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8 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
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12 proceeding of the United States Nuclear Regulatory
13 Commission Advisory Committee on Reactor Safeguards,
14 as reported herein, is a record of the discussions
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16
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18 corrected, and edited, and it may contain
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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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625TH MEETING

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

+ + + + +

WEDNESDAY

JUNE 10, 2015

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ROCKVILLE, MARYLAND

+ + + + +

The Advisory Committee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B3, 11545 Rockville Pike, at 8:30 a.m., John W. Stetkar, Chairman, presiding.

COMMITTEE MEMBERS:

JOHN W. STETKAR, Chairman

DENNIS C. BLEY, Vice Chairman

MICHAEL L. CORRADINI, Member-at-Large

RONALD G. BALLINGER, Member

SANJOY BANERJEE, Member

CHARLES H. BROWN, JR. Member

DANA A. POWERS, Member

JOY L. REMPE, Member

PETER C. RICCARDELLA, Member

MICHAEL T. RYAN, Member

STEPHEN P. SCHULTZ, Member*

GORDON R. SKILLMAN, Member

DESIGNATED FEDERAL OFFICIALS:

EDWIN M. HACKETT, Executive Director, ACRS

QUYNH T. NGUYEN

KATHY D. WEAVER

DEREK A. WIDMAYER

WEIDONG WANG

ALSO PRESENT:

DAN BLOUNT, Sargent & Lundy

ERIC E. BOWMAN, NRR

GREGORY BROADBENT, Entergy Operations, Inc.

PROSANTA CHOWDHURY, NRO

MARK DELLIGATTI, NRO

JOSEPH F. GIACINTO, NRO

CRAIG GOODSON, GEH

CHARLIE HECK, GEH

CHRIS JACKSON, NRR

HENRY JONES, NRO

JAMIE MALLON, PSEG

JOHN B. MCKIRGAN, NRO

KEVIN R. QUINLAN, NRO

TIMOTHY A. REED, NRR

JIM RILEY, NEI

GARY RUF, PSEG

CHRISTOPHER SCHWARZ, PSEG

*Present via telephone

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Adjourn

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

2 (8:31 a.m.)

3 CHAIRMAN STETKAR: The meeting will now
4 come to order. This is the first day of the 625th
5 meeting of the Advisory Committee on Reactor
6 Safeguards.

7 During today's meeting the Committee will
8 consider the following. PSEG Early Site Permit,
9 documents that support the mitigation of
10 beyond-design-basis events rulemaking, update on
11 reactor oversight process, Grand Gulf MELLLA+ license
12 amendment and preparation of ACRS reports.

13 This meeting is being conducted in
14 accordance with the provisions of the Federal Advisory
15 Committee Act. Mr. Quynh Nguyen is the designated
16 federal official for the initial portion of the
17 meeting.

18 We received no written comments or
19 requests to make oral statements from members of the
20 public regarding today's sessions.

21 There will be a phone bridge line. To
22 preclude interruption of the meeting, the phone will
23 be placed in a listen in mode, during the presentations
24 and Committee discussions.

25 A transcription and portions of the

1 meeting is being kept. And it is requested that the
2 speakers use one of the microphones, identify
3 themselves and speak with sufficient clarity and volume
4 so that they can be readily heard.
5 And I'll ask everyone in the room to please
6 silence all of your little communications devices.
7 Thank you, sir.
8 As a matter of interest, I'd like to
9 welcome Evelyn Gettys, who'll be on rotation, as part
10 of the ACRS staff. She'll be assisting with the SHINE
11 and NuScale design specific review standard topics for
12 the next six months.
13 Evelyn joined the NRC in 2006 as a project
14 manager in NRR, in the division of license renewal.
15 Previously she worked at the Savannah River Site and
16 at TVA at the Bellefonte Project as an electrical
17 engineer. Evelyn, welcome to the fold.
18 One more matter, before we begin. I'll
19 remind everyone that we have reconfigured our
20 microphones so that when you wish to speak, please turn
21 them on. When you wish to not speak, please leave them
22 off. It cuts down on the extraneous noise over the
23 phone bridge line. And that's that.
24 The first item on our agenda then is the
25 PSEG Early Site Permit. And Dr. Dana Powers will lead

1 us through that. Dana.

2 MEMBER POWERS: Thank you, Mr. Chairman.

3 Yes, we are going to hear our 5th early site permit

4 application from PSEG. Not their 5th, it's their 1st,

5 but.

6 This has been the subject of three grueling

7 and exhausting subcommittee meetings. And I've asked

8 the presenters to summarize, in 20 or 30 minutes a

9 piece, the highlights of that.

10 This early site permit is a bit different

11 than the earlier -- the pervious early site permits.

12 Because it's required augmented examinations in

13 connection with seismic flooding and emergency

14 planning as a result of the events at Fukushima.

15 With that introduction, I'll ask Mark

16 Delligatti to give us some introductory words from the

17 staff's perspective.

18 MR. DELLIGATTI: Good morning. My name

19 is Mark Delligatti. I'm the deputy of director of

20 division of new reactor licensing in the office of new

21 reactors.

22 During and following the docketing of the

23 PSEG site, the ESP application in 2010, the NRC staff

24 worked to complete its safety application. This

25 involved thoroughly reviewing information in the ESP

1 application and resolving emerging issues, conducting
2 site visits and regulatory audits, performing
3 independent confirmatory analyses where necessary,
4 cooperating with other federal state and local agencies
5 and documenting its evaluation findings and
6 conclusions and safety evaluations with no open items.
7 The staff interacted with the Applicant
8 throughout the review process and maintained its focus
9 on safety, through compliance with applicable
10 regulations and commission polices, and conformance to
11 applicable guidance.
12 To date the staff issued and presented to
13 the ACRS all SEs with no open items. I commend the NRC
14 staff for a job so well done in a timely manner.
15 Today we are presenting an overall high
16 level picture of our review of the PSEG site ESP
17 application, to the ACRS Full Committee. For your
18 information, the NRC has previously issued the
19 following four ESP's.
20 Clinton, Illinois in March 15th, 2007.
21 Grand Gulf, Mississippi in April 5th, 2007. North
22 Anna, Virginia in November 27th, 2007. And Vogtle,
23 Georgia, August 26th, 2009.
24 With me today is Mr. Prosanta Chowdhury,
25 who is the lead project manager for the PSEG site ESP

application review. Prosanta will lead the NRC staff presentation today.

The key technical staff is also present to support Prosanta in clarifying information in the SEs and answering questions that are specific to their review areas. Thank you.

MR. CHOWDHURY: Thank you, Mark. Good morning everybody. My name is Prosanta Chowdhury. I'm the lead project manager for the PSEG site, early site permit application review.

As for my background, I have a Master of Science degree in electrical engineering from Moscow, Russia. Years ago. And a nuclear engineering degree from LSU, Louisiana State University in 1987.

Since then I work for the State of Louisiana radiation protection program, for 18 years. Dealing with nuclear power plants, offsite emergency response and other matters.

I came to the NRC in 2005. Joined the Nuclear Security and Incident Response group. Worked there for three years. And then I accepted an opportunity at the office of new reactors as a project manager.

And since then, that is since 2008, I have been a project manager. And this was my whole project,

1 besides working on some other chapters in design
2 certification as well as COL applications.
3 So since May 2010 I have been working on
4 this project. And we have completed all safety
5 evaluations, with no open items, for this project. The
6 last piece of this, it was presented to the ACRS
7 subcommittee yesterday, which was hydrology
8 engineering.
9 So I will go through my slides later, after
10 PSEG makes their presentation. Thank you.
11 MR. SCHWARZ: Good morning. My name is
12 Chris Schwarz. I am the vice-president of operations
13 support for PSEG Nuclear. Which comprises of Salem and
14 Hope Creek Nuclear Power Plants.
15 I want to thank the ACRS members for their
16 time today. Appreciate the opportunity to address all
17 of you and explain our early site permit application.
18 Also like to thank the NRC staff that has
19 reviewed our application. The rigorous review has
20 helped us improve our application.
21 I am here today to provide an overview of
22 PSEG and the reasons why we're pursuing an early site
23 permit. I'll start by explaining.
24 I have over 35 years of experience in the
25 nuclear power industry. I started in the nuclear power

1 industry, actually as -- in the U.S. Naval Nuclear Power
2 Program.
3 Actually was a engineering watch
4 supervisor. Eight patrols on the USS Lafayette. And
5 found out that I didn't like punching holes in the ocean
6 for a living. So I actually left the United States
7 Navy.
8 And went back, got my degree from Widener
9 University. Bachelors in mechanical engineering
10 degree. And then subsequently, actually got a senior
11 reactor operators license at the Peach Bottom Atomic
12 Power Station.
13 I served on shift for four years as a
14 control room supervisor. And subsequently a shift
15 manager on shift.
16 I moved through various areas of
17 responsibility in the nuclear industry. Operations
18 managers, maintenance managers, work management.
19 Became a recovery manager at the Millstone
20 Power Station that was shutdown in the mid '90's for
21 safety conscious work environments. And subsequently
22 became the site director for the Millstone Power
23 Station.
24 After that I was recruited by Entergy for
25 a recovery project of the Indian Point Power Plants in

1 New York. Where Entergy had purchased both units.
2 And became the plant manager for Indian
3 Point. Which we reassembled two separate cultures
4 into one management team.
5 Subsequently after that I was the
6 vice-president of the Palisades Plant that they had
7 purchased in 2007 for four years. And also was the site
8 vice-president of Arkansas Nuclear One.
9 Subsequently retired. Went into a
10 consulting business and wound up back at PSEG helping
11 them out here.
12 So interesting side note. I got an
13 opportunity to go to MIT a couple weeks ago for the
14 nuclear technology program for industry executives.
15 Where these, mainly chief financial officers of
16 companies, get put through a rigorous six week process
17 of learning reactor physics. And actually brought
18 back a lot of memories.
19 But it was actually an interesting course
20 for industry executives. Because I believe it teaches
21 them the responsibility of nuclear power. That it is
22 special and unique.
23 So with that, I have some slides that I
24 wanted to share with you today about diversity of PSEG
25 and why we're here for this early site permit.

