTD



- NRC Inspection Report No. 99901364/2009-201
- ADAMS Accession No. ML092290864

# Areva – Creusot Forge



- *Components inspected:* Reactor pressure vessel and EPR steam generator forgings
- NRC Inspection Report No. 99901381/2009-201
- ADAMS Accession No. ML092370387

# Sumitomo Metal Industries

- *Components inspected: AP1000 and operating reactor steam generator tubes*
- NRC Inspection Report No. 99901384/2009-201
- ADAMS Accession No. ML093070450

# Sandvik Material Technology



- *Components inspected:* EPR steam generator tubes
- NRC Inspection Report No. 99901326/2010-201
- ADAMS Accession No. ML101940246



- *Components inspected:* AP1000 pressurizers and passive residual heat removal exchangers
- NRC Inspection Report Nos. 99901393/2010-201 and 99901416/2012-201
- ADAMS Accession Nos. ML102600433 and ML 12320A661



- *Components inspected:* AP1000 containment vessel and ABWR reactor pressure vessel
- NRC Inspection Report No. 99901395/2010-201
- ADAMS Accession No. ML102870167



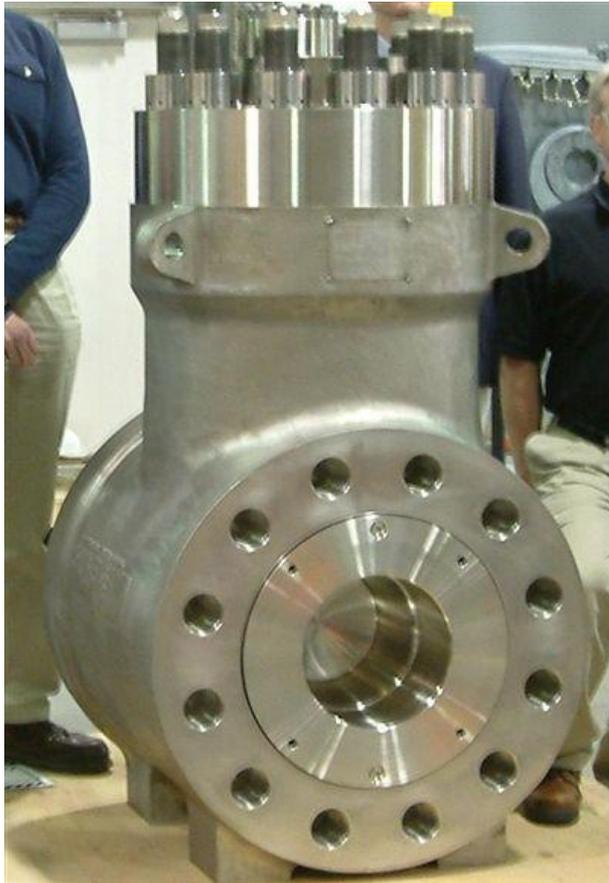
- *Components inspected: AP1000 containment vessel and ABWR reactor pressure vessel*

# Westinghouse Electric Company (Newington, NH)



- *Components inspected:* AP1000 control rod drive mechanisms and reactor vessel internals
- NRC Inspection Report No. 99901392/2011-201
- ADAMS Accession No. ML112144266

# SPX Copes-Vulcan



- *Components inspected:*  
AP1000 squib valves
- NRC Inspection Report No. 99900080/2012-201
- ADAMS Accession No. ML12158A154



**Advisory Committee on Reactor Safeguards  
Full Committee Meeting**

**Safety Evaluation Report Regarding  
License Renewal for Limerick Generating Station,  
Units 1 and 2**

February 7, 2013

Patrick Milano, Project Manager  
Office of Nuclear Reactor Regulation

# Presentation Outline

- Overview
- Closure of Open Items
  - Operating Experience
  - Suppression Pool Liner and Downcomer Corrosion
- Conclusion

# Overview

- Safety Evaluation Report (SER) with Open Items was issued July 30, 2012
- ACRS License Renewal Subcommittee Meeting on September 5, 2012
- The Open Items for the SER are closed
- Final SER was issued January 10, 2013

- Follow-on Planning
  - Commission Memorandum and Order, CLI-12-16
    - No licenses issued pending decision on waste confidence rule
  - License Renewal - Interim Staff Guidance Incorporation
    - Address in annual updates to LR application
  - Final ACRS Decision
    - Staff to provide documents related to issues arising after the receipt of an ACRS decision
    - Staff to describe changes/supplements to SER findings
    - Staff will inform ACRS on changes about 3-4 months prior to expected LR issuance date
    - Pending ACRS desire to discuss changes, staff would request the ACRS decision to be finalized

# SER Section 3 Closure of Open Items

## SER Section 3.0.5 – Operating Experience for Aging Management Programs

- **Issue:** Whether applicant would fully consider age-related operating experience between issuance of renewed license and implementation of Operating Experience program enhancements
- **Applicant Response:** Program enhancements will be implemented no later than renewed license issuance and enhanced operating experience review activities will be conducted on ongoing basis throughout terms of renewed licenses
- **Staff Finding:** Implementation of Operating Experience program enhancements ensures that applicant fully considers all available information to inform the aging management activities on an ongoing basis

# SER Section 3 Closure of Open Items

## SER Section 3.0.3.2.13-1 ASME XI, Subsection IWE

- **Issues:**

- Frequency and methods of inspection, and criteria for recoating the liner
- Schedule for implementing coating maintenance plan.
- Acceptance criteria for downcomers degradation not in AMP or procedures

- **Applicant Response:**

- Enhanced AMP to increase the frequency of inspection of suppression pool liner and sludge removal
- Committed to Implement more stringent acceptance criteria for recoating and repair of liner plate
- Committed to perform UT examination of liner plate to complement liner plate thickness measured by depth gauges
- Committed to implement a coating maintenance plan to locally recoat the liner based on the new criteria
- Enhanced acceptance criteria for augmented examination and recoating of downcomers

# SER Section 3 Closure of Open Items

## Section 3.0.3.2.13-1 ASME XI, Subsection IWE (Con't)

### Staff Finding:

- Enhancements to the AMP are acceptable because:
  - Applicant committed to perform an ASME IWE examination of the submerged portion of the suppression pool during each ISI period or at a maximum interval of four years (two refueling outages).
  - The maximum 4-year inspection interval is sufficiently short to identify local (pitting) corrosion prior to challenging the structural integrity and leak tightness of the liner.
  - Applicant plans to recoat all local areas (less than 2.5 inches in diameter) of corrosion (pitting corrosion) with greater than 50 mils plate thickness loss in the outage identified.
  - Applicant is committed to perform UT examination of liner plate to correlate with results of visual examinations.
  - Enhanced acceptance and recoating criteria for downcomers will ensure that structural integrity of the downcomers will be maintained during the PEO.

# Conclusion

On the basis of its review to date, the staff determines that the requirements of 10 CFR 54.29(a) have been met for the license renewal of Limerick Generating Station, Units 1 and 2