1 PSEG Corporation is actually comprised of
2 three subsidiaries. Traditional transmission and
3 distribution has over 2 million electric customers and
4 close to 2 million gas customers.
5 We have a deregulated wholesale market.
6 Our nuclear capacity is 36,000 megawatts. And our
7 total generation capacity is 13,000 megawatts.
8 And also we manage PSEG Long Island as a
9 managed contract. With over a million customers on
10 Long Island.
11 This slide here is a pretty unique slide.
12 It shows our fuel diversity and why that's important
13 for us.
14 On your left you'll see the pie chart.
15 Actually is our total capacity that we have in
16 generation.
17 Large part, 44 percent gas, 18 percent
18 coal, 27 percent nuclear. Small amount of oil and pump
19 storage. And solar about one percent. And that
20 continues to grow.
21 Our actual production for 2013, as you can
22 see, nuclear was a major component of that. Fifty-five
23 percent of actual energy generated for service
24 territories.
25 And as you can see, the amount of coal we

1 actually had used had declined from our total capacity
2 to 13 percent. In gas.
3 As you see, we're the fourth largest
4 generator in the Pennsylvania, New Jersey, Maryland
5 interconnection. And our assets are located in New
6 Jersey, New York, Connecticut and Pennsylvania.
7 PSEG Nuclear, Salem and Hope Creek is the
8 second largest nuclear site in the country. They have
9 over -- close to 36,000 megawatts of electricity.
10 Enough for 3 million homes.
11 All three of our units have actually
12 successfully gone through the license renewal program.
13 And you can see the date, Salem Unit 1 scheduled to
14 retire in August 2036. Unit 2, 2040. And Hope Creek
15 in 2046.
16 Interesting, and a compelling reason for
17 us to be looking at diverse sources. In 2014, the
18 winter of 2014, was one of the first winters up in the
19 northeast where there was actually a max generation
20 alert.
21 Pretty significant demand on the grid.
22 And what we were finding is that typically when a large
23 cold snap, most of the gas goes to the retail customers.
24 So we were unable to actually fire up some of our gas
25 units. And actually challenged the grid.

1 And we needed to startup a lot of our
2 peaking units in order to keep the grid online. And
3 again, that speaks to the reason why we need to have
4 a diverse fuel supply.
5 Another factor though, going forward for
6 us though, is due to environmental regulations, we are
7 going to have to retire a number of these peaking units
8 in 2015. Due to emission standards.
9 And over the next 20 years, as you can see,
10 a significant number of nuclear units are going to be
11 reaching their end of life.
12 And the Fukushima -- yes, sir?
13 MEMBER BALLINGER: This peaking capacity
14 that's going to be shutdown, when you say shutdown, do
15 you mean replaced or shutdown?
16 MR. SCHWARZ: Shutdown permanently. So
17 that's going to create more demand on the grid.
18 Obviously we are still looking at other types of
19 generation assets. Gas or gas fired units, but that
20 takes time to bring online.
21 MEMBER CORRADINI: You're not shutting
22 down the oil peaking?
23 MR. SCHWARZ: Yes.
24 MEMBER CORRADINI: Okay, that's what I
25 thought.

1 MR. SCHWARZ: We'll be shutting down the
2 oil peaking.
3 MEMBER CORRADINI: Sorry.
4 MR. SCHWARZ: That's correct. Thank you,
5 sir. Next slide.
6 So with that, I wanted to turn that over
7 to Jamie Mallon. Unless there are any questions.
8 MR. MALLON: Okay, good morning. My name
9 is Jamie Mallon. I'm the manager for nuclear
10 development for PSEG. I've been managing the ESP since
11 we started in this effort in '08.
12 In addition, we have started a partnership
13 with Holtec. And we're helping to design the small
14 modular reactor that they're working on.
15 And I have four people up there working on
16 that design. Forming it from an ops maintenance
17 chemistry RP perspective. So it's not just design
18 engineering, we're trying to inform it from a how we
19 actually run these things.
20 My biography. I have over 30 years in the
21 commercial and nuclear power industry. In diverse
22 roles, project management, licensing, registrants,
23 training and radiation protection.
24 I've worked at operating units, I've
25 worked at decommissioning units. And I also worked on

1 the construction that happened in the '80's on Nine Mile
2 and Riverbend.
3 I have a physics degree from Franklin and
4 Marshal College. And with that, we'll get into the
5 presentation.
6 So this application has PSEG power and
7 nuclear as co-applicants. We started this work in 2007
8 with a feasibility study. Could we build a nuclear
9 plant on our site?
10 In 2008 a team was assembled with the
11 initial job of preparing a COLA. So we had to select
12 the technology.
13 As we started that effort, looking at the
14 ABWR, ESBWRs and all the other design certs under
15 review, we looked at licensing uncertainty,
16 construction uncertainty and operational uncertainty.
17 And -- Yes, sir?
18 MEMBER CORRADINI: I guess in all the
19 description, what's the difference between Power LLC
20 and Nuclear LLC?
21 MR. MALLON: Okay. That's a good
22 question.
23 MEMBER CORRADINI: I mean it's not in all
24 --
25 MR. MALLON: I have a old chart --

1 MEMBER CORRADINI: -- of your intro
2 slides.
3 MR. MALLON: -- a couple slides on and I'll
4 talk about that.
5 MEMBER CORRADINI: Okay. Okay.
6 MR. MALLON: But fundamentally, when we
7 started this effort, we put nuclear development under
8 power. As opposed to nuclear that runs our nuclear
9 power plants.
10 And that was a lesson learned from the
11 '80's when a lot of plants were being developed.
12 Limerick was under construction, Peach Bottom slid in
13 performance.
14 Management of the companies focused on
15 that nuclear project and not on nuclear operations. It
16 happened there, it happened with St. Lucie and Turkey
17 Point.
18 It happened at ComEd when they were
19 building LaSalle, Byron and Braidwood. Zion, Quad
20 Cities and Dresden were all on the watch list.
21 So when we started this effort, there was
22 a conscious decision made to put nuclear development
23 in power.
24 This site, however, is owned by PSEG
25 nuclear who owns the land that we want to build the plant

on. So when we were preparing the application we had to be co-applicants.

So back to uncertainty. We couldn't pick a technology at that time, in '08. We couldn't figure out who was going to minimize our uncertainty.

As Chris mentioned, we operate as a merchant generator. We have no guarantees from the state of cost recovery. We have to bid onto the market what it costs us to produce power.

And if we don't produce it in an efficient manner, we will be uneconomical and the plant will have to shutdown. So there's no guaranteed rate recovery for us. So that uncertainty was --

(Off microphone comment)

CHAIRMAN STETKAR: Sanjoy?

MEMBER BANERJEE: Push the button.

CHAIRMAN STETKAR: It's really important that we turn the mics on, because otherwise the transcript doesn't pick us up, okay?

MEMBER BANERJEE: Sorry. I'm just getting used to it myself. Can you hear it? Can you hear me?

So you own Hope Creek and that's operated as a merchant plant?

MR. MALLON: Yes it is.

1 MEMBER BANERJEE: And Salem is what?

2 MR. MALLON: We own Salem. We own half of

3 Salem and that's operated as a merchant. We also own

4 half of Peach Bottom. And that's also a merchant.

5 The markets are setup in large portions in

6 the U.S. as merchant, with a reverse option process for

7 bidding into the grid.

8 MEMBER BANERJEE: Okay, thank you.

9 MR. MALLON: Sure.

10 MEMBER RICCARDELLA: Is there a capacity

11 market --

12 MEMBER BANERJEE: Yes.

13 MEMBER RICCARDELLA: -- as well?

14 MR. MALLON: There is a little bit of a

15 capacity market. There's a lot of questions about

16 whether the compensation is adequate for it.

17 And that drives some of the fuel diversity

18 issues. And that's the economic side of what we're

19 trying to do.

20 Too much uncertainty for us to select a

21 technology. A COLA has to be technology specific. We

22 then step back and looked at an early site permit.

23 The first three early site permits,

24 Clinton, Grand Gulf and North Anna were all PPE-based.

25 They did not pick a technology in those early site

1 permits.

2 So we looked at that and we said that's an

3 interesting way to approach this. It also causes

4 public engagement.

5 If you submit a complete and integrated

6 emergency plan that means the local communities have

7 to weigh in. They have to voice whether they're

8 supportive or not of this nuclear plant.

9 As we may remember, the emergency plan was

10 a real challenge at Shoreham. And it almost became the

11 challenge at Seabrook.

12 So getting that out of the way and everyone

13 brought in, was important to us.

14 MEMBER BANERJEE: So the site would be

15 close to your existing --

16 MR. MALLON: It would be co-located. It

17 would have a contiguous security boundary. I have some

18 maps of that.

19 And that was important from a strategy

20 standpoint. Having that contiguous security boundary

21 helps our Armed Forces respond in a coordinated matter.

22 We did look at a second site, which would

23 be a separate security boundary. And we didn't have

24 that flexibility.

25 So some of the parts of the early site

1 permit. It's the SSAR section that deals with the site
2 and the safety of the plant on that site.
3 So we have Chapter 2 is almost completely
4 there with meteorology, hydrology, geology. All
5 that's in there. Demographics.
6 We have some of the hazards from the
7 aircraft. And also river traffic. Because we are
8 right on the Delaware River, so we looked at that.
9 As I mentioned, we have a complete and
10 integrated emergency plan in our application.
11 It is based right off the Salem, Hope Creek
12 plan. So that way it's familiar with the State of New
13 Jersey and the counties.
14 It's the plan that they know and that we
15 practice many times each year. So that helped us.
16 We did the accident analysis for the
17 different reactor types. For the LOCA and other
18 design-basis accidents.
19 MEMBER BANERJEE: So what's the nearest
20 population center? I recall that it's not that close,
21 right?
22 MR. MALLON: Wilmington is probably the
23 largest. And I have a slide with that. I think it's
24 15 miles away. But I'll show that in a second. What's
25 that? Yes.

1 So this is what, to your question, how we
2 are split up. Sargent & Lundy and AMEC were the prime
3 contractors on the. Sargent & Lundy, a lot of the
4 design engineering and the lead contractor.
5 AMEC, the hydrology, geology. A lot of
6 the science. Also the environmental reports.
7 Here we go. So we're 15 miles south of the
8 Delaware Memorial Bridge. Wilmington, we're 18 miles
9 south.
10 Now due west of us is a town, Middletown,
11 Delaware. It's right at the ten mile line. A small
12 portion of that town is inside the ten miles.
13 But what's interesting about our site, and
14 we'll see it in a little bit, we have no one within two
15 miles. Our closest neighbor is actually across the
16 river in Delaware, two and a half miles away.
17 So while we're in New Jersey, the most
18 populated state in the nation, we are actually in a
19 remote area from New Jersey.
20 Let's see, where are we at here. Okay, so
21 we looked at our land. That bottom bullet, we talk
22 about the Army Corps of Engineers.
23 Our application describes acquiring 85
24 acres of land from the Army Corps north of Hope Creek.
25 We could build a plant on our existing site.

1 If we acquire that land there's less
2 environmental damage. We're able to build on their
3 land, which is a confined disposal facility for dredge
4 spoils.
5 MEMBER CORRADINI: Can I ask one thing?
6 MR. MALLON: Sure.
7 MEMBER CORRADINI: You'll probably get to
8 it, but just to highlight. So you said about
9 stationary population, but I'm curious about
10 vacationers and transient population. So when you get
11 to that part I'd be curious --
12 MR. MALLON: Sure. I think we'll see of
13 that a little bit on the 50 mile slide.
14 MEMBER CORRADINI: Okay, thank you.
15 MR. MALLON: And you can see where the
16 Jersey Shore, which is where people vacation, is right
17 at the edge of that 50 mile circle.
18 So we are working with the Army Corp to
19 acquire land north of Hope Creek. That would help
20 minimize our environmental upset when we build the
21 facility.
22 MEMBER CORRADINI: Okay, just one other
23 thing. So I know there's an EPA rule, I can't remember
24 if it's 210(b) or 210 something or other about cooling.
25 I'm curious how that impacts --

PARTICIPANT: It's 316 Bravo?

MEMBER CORRADINI: Yes, thank you. But I'm curious where that fits in, terms of impacting downstream decay.

MR. MALLON: What we would do, we would have a, what we describe in our application as different kinds of cooling towers.

MEMBER CORRADINI: Okay.

MR. MALLON: Either natural draft or fan, mechanically supported cooling towers. But we will have cooling towers because of where we're at on the river. All right.

Okay, here we go. To where we're at in a 50 mile radius. So I'm going to try to use the mouse.

Here's our site. Right where -- we're 52 miles from the mouth of the Delaware Bay, up river. We're in the transition point where it transitions between the Bay and the river.

Title flows dominate here around 400,000 cubic feet per second. Fresh water flow about 15,000 cubic feet per second.

The Jersey Shore, which people are familiar with, is just not quite touching those barrier islands. That are Wildwood and Cape May and Stone Harbor, Avalon as you're moving north. And you can see

1 Atlantic City here.

2 Wilmington is here. Philadelphia is

3 here. And here's Middletown right on the edge of the

4 ten mile circle.

5 Water in this reach of the river is

6 brackish. Here's a little closer in. Now I mentioned

7 we acquired the land for Salem and Hope Creek from the

8 Army Corps.

9 Over a hundred years ago, and you can see

10 this shape of the land is a little unusual. And what

11 happened was the Army Corps was dredging the river, and

12 this was a shallow point in the river. And they put

13 the dredge spoils there. They then added bulk heads

14 and built it up. It became artificial island.

15 As they continued to dredge and deposit

16 material there they actually connected the island to

17 the main land. So the original Delaware River

18 shoreline was over here.

19 Now what's interesting about this kind of

20 trivia, you can see a horizontal line right there, the

21 top part of this land is actually in the State of

22 Delaware. Going back to the old laws that establish

23 the state boundaries.

24 So about once a quarter, somebody from

25 DNREC comes over and drives up there to confirm that

1 it's still Delaware.

2 So here's a little photo of the site. This

3 is looking east. I mentioned this is dredge spoils.

4 It's degraded spoil. It's poor quality.

5 The vegetation around this site is

6 dominated by an invasive species of grass called

7 Phragmites.

8 It establishes a monoculture. Not good

9 habitat for any wildlife, birds, terrestrial species.

10 But you can see, looking east, there's nothing.

11 And what we have here is Salem 1, Salem 2,

12 Hope Creek and the Hope Creek cooling tower. To your

13 point about 316, Salem 1 and 2 were designed as once

14 through plants.

15 MEMBER CORRADINI: Are they going to have

16 to convert?

17 MR. MALLON: Right now we're working with

18 the State of New Jersey on their NJPDES permit. And

19 it looks like we will not have to convert.

20 We have the best available technology on

21 the screens, on the intake screens, for surf water to

22 minimize the impingement.

23 MEMBER CORRADINI: Okay, because --

24 that's fine. It's off topic, so.

25 MR. MALLON: Sure. This is the area where

1 we would build the new plant. And what you see here
2 is the southernmost, north of us are three Army Corps
3 confined disposal facilities.
4 This water is the water that's pumped over
5 with the dredged spoils. It's the slurry that's pumped
6 over.
7 The water collects and then they discharge
8 it as the suspended solids participate out. And it
9 clears up. And that's discharged.
10 So it looks like water, but it's not water.
11 It's the bottom of the CDF.
12 (Laughter)
13 MR. MALLON: And that has environmental
14 nuance there. Here's a view of the facility looking
15 north. And again, you can see the artificial shape of
16 this due to the man-made nature of the island. The
17 bulkheads that were placed there.
18 And again, Salem 1, Salem 2 and Hope Creek.
19 And this is the area where the plant will be built.
20 So when we started working on the
21 application we filled the NRC regulatory guidance, you
22 know, Subpart A of 52, 1206 NUREG-0800. And we started
23 work on all the studies that we needed to do.
24 We did not rely on anything that had been
25 done for Salem and Hope Creek. We redid all our own

1 geological borings, all our own groundwater
2 monitoring.
3 We confirmed that what we found was
4 consistent with Salem and Hope Creek, but we didn't want
5 to rely on that. Given that in some cases it was quite
6 dated.
7 So we started out fresh. Some of the
8 things we talked about here. The first three ESPs were
9 PPE based. We looked at this as a way to -- however,
10 those PPEs were based on some conceptual designs.
11 I think the North Anna had a pebble bed
12 reactor in there. And a CANDU reactor. I think the
13 Clinton application also had the pebble bed in it.
14 So when we started preparing our PPE, we
15 only looked at designs that were under review by the
16 NRC at the time.
17 And what's interesting about this, is when
18 we were picking who we would choose, we weren't sure
19 that the GE ESBWR was going to make it through
20 licensing. So we left them out of the PPE.
21 And instead we had the AREVA unit and the
22 Mitsubishi unit in there. And now, I look back at what
23 we did and we were wrong.
24 MEMBER CORRADINI: But in terms of an
25 envelope of technologies, it fits within the single

unit envelope?

MR. MALLON: It does. We have done that informally.

MEMBER CORRADINI: But not the dual unit envelope?

MR. MALLON: Well it's -- our envelope is both.

MEMBER CORRADINI: Right, I understand that. But in terms of just acreage that you have to set aside, because of the size of the thermal power of the ESBWR and all the associated auxiliaries, I was guessing it would be a single ESBWR.

MR. MALLON: It would be a single ESBWR, that's correct.

MEMBER CORRADINI: Okay.

MR. MALLON: So I wanted to take a minute for plant parameter envelope. And this diagram is from NEI 10-01.

Which we worked with NEI to develop. Because we needed some guidance about how do you prepare a PPE-based ESP.

We had just been through it on the preside so we leaned in pretty hard to make sure this document lives after our project is gone.

The first set is a vendor information

1 worksheet. And the vendor will provide you
2 information on site parameters and reactor parameters.
3 Site parameters are what they assume the
4 site has to be. So we'll make an assumption about snow
5 load or precipitation.
6 For an ESP I determined my own site
7 characteristics. I don't present the site parameters
8 to the NRC, at the ESP time. That's for the COLA and
9 the decision making process.
10 So if I have a site characteristic that
11 exceeds a site parameter, they design it for ten inches
12 of rain in an hour. But my site is 18 inches of rain
13 in an hour.
14 I either have to exclude that design or I
15 have to take a departure from the design cert. So
16 that's why site parameters go into that commercial and
17 decision making and the COLA space.
18 So the vendor information comes down, the
19 reactor parameters, the embedment depth, you know, the
20 height, how much cesium-137 is admitted in liquid
21 effluence, all that stuff, combined with engineer
22 parameters for the site. That depends upon my river
23 temperatures, my suspended solids in the river, all my
24 site specific information goes into the plant parameter
25 envelope. That's combined with site characteristics

1 and that goes into the ESP.

2 The PPE table is contained in SSAR Section

3 1.3. We include all the reactor parameters, all the

4 owner engineered parameters. And they're in a large

5 table in that. I think there's a 150 different

6 parameters in that table.

7 They're broken down by categories.

8 Whether it's related to the structure, the heat sink,

9 potable water and so on.

10 So here's a little slide that I used when

11 I was briefing our senior executives. Just a schedule.

12 What we had to do to prepare the application.

13 This is the work that went on, starting in

14 '08, going to our submittal date in May of '10. One

15 thing I want to point here is meteorological data

16 collection. It starts right away, in '08.

17 We're using the Salem and Hope Creek met

18 tower. We have over 30 years' worth of data from that

19 met tower.

20 It's fully compliant with the regulations,

21 it's what those plants use every day. For their

22 emissions as well as for emergency planning purposes.

23 We did verify that it's consistent with

24 regional and local meteorology. And it meets all the

25 requirements.

1 MEMBER CORRADINI: Is there any
2 requirement to increase the spatial location of these
3 met towers, as time marches on? Or as -- you know what
4 I'm asking?
5 MR. MALLON: I do.
6 MEMBER CORRADINI: Who decides where they
7 go and how they're spaced out? I don't really know
8 that.
9 MR. MALLON: I know we were -- you don't
10 want to be too close and get building wake effects. You
11 don't want to be too far away and not be representative
12 of the site.
13 I know that where it is, when you're coming
14 onto our site, it's right there. Right at the eastern
15 edge of our site. But it meets the requirements for
16 the spacing.
17 This slide, I'm talking about all the
18 visits we've had and work we've done with the NRC. The
19 pre-application on the subsurface started right away
20 in January '09. We were doing our borings.
21 The NRC came to observe what we were doing
22 to confirm that -- our approach and how we were going
23 through it. We had a number of pre-app meetings to
24 describe the PPE, hazards analysis.
25 What's interesting also about this slide

is you'll see February '11, hydrology audit, February 2014 hydrology audit. How there's two of them.

Flood re-analysis is there in 2013. That's all Fukushima related. And I'll have separate slides to talk about that. But we had to redo a lot of work on seismic and flood coming out of Fukushima.

So since then, and I've mentioned it already, 2015 -- excuse me. May 25th, 2010 we submitted it. 2011, February we had our hydrology audit.

A month later the great Tohoku earthquake happened with a subsequent tsunami. And we all know the impact at Fukushima. And after that we got a number of RAIs, as explained.

Same thing happened in seismic where January 2012, right here, the CEUS model came out. And we needed to redo our seismic.

Our most recent revision was submitted June 5th of this year. And that includes all confirmatory items, all open licensing commitments. All RAIs are now in there. That is hopefully the last revision of the ESP.

Our timeline with ACRS. As Dr. Powers said, we had our third meeting yesterday and we're in Full Committee meeting now.

1 Since our application was submitted,
2 again, the same slide I used with our executives, we
3 have answered over 430 questions from the NRC.
4 Ninety-one percent of them were answered in 30 days.
5 So I use this to talk about the work that
6 we've done since submitting the application. It
7 wasn't done, we had a lot of work that we continued on.
8 MEMBER POWERS: It could be --
9 MR. MALLON: Yes, sir.
10 MEMBER POWERS: -- a relatively small
11 number of questions. I mean it sounds like a lot, 437.
12 It compares to over 1,100 in previous. It is
13 reflective of the modifications that the staff's made
14 in their approach in dealing with the licensee.
15 And it allows a lot of the questions to be
16 resolved, both in site visits and audits as well as kind
17 of routine questions gets solved.
18 MR. MALLON: I agree. The audits are a
19 great way to come to a common understanding of what was
20 done and what any issues are.
21 MEMBER POWERS: Yes. This --
22 MR. MALLON: So it helps --
23 MEMBER POWERS: On a relative basis
24 there's been a fairly efficient transfer of
25 information, with respect to RAIs and things like that.

1 MR. MALLON: Yes. Okay, so the two areas
2 where we had re-analysis. The surge and flood. For
3 the -- our site and our location adjacent to the
4 Delaware River, we did look at all the possible flooding
5 mechanisms at our facility.
6 Ice jams, tsunamis, up river dams
7 breaking. But the design-basis flood for us is a
8 probable maximum hurricane storm surge.
9 We used NWS 23, which is a deterministic
10 method for developing what that hurricane is. So the
11 first step in that process is, what's the angle that
12 it's approaching.
13 And we choose an angle parallel to the
14 Delaware Bay, but with land fall a little south of that.
15 So that the prevailing winds pushed the water up the
16 bay.
17 The model has it starting, we used a one
18 dimensional screening model to select other
19 parameters. Including radius of maximum winds and
20 forward transitional velocity. Translational
21 velocity.
22 We maximized those via the one dimensional
23 method. And then did a confirmatory two dimensional
24 model.
25 The two dimensional model was based on

1 ADCIRC+SWAN. It used a model that was developed for
2 FEMA Region III to look at coastal flooding.
3 It's a very large model. It has 1.8
4 million computational nodes. It goes out to the
5 Atlantic.
6 You can see Bermuda there as a slightly
7 dark spot here in the Atlantic. So it allows you to
8 track the hurricanes movement, through the entire
9 Atlantic.
10 The whole Caribbean and the Gulf of Mexico
11 is modeled. And it takes it up from the deep ocean,
12 right up into Delaware Bay.
13 MEMBER CORRADINI: You said it, but if you
14 could just repeat it. So there was a search done to
15 find an angle that maximized the flooding on the site?
16 MR. MALLON: Yes.
17 MEMBER CORRADINI: Is that how you --
18 MR. MALLON: Yes.
19 MEMBER CORRADINI: Okay. And that turned
20 out to be parallel to the channel?
21 MR. MALLON: Yes. But a little southern
22 so the counter clockwise winds are pushing the water
23 up. But at about 500 miles out the storm starts to
24 lineup and come in that direction.
25 MEMBER CORRADINI: And this was done just

1 by iteration of guessing? Expert judgment, yes.
2 MR. MALLON: Well expert judgment was a
3 key part of that, but because of where we are in the
4 shape of the bay, it actually is not -- it's kind of
5 easy --
6 MEMBER CORRADINI: Okay, I understand.
7 MR. MALLON: -- to reach that conclusion.
8 MEMBER CORRADINI: And the second
9 question is, so that's the direction, what about the
10 magnitude? How do you choose the wind?
11 MR. MALLON: We use the NWS 23 guidance,
12 which drives you to it. What we modeled is a strong
13 Cat 4 hurricane.
14 The open ocean water temperatures in this
15 region would not support a Cat 4 hurricane, very
16 unlikely. New Jersey has only ever seen Cat 1
17 hurricanes make landfall. No Cat 4 hurricane has ever
18 made landfall north of North Carolina.
19 MEMBER CORRADINI: And the recent one that
20 occurred?
21 MR. MALLON: Sandy was a Cat 1. And it
22 actually downgraded before it made landfall. And it
23 made landfall north of Atlantic City.
24 MEMBER CORRADINI: Okay.
25 MEMBER BALLINGER: Was the, along these

1 lines, was the model, NWS 23 model, used to see what
2 Sandy would have done to your site?
3 MR. MALLON: We didn't do that. We --
4 MEMBER BALLINGER: Just looking for
5 calibration.
6 MR. MALLON: Right. Well I can get into
7 what we did with this model on calibration. So we took
8 the FEMA model and we validated it against two storms.
9 Hurricane Isabel and Nor'easter Ida.
10 And we used seven tie gauge stations around
11 the facility. From Atlantic City, down to Ocean City,
12 Maryland were two of them.
13 The other five were in the Delaware Bay and
14 river. Including Reedy Point, which is about six miles
15 north of the site. On the Delaware River.
16 They ran those two storms in this ADCIRC
17 model. And the difference between what was measure at
18 those title gauges and what was in the ADCIRC, was less
19 than half a foot. And that would be the worst ever.
20 So it was pretty close to predicting.
21 CHAIRMAN STETKAR: Jaime, before we --
22 thank you, sir. I'm not a meteorologist so I'm not
23 familiar with NWS 23, but I know it's pretty old. It
24 was published in 1979.
25 And I don't know whether the staff will

1 address this. How does the methodology, in NWS 23,
2 compare with the methodology for developing
3 design-basis hurricanes?
4 For example, in Reg Guide 1.221 that was
5 published in 2011 or NUREG/CR-7005 that was published
6 in 2009, which performed the basis for the reg guides.
7 MR. MALLON: Dan, do you have that answer?
8 Would you care to come up to the microphone. Dan,
9 please introduce yourself.
10 MR. BLOUNT: Hi, good morning. My name is
11 Dan Blount. I'm a project manager with Sargent &
12 Lundy.
13 I supported the oversight permit
14 application through working through the hydrological
15 section in developing a number of these analyses.
16 NWS 23 is the NOAA publication that
17 provides us with a range of parameters. As you say,
18 it is from 1979.
19 We did look at the parameters and looked
20 at hurricanes up until the, I think about mid-2000's,
21 as far as data and how those hurricanes, a range of
22 parameters presented in NWS 23 versus the hurricanes,
23 historically that we've seen. And NWS 23 so greatly
24 exceeded the parameters of historical hurricanes that
25 we've seen.

1 And the period in which NWS 23 looked at,
2 from the, I believe the '40's through the '70's, is very
3 similar in the magnitude and frequency of the storms
4 across the east coast. And the -- so we expected the
5 NWS 23 parameters to be similar.
6 Now with respect to the Reg Guide 1.221,
7 which provides the, I believe the ten to the minus seven
8 wind speeds, we did not do a direct comparison to that,
9 to NWS 23. Because that was after our application
10 here.
11 CHAIRMAN STETKAR: Okay. I'll ask the
12 staff about that then. Thank you.
13 MR. MALLON: I should also say, back here
14 on the 1D model, we ended up with a full flood height
15 of 42 feet. Of water.
16 Now that's interesting to compare to
17 Katrina, which was the highest storm surge I learned
18 yesterday from Dr. Jones. And that was, I believe, 29
19 feet.
20 So this NWS 23 methodology develops
21 varied. And the one dimensional model develops very
22 conservative results.
23 The two dimensional model, because we are
24 up the bay, more accurately describes the topography
25 around the site, as well as the flood waters comes up

1 so that it is a more accurate modeling tool.

2 We took the validated model and then we

3 refined it further around our site. We took the

4 computational nodes and increased them by decreasing

5 the distance. The size of them. To make them finer

6 around our site and take credit for features that were

7 not in normal -- normally available geospatial mapping

8 programs that FEMA had used.

9 So we did onsite footwork to map the site.

10 And included that more closely.

11 We then ran the model. And what we came

12 up with was, we had an antecedent water level of 1.35

13 feet. That was put in as an initial input. We raised

14 all the water in the model by 1.35 feet to take credit

15 for sea level rise.

16 We have a maximum still water level of 20

17 feet wade run-up. And the ten percent of sea and side

18 tide are added, giving us a water surface, surface

19 elevation of 32.1 feet.

20 In our application we describe site grade

21 as being raised to 36.9 feet. That's done, normally

22 site -- right now at the site, site grades around ten

23 to 11 feet NAVD.

24 But Salem and Hope Creek are made to be

25 watertight. They have watertight doors, the operators

1 take action in a hurricane coming to close those doors.
2 Which is what they did in Sandy.
3 MEMBER CORRADINI: Up to what?
4 MR. MALLON: And they're --
5 MEMBER CORRADINI: Up to what level?
6 MR. MALLON: They are designed -- Gary?
7 MR. BLOUNT: Go ahead, I can answer that
8 again. Dan Blount again. It's approximately 20 feet
9 above grade. It varies depending on the exact
10 location.
11 MEMBER CORRADINI: So approximately 30
12 feet above.
13 MR. MALLON: 30 feet above mean water
14 level.
15 MEMBER CORRADINI: And then -- okay. And
16 then kind of going backwards to Ron's question. So if
17 you were to have run a calculation on the effect of Sandy
18 on your site, compared to what you saw, was that done?
19 I think that's kind of where you were --
20 MEMBER BALLINGER: There was another
21 potential place to calibrate this. A number of years
22 ago there was a hurricane that came up the coast. And
23 the Seven River, which has the same general shape as
24 this, there was a storm surge that went up the Seven
25 River and sort of buried the first 100 feet of

1 Annapolis.

2 That's another place. Did you look and

3 see, I'm trying to get a feel for the level of

4 conservatism versus what compares against what

5 actually happens.

6 MR. MALLON: Right. And that's why we did

7 validate the FEMA model against Isabel and Nor'easter

8 Ida.

9 Those storms were selected based upon

10 discussions with the FEMA folks that developed the

11 ADCIRC+SWAN model. They recommend that given our

12 location, to look at those two storms because they track

13 close to the Delaware Bay. And the effects would model

14 what we're looking for, for our location.

15 MEMBER BALLINGER: Now you say they track

16 close to Delaware Bay, but what about the angle of

17 attack and things like that, with respect to producing

18 the storm surge that goes right up in the worst case?

19 MR. MALLON: So what we're trying to do is

20 validate the model to actual data.

21 MEMBER BALLINGER: Yes.

22 MR. MALLON: Does it represent the

23 topography of the land, how the open ocean is coupled

24 to the bay, which is coupled to the river.

25 So by choosing storms that came close to

1 our site, and using title stations up the bay and river,
2 as well as to -- out Atlantic City, Cape May and Ocean
3 City, Maryland, we're tracking the open ocean. And by
4 validating against them, we're showing that the model
5 produces results that reflect well with the measured
6 data from those two storms.
7 And as I said, those storms were
8 recommended to us by the FEMA folks that developed the
9 ADCIRC model.
10 MEMBER BALLINGER: Thank you.
11 MR. MALLON: Sure. We raised site grade
12 to 36.9 as part of our application. Setting site grade
13 is important.
14 The design certs all assume that the plant
15 will be above the highest flood level. They don't have
16 watertight doors in them in the current design cert.
17 So at COLA time we have to look at a departure, we'd
18 have to do something different.
19 We need to set site grade early in the
20 process, because it impacts seismology and vibratory
21 ground motion. It impacts the environmental side
22 because they have to bring in truckloads of dirt. And
23 the environmental impact of the fill that's brought in.
24 So you need to set site grade. We set it
25 at 36.9. It is 4.8 feet above the storm surge

1 predicted.

2 MEMBER BALLINGER: Now does that include

3 any settling that might occur? There's a certain

4 airport in Japan that's having a little trouble with

5 reclaimed land.

6 MR. MALLON: Yes. We excavate down 70

7 feet to the -- to a competent layer. The Vincentown

8 Formation, it's cemented sands about 50 to 70 feet

9 thick.

10 It's the same layer that Salem and Hope

11 Creek are built on. It had a shear wave velocity of

12 about 2,000 feet per second. So it's a pretty solid

13 level --

14 MEMBER BALLINGER: Okay, so you have

15 underlying rock or something underneath that --

16 PARTICIPANT: No.

17 MEMBER BALLINGER: -- that's not

18 reclaimed land?

19 PARTICIPANT: It's sand.

20 MR. MALLON: So the language, I have a

21 piece of it on my desk.

22 MEMBER BALLINGER: Yes, I'm not a

23 geologist either --

24 MR. MALLON: And if I showed it to you --

25 MEMBER BALLINGER: -- so I'm using lousy

language for sure.

MR. MALLON: Yes. If I showed it to you you'd say that's rock. Okay. From a geological standpoint it's cemented sands. Hard rock is 18,000 feet down. So we are a soft soil site. As are a number of sites in the U.S.

And then we fill it back up with engineered fill. Roll it up and pack it fill. Lean concrete.

We haven't made that decision yet. That will be made when we select the technology. We know their foundation depth. That will be a factor.

And then we'll build it back up. So the settlement should not be a factor for us. Because of the engineering that goes into it.

VICE CHAIRMAN BLEY: Jaime, for Ron's question, maybe you can just define competent layer.

MR. MALLON: Sure. That's a layer that -- from the geological studies, we went borings down to 600 feet on our site. And adjacent to it. And then found everything consistent from Salem and Hope Creek.

You need a layer that can support the dead weight, essentially, of the plant. You need a layer, and the geologists are in the room and I'm probably mangling the topic, and you need a layer that -- how it transmits the energy from vibratory ground motion

1 and it won't be impactful.

2 You also want to avoid liquefaction. So

3 you need that -- there's a number of things that go into

4 determining what is the competent layer. But that

5 layer, the Vincentown Formation, is that competent

6 layer for us.

7 Okay. The next area where we had

8 re-analysis that we had to do was vibratory ground

9 motion. First step is to characterize potential

10 earthquake hazard in the region of the site. Two

11 hundred mile radius.

12 We did that using the EPRI-SOG model in our

13 initial application. We updated it with more recent

14 data.

15 We then characterized the seismic hazard

16 at the site. And then you move it up from a hard rock,

17 to the ground motion, to your competent layer. And

18 that's where you determine the ground motion response

19 spectrum. And we used the EPRI 2004, 2006 ground

20 motion.

21 CHAIRMAN STETKAR: Jaime, just for

22 clarity. You said you used the EPRI-SOG model to

23 characterize the hazard --

24 MR. MALLON: In our initial application.

25 CHAIRMAN STETKAR: -- in the initial

1 application. The final application --

2 MR. MALLON: And then in January of '12 we

3 were given a question, what's the impact of using the

4 CEUS model. So we did a seismic re-analysis --

5 CHAIRMAN STETKAR: Okay.

6 MR. MALLON: -- to support that.

7 CHAIRMAN STETKAR: Good. Thank you.

8 MEMBER RICCARDELLA: So you're using the

9 current CS GMRS?

10 PARTICIPANT: You got to hit your button.

11 PARTICIPANT: Peter.

12 PARTICIPANT: Hit your button.

13 MEMBER RICCARDELLA: I'm sorry. So

14 currently, you're planning to use the CS GMRS for --

15 MR. MALLON: Yes, we did. That's what our

16 current application has in it now. So this is another

17 area where we had to do significant re-analysis, post

18 Fukushima.

19 Even though we have to come back in this

20 same topical area, COLA time. We only determine the

21 ground motion response spectrum. We don't determine

22 our FIRS. The foundation incident response spectrum.

23 I don't know the embedment effect.

24 They're different from different technologies. I

25 don't know what my fill material will be.

1 So we did look at, can we generate a FIRS?
2 Can we bound that, that was one of our first questions
3 and we could not do that. At that ESP timeframe.
4 So we did use the CEUS updated catalogue.
5 We used the entire CEUS catalogue. We didn't limit it
6 to the 200 mile radius.
7 We turned on everything. All the sources
8 in there. And we used the '04, '06 ground motion
9 prediction equations and followed that that guidance.
10 Yes, sir?
11 MEMBER RICCARDELLA: I was just taking a
12 good look at the 2014 preliminary GMRS studies from the
13 NRC. And see that for Salem and Hope Creek there's a
14 significant difference between what they call the
15 licensee GMRS and the NRC GMRS. Is that familiar?
16 MR. MALLON: Yes, do you want to --
17 MR. RUF: My name is Gary Ruf. I'm the
18 lead mechanical engineer for PSEG on the early site
19 permit project. But I also was on loan to Fukushima
20 representing PSEG on Fukushima.
21 We did have, Chris can probably find the
22 date, but we did have a subsequent meeting with the NRC
23 to discuss that disparity of their graph versus ours.
24 MEMBER RICCARDELLA: That was last
25 spring?

1 MR. RUF: Last spring timeframe. And
2 what it came down to was the use of the -- primarily
3 it was the use of the kappa they selected for our site,
4 lead to that disparity.
5 Subsequent to that meeting they have now
6 re-looked at what -- they're approach based on the
7 discussion with our experts and theirs. And now they
8 were in alignment that disparity no longer exists.
9 MEMBER RICCARDELLA: Thank you.
10 MR. RUF: You're welcome.
11 MR. MALLON: Gary, will some of that be --
12 that discussion also included the fact that we had new
13 geological boring data for the site. Did that help
14 them in the kappa?
15 MR. RUF: We provided that. The kappa
16 that was selected, they had various teams from the NRC
17 working on various sites, because they were doing the
18 entire Eastern U.S.
19 The kappa that they selected was more in
20 line with, initially, was more in line with a harder
21 rock site. Subsequently based on the data we had, they
22 agreed that the kappa should be more of a, for a soft
23 soil site. Which then brought their graph in alignment
24 with ours.
25 MEMBER RICCARDELLA: Thank you.

1 MR. RUF: You're welcome.

2 MR. MALLON: So one side benefit of the
3 ESP, quite frankly, has been our ability to help the
4 operating units with the Fukushima response. Both
5 from the flood and the seismic.

6 And here are our horizontal and vertical
7 GMRSs. And with that, I'm done.

8 MEMBER POWERS: Do the members have any
9 additional questions for the Applicant in this case?
10 At this point we will turn the presentations over to
11 the staff. And, Prosanta, you will present?

12 MR. CHOWDHURY: Once again, good morning
13 and my name is Prosanta Chowdhury. And at this time
14 I would -- thank you very much.

15 I will go over some of this information.
16 Some of the information maybe overlapping with what
17 PSEG has already covered. I'll go through those
18 faster.

19 Okay. You already know this. PSEG
20 requests permit approval for a 20-year term. Along
21 with approval for a complete and integrated emergency
22 plans. That was part of the application.

23 PSEG does not seek approval for limited
24 work authorization activities.

25 And as PSEG already mentioned, the plant

1 parameter envelope was developed using these -- the
2 table here shows the technologies that they looked at.
3 This is the site overview. You have seen
4 probably more details, but I borrowed this picture from
5 our hydrology presentation yesterday. The site is
6 located on the eastern shore of Delaware River, upper
7 Delaware Bay.
8 There was a question about the nearest
9 population center. And it is the City of Wilmington,
10 Delaware with its nearest boundary distance of about
11 15 miles. And the estimated population of 72,868 in
12 2007. And the proposed site grade is 36.9 feet NAVD88.
13 As I move through my slides, we have staff
14 members present here from different disciplines. For
15 example, hydrology, seismology, vibratory ground
16 motion, emergency planning, quality assurance, et
17 cetera.
18 So if there are specific questions, I will
19 request the staff member to provide their subject
20 matter expert clarification. And any information.
21 Just a quick overview that the staff
22 presented to the Full Committee, the scope of an ESP
23 and concept plan permit envelope in May of 2014. And
24 then the staff did pre-application site visit.
25 January 2008 is an error, there it should be January

2009. I apologize for the error.

We did have an emergency planning site visit. The staff actually toured the site to the extent they could access. And saw all aspects of the early emergency planning review areas that are physical areas. So they did an extensive site visit.

Hydrology site visit and audit was done in 2011. And there was a shorter audit on a specific matter during 2014.

A quality assurance audit was done and quality assurance inspection was done. Geology site visit and audit was done. A meteorology site visit was done. And seismic software audit was done.

So all these activities were done, in addition to reviewing the information in the application that was presented.

The audits and site visits helped the staff tremendously in their independent review, later on in doing the confirmatory analysis. So the staff did an excellent job, in my opinion, as a project manager, in tearing out their responsibilities in the review application, with focusing on the independent portion of the activities that they could do.

Along the same line, the staff tremendously cooperated. And I emphasis this because

1 I was part of this, all through the process. With
2 several federal agencies and state agencies.
3 So to name a few, Army Corps of Engineers,
4 U.S. Coast Guard, Geological Survey, Federal Emergency
5 Management Agency, who is in the lead to oversee and
6 review the offsite state and local emergency plans.
7 So the staff had a routine collaboration
8 and cooperation with FEMA. In terms with FEMA, in turn
9 works with the state governments involved. Not only
10 within in the ten mile radius, but also within the 50
11 mile initial planning zone. And then the local
12 governments.
13 So FEMA's feedback to the NRC is essential,
14 is required, necessary and it makes the staff's finding
15 complete with FEMA's findings.
16 So this efforts are not talked about much,
17 but they are essential, important and significant.
18 Staff also completed all advance safety
19 evaluation with no open items. And they were presented
20 to the ACRS subcommittee between March 2014 and June
21 2015.
22 There was question about number of RAIs.
23 Or not question, a comment. And I'd like to make a
24 comment in that regard.
25 If you think that the number of RAI

1 questions were less than we have seen usually for other
2 application, there is another reason. I would like to
3 mention, is that on each and every RAI that was issued
4 as draft to the Applicant, we made it clear to the
5 Applicant that we are ready to provide any
6 clarification that they needed. And we conducted that
7 clarification call when there was a request from them
8 or when the staff felt that it would expedite the
9 process of response.
10 If we initiate a, you know, clarification
11 call, we did that. And during the clarification calls,
12 I want to emphasis here that the staff made no attempts
13 to discuss the technical matters.
14 Just simply clarification what the staff's
15 expectations are and what the Applicant -- how the
16 Applicant could meet the staff's expectation. That's
17 the clarification. And beyond that, any need for any
18 technical discussions was scheduled through public
19 meetings.
20 Okay. The review was conducted in all
21 those areas that are mentioned already. The staff
22 identified nine permit conditions.
23 And one permit condition is in exclusion
24 area, authority and control. There are two in
25 potential accidents and flammable vapor clouds area

1 review. That's Section 2.2.3.

2 Surface faulting and geologic mapping.

3 Permit Condition 3. Stability of subsurface materials

4 and foundation. This is all part of 2.5.

5 And the emergency planning has two that are

6 related to Fukushima Near-term Task Force

7 Recommendation 9.3. And those specific permit

8 conditions are listed in Section 13.3.4.3.2 to be

9 specific.

10 Enhancements to emergency preparedness

11 regulations also has a permit condition. And

12 emergency action level has two permit conditions.

13 All these permit conditions, and then the

14 COL action items, are listed and will be published as

15 -- in a table format, as part of the final safety

16 evaluation report. In Appendix A, Chapter 1.

17 However, these are all publically

18 available information in the respected safety

19 evaluations.

20 So at the very high level, what did the

21 staff find. In the designated exclusion area it meets

22 the regulatory requirement subject to permit

23 condition.

24 Potentially hazards activities on site and

25 in the vicinity of the plant have been identified per

1 regulatory requirements.

2 Site characteristics and design

3 parameters, with respect to evaluation of potential

4 accidents, meet the regulatory requirements for

5 determining the acceptability of the site.

6 The aircraft hazards do not present an

7 undue risk to the safe operation of nuclear units at

8 the PSEG site. At the proposed PSEG site.

9 Radiological effluent release limits

10 associated with normal operation can be made for any

11 individual located offsite. Now these are very

12 shortened version of the staff findings. If you need

13 more details the staff is presented here to provide that

14 to you.

15 Radiological dose consequence of

16 postulated accidents meet the 10 CFR 50.34(a)(1)

17 criteria.

18 In the area of meteorology, which is of

19 high interest, onsite meteorological monitoring system

20 provides adequate data to represent onsite

21 meteorological conditions.

22 Site characteristics and design

23 parameters related to short-term deficient estimates

24 are acceptable.

25 Characterization of atmospheric

1 dispersion and deposition conditions are appropriate
2 to demonstrate compliance with numerical guides for
3 doses for any individual located offsite.
4 Hydrology. The Applicant considered most
5 severe natural phenomena that have been historically
6 reported for the site and surrounding area. And
7 appropriately estimated the design-basis flood
8 elevation, which is 32.1 feet NAVD versus the site
9 grade, which is 36.9 feet NAVD.
10 So there's sufficient margin for safety
11 related site grade system, structures and components.
12 And here's a list of the maximum flood
13 level or maximum groundwater level requirements for
14 each technology that the Applicant selected in
15 developing their plant parameter envelope.
16 MEMBER REMPE: Could you clarify why you
17 have most severe and natural phenomena? What was
18 omitted that wasn't needed to be considered?
19 MR. CHOWDHURY: Okay. In that hydrology
20 EPA request, Joe Giacinto and Dr. Henry Jones are
21 present. Would you please answer one of the --
22 regarding, to consider the most severe natural
23 phenomena. So the question is, what was left out or
24 not considered.
25 MEMBER BROWN: I read it a different way.

1 (Off microphone comments)
2 CHAIRMAN STETKAR: One person at a time.
3 MEMBER BROWN: I read it the other way.
4 You consider --
5 MR. CHOWDHURY: You are correct.
6 MEMBER BROWN: -- the most severe natural
7 phenomena. Not most of the severe. So I --
8 MR. CHOWDHURY: That is correct. I made
9 a mistake there.
10 MR. GIACINTO: That is correct.
11 MEMBER REMPE: Great. Thank you.
12 MR. CHOWDHURY: Okay. And in the flood
13 hazard area, Fukushima Near-term Task Force
14 Recommendation 2.1, the staff found that the Applicant
15 used appropriate regulatory guides in other documents.
16 And addressed the information on fighting
17 the evaluation adequately. And therefore there was no
18 need for a separate review of the Fukushima 2.1 related
19 information.
20 The staff's review, evaluation, findings
21 and conclusions, in this area, flood hazard, are
22 documented in Advance Safety Evaluation Sections 2.4.5
23 and 2.4.6.
24 Moving along. Geology and seismology.
25 No tectonic or non-tectonic features with the potential

1 for adversely affecting suitability and safety occur
2 in the sire region, site vicinity or site area or at
3 the site location. That was the finding of the staff.
4 No potential for tectonic or non-tectonic
5 surface deformation in the site vicinity or site area
6 or the site location that could adversely affect
7 suitability of the site.
8 The staff also found that the Applicant
9 thoroughly characterized seismic sources surrounding
10 the site, adequately addressed the uncertainties
11 through a PSHA. That's Probabilistic Seismic Hazard
12 Analysis.
13 Applicant's GMRS, Ground Motion Response
14 Spectra, adequately presents the regional and local
15 seismic hazards. And accurately includes the effects
16 of the local site subsurface properties.
17 Applicant adequately determined site
18 specific engineering properties of the soil underlying
19 the ESP site, following state of the art methodology
20 for field and laboratory analyses.
21 Fukushima Near-term Task Force
22 Recommendation 2.1, seismic hazard. The Applicant
23 used the current guidance and methodologies. And the
24 Applicant's information was adequate, as documented in
25 the Advance Safety Reevaluation Section 2.5.2,

1 Vibratory Ground Motion.

2 Emergency plants provide an adequate
3 expression of the overall concept of operation and
4 describe the essential elements of advance planning and
5 the provisions made to cope with emergency conditions.

6 The overall state of onsite and offsite,
7 this where FEMA's evaluation comes into play.
8 Emergency preparedness, when fully implemented, will
9 meet the applicable regulatory requirements.

10 Subject to the required condition and
11 limitations of the full-power license and satisfactory
12 completion of the ITAAC, emergency planning ITAAC,
13 there's reasonable assurance that adequate protective
14 measures can, and will be taken, in the event of
15 radiological emergency at the new site. And that
16 emergency preparedness of the PSEG site is adequate to
17 support full-power operations.

18 Here we have Fukushima Recommendation 9.3.
19 That has to do with emergency preparedness, staffing
20 and communications. The staff has issued proposed two
21 permit conditions to address that once technology is
22 selected.

23 Staff found PSEG's PPE values reasonable.
24 PSEG provided sufficient design information to perform
25 analysis required by 10 CFR 52.17(a)(1) to determine

1 the adequacy of the proposed exclusion area boundary
2 and low population zone.
3 PSEG performed analysis for a broad
4 spectrum of representative postulated design-basis
5 accidents to determine bounding radiological
6 consequences.
7 The staff proposed for inclusion in the
8 ESP, the site characteristics and the bounding design
9 parameter.
10 I'd like to mention here also that, on June
11 5th, 2015, PSEG submitted Revision 4 of the
12 application. The staff was waiting to make sure that
13 the confirmatory items that were identified throughout
14 the safety evaluation, had been adequately and
15 satisfactory addressed by PSEG.
16 So I'll go over that. This is -- I
17 considered this very important in terms of closing
18 those items.
19 There were two confirmatory items for
20 Chapter 2, Sections 2.1 and 2.2 combined. And both of
21 them, confirmatory items 2.1-1 and 2.2-1, have been
22 satisfactory addressed by the Applicant. And
23 therefore the staff recommends that they be closed.
24 Confirmatory Items 2.4-1 and 2.4-2 that's
25 related to hydrology, have been adequately addressed

1 and satisfactory -- to the satisfaction of the staff.
2 We verified all of these yesterday. And the staff is
3 satisfied that those have been properly address and can
4 be closed.
5 Now this area has significant amount of new
6 information. And the site safety analysis support
7 markups that the Applicant committed to incorporate in
8 this division of the application.
9 So we went through, the staff and myself,
10 we went through all of this yesterday and found that
11 they have been adequately addressed. Therefore these
12 two can also be closed.
13 Confirmatory Item 2.5.4-1 that's related
14 to geology. Seismology Area 2.5, has been adequately
15 addressed. And will be closed.
16 And the last, but not least, Chapter 13,
17 Section 13.3, emergency planning, there was a
18 Confirmatory Item, 13.3-1, and that has been adequately
19 addressed and the staff recommends that we close this.
20 So I wanted to make this statement on the
21 record that we have verified all confirmatory items
22 addressed by the Applicant and they can be closed.
23 So what that means is that the final safety
24 evaluation report, due by September 30th, 2015, will
25 not have any confirmatory items. They will have been

closed.

So based on the review of the PSEG site safety analysis support and emergency planning information, the staff concludes that the PSEG ESP site characteristics comply with 10 CFR Part 100, subject to staff's proposed conditions. One or two reactors having characteristics within the site parameters, can be constructed and operated without undue risk to public health and safety.

And last but not least, the proposed emergency planning ITAAC are necessary and sufficient. That's the end of my formal presentation. I have some additional backup slides in case we need to provide explanation in certain areas.

MEMBER POWERS: Are there any additional questions?

CHAIRMAN STETKAR: Yes.

MEMBER POWERS: Oh, I'm sorry.

CHAIRMAN STETKAR: No problem.

MEMBER BROWN: Oh, I thought I had it on. Sorry about that. And I don't know who it has to -- should answer this one, but you made the comment that the artificial island, it was built up by the U.S. Army Corps of Engineers and it's got this little finger that sticks up with like a little bay in it and it's built

1 up from dredging.

2 Is that island configuration going to stay

3 in the form that it is now or is the configuration going

4 to change by additional dredging being deposited either

5 up in -- is Delaware going to get some more land?

6 I don't know if it has any affect or not,

7 it's just if you put more junk it that seems to affect

8 -- might affect something. So I thought I'd ask the

9 question.

10 MR. MALLON: Sure. It's a good question.

11 Environmental regulations preclude deposition of

12 dredge spoils into water and filling in wetlands. That

13 is almost impossible to happen anymore.

14 So what happens now --

15 MEMBER BROWN: But not before is what

16 you're --

17 MR. MALLON: Right. Right.

18 MEMBER BROWN: Okay.

19 MR. MALLON: It was over a hundred years

20 ago. What happens now in a CDF is you build them up.

21 So you build a berm, you deposit the material inside,

22 the liquid effluent is released. It has to meet water

23 quality standards. You raise the berm higher.

24 MEMBER BROWN: That's those little pools

25 that you were showing us earlier?

1 MR. MALLON: Yes. And you just slowly
2 build it up.
3 MEMBER BROWN: Okay. So it's really
4 effectively deposited on the existing --
5 MR. MALLON: Yes.
6 MEMBER BROWN: -- configuration, as it is.
7 MR. MALLON: Yes.
8 MEMBER BROWN: Okay. Thank you.
9 MR. MALLON: Sure.
10 CHAIRMAN STETKAR: Are the estimated peak
11 wind speeds at the site, determined by tornado or
12 hurricane?
13 MR. MALLON: I think the tornado is the
14 highest wind speed, if I remember correctly from the
15 site characteristics.
16 MR. BLOUNT: Yes, that's correct. This
17 is Dan Blount. The tornado does bound the hurricane.
18 CHAIRMAN STETKAR: Okay. I'll ask the
19 staff.
20 The Applicant noted that they performed
21 their hurricane analyses according to the methods and
22 the data in NWS 23. And we heard that they looked at
23 the hurricane record between 1979, and more recent
24 dates, to update the estimated frequencies and
25 severities.

1 Did the staff use -- what, Reg Guide 1.221
2 in their review of the hurricane hazard?
3 MR. CHOWDHURY: Dr. Henry Jones will
4 address your question.
5 DR. JONES: I'm Dr. Henry Jones. I've
6 been with the NRC since 2007. I have a bachelors in
7 the Naval Academy, masters and PhD from the Naval
8 Postgraduate School. Also professional
9 meteorologist. Served 28 years in the United States
10 Navy.
11 The question that came up when I first got
12 here, there are two separate reg guides. Peter
13 Vickery, with whom I'm very familiar with, designs the
14 wind speeds for hurricanes for the American Society of
15 Civil Engineers.
16 What you have is two different phenomena.
17 The same hurricane that will bring the maximum wind at
18 the site is not the same hurricane that can bring the
19 same storm surge.
20 CHAIRMAN STETKAR: Right.
21 DR. JONES: Because remember, you're
22 having the ocean, the hurricane has to push the winds
23 over the ocean and bring the water, like PSEG, up a
24 channel.
25 Whereas a tornado or a hurricane may have

1 a different direction to bring the maximum winds at the
2 site.
3 Vickery's model doesn't have any storm
4 surge. It doesn't even have the resolution, really,
5 to see terrain at the resolution that we look at storm
6 surge. Which is down to almost ten meters.
7 CHAIRMAN STETKAR: Right.
8 DR. JONES: When we come in real close.
9 So he's essentially had a climatological model that he
10 developed. He decayed his storms, ran them into the
11 coast until he got different periods of accedence. And
12 he made curs up to a tenth to the negative seven for
13 that.
14 CHAIRMAN STETKAR: Okay.
15 DR. JONES: And it has nothing to do with
16 the storm surge.
17 CHAIRMAN STETKAR: Okay.
18 DR. JONES: NWS 23, other hand, every
19 applicant looks at that and they have to modify it
20 accordingly, based on climatology that's in SER. They
21 review that.
22 We had the Corps review that in 2009. It's
23 still pretty much valid. And actually in many cases
24 of the new reactors, we had RAIs and they modified some
25 radius of maximum winds to conform to the recent

1 climatology as the PSEG Applicant has stated.
2 And so what you do is a lot of simulations.
3 You do a lot of permutations. A lot of track. About
4 six parameters until you get the worse storm surge at
5 our site.
6 CHAIRMAN STETKAR: Thank you. But I
7 wasn't asking about storm surge. I was asking about
8 --
9 DR. JONES: About the winds at the site.
10 CHAIRMAN STETKAR: Right.
11 DR. JONES: Yes. We don't use the same --
12 that's what I was saying. We don't use the same guide.
13 The guide that they use for maximum wind speed is
14 totally different than what you would use for the
15 physics of a storm surge.
16 CHAIRMAN STETKAR: I wasn't asking about
17 storm surge. I was asking specifically about wind
18 loading. Maximum wind speed loading.
19 DR. JONES: But that's 1.22.
20 CHAIRMAN STETKAR: That's 1.221, right?
21 That's what I was asking about.
22 MR. QUINLAN: Hi, my name is Kevin
23 Quinlan. I was the lead meteorologist for this review.
24 CHAIRMAN STETKAR: Right.
25 MR. QUINLAN: Yes. For the hurricane

1 wind speeds, the three second gust, we used Reg Guide
2 1.221.
3 CHAIRMAN STETKAR: And you reviewed their
4 submittal against Reg Guide 1.221?
5 MR. QUINLAN: Correct.
6 CHAIRMAN STETKAR: You did? Thank you.
7 That's what I was asking.
8 DR. JONES: But sometimes you get confused
9 on --
10 CHAIRMAN STETKAR: No, no I -- over about
11 three years of sitting on this subcommittee and
12 Committee I've gotten educated about the difference
13 between storm surges and maximum wind gusts. So thank
14 you.
15 MEMBER POWERS: Are there any other
16 questions that will be clarified for reasons that need
17 not be disclosed? I don't hear any other questions.
18 There is a dance that I am totally
19 unfamiliar with concerning lines and external
20 comments. I will turn to the Chairman of this, our best
21 buddy, to handle that.
22 (Laughter)
23 CHAIRMAN STETKAR: Well thank you, Dr.
24 Powers. Since you've absolved yourself of any
25 responsibility in that way.

1 What I'd like to do right now then is ask
2 if there's anyone in the room who, member of the public
3 or anyone who'd like to make any comments related to
4 this matter, please come up to the microphone and do
5 so?
6 And if not, because of our high technology,
7 I have some noise indication that the external line
8 maybe open, but could somebody please just help me out.
9 AUTOMATED MACHINE: The conference is
10 being terminated.
11 PARTICIPANT: There you go. All set.
12 MEMBER POWERS: It strikes me that that
13 means there is no one on the line.
14 MR. MALLON: Try it again.
15 CHAIRMAN STETKAR: We'll try it again.
16 If there's anyone out there on the bridge line, can you
17 help me out and just say hello to see if the line is
18 open?
19 Hearing nothing --
20 THERON: Excuse me, Mr. Stetkar, no one on
21 the line.
22 CHAIRMAN STETKAR: No one on the line.
23 Thanks, Theron. With that, there are no public
24 comments. Thank you very much, Dr. Powers, for leading
25 us through that. I thank the Applicant and --

1 MEMBER POWERS: I will comment that we
2 will be writing a letter on this.
3 CHAIRMAN STETKAR: Okay.
4 MEMBER POWERS: For comments.
5 CHAIRMAN STETKAR: And if there's nothing
6 else, we will recess until 10:30.
7 (Whereupon, the above-entitled matter
8 went off the record at 9:58 a.m. and resumed at 10:32
9 a.m.)
10 CHAIRMAN STETKAR: We are back in session.
11 The next topic on the agenda is Discussion of Documents
12 Supporting the Mitigation of Beyond-design-Basis
13 Events Rulemaking. And in Steve Shultz's absence I
14 will at least introduce the topic.
15 And the purpose of today's information
16 briefing is to review proposed updates to the NRC draft
17 regulatory guides and NEI technical reports since our
18 last Fukushima subcommittee meeting on May 6th of 2015.
19 During the previous Fukushima
20 subcommittee meeting there were areas that had not been
21 developed and areas that were subject to change before
22 the draft rulemaking package is released for public
23 comment.
24 The briefing today will include the
25 progress that the industry and the NRC staff has made

on closing those items and issues. And information about any updates to documents or revisions.

Information briefing is open to the public and Kathy Weaver is the designated federal official for the briefing. We have received no written comments or requests for time to make oral statements.

And Steve Shultz I understand is on the bridge line and it should be open for him to participate in the meeting. Steve, are you out there?

MEMBER SHULTZ: I'm here, John.

CHAIRMAN STETKAR: Thank you. We'll now proceed with the briefing and I call upon Mr. Jim Riley of NEI.

MR. RILEY: Thank you, John. My name is Jim Riley. I'm senior technical advisor at NEI. I've been responsible for the industries response to the flooding issue at Fukushima since we all started this, about four years ago now. So I've been there for the whole duration.

What I came to talk to you about today is what we're calling a mitigating strategies assessment. It will appear as Appendix G in NEI 12-06 when Rev 1 of NEI 12-06 is issued.

And basically the approached we've taken provides five paths for assessing the effect of

1 flooding on mitigating strategies. Two of them
2 involve use of FLEX as is. I'm going to define these
3 terms here in a minute.
4 One involves a modification to the FLEX.
5 The next one is an audit. We're calling it a alternate
6 mitigating strategy. And the third is targeted
7 hazard.
8 And when I'm talking here, and I use the
9 word FLEX, I'm referring to the mitigating strategies
10 approach that was ordered by EA-12-049. And the
11 industry is in the process of implementing.
12 When I talk about alternate mitigating
13 strategies, I'm going to be talking about a hybrid of
14 FLEX strategy with installed plant equipment that is
15 being adopted by some plants in response to the
16 reevaluated hazard.
17 And then targeted hazard mitigating
18 strategies differs from FLEX and from alternate
19 mitigating strategies, into the targeted hazard
20 mitigating strategy, does not maintain a containment
21 function as part of the response. But minimizes
22 offsite releases because the core and the spent fuel
23 pool are kept cool.
24 So for some plants that have had to take
25 that approach, we call it a targeted hazard mitigating

1 strategy.

2 The next chart I'm going to show you is

3 something you've seen before. I'll put it up there and

4 briefly describe it. And if you have any questions,

5 I'll entertain them.

6 But as you can see, the chart proceeds from

7 left to right. Starting off with the characterization

8 of the flood hazard. That was done as part of the

9 reevaluations that everybody has already submitted.

10 If you remember, they were done over three

11 years. The last of them was due last March. Some are

12 working on extensions.

13 Be that as it may, you take the results of

14 the reevaluated hazard and you take a look at how they

15 relate to, first of all your design-basis and then how

16 you relate to the basis of FLEX and move from left to

17 right in that chart as you're doing that.

18 So the first question is, does the

19 reevaluated hazard -- is the reevaluated hazard bound

20 by your current design-basis, flood? And if it is,

21 basically you'd document that situation. Because

22 that's how you design FLEX. FLEX was designed to the

23 design-basis, flood.

24 The next block says, can FLEX be

25 implemented as is with no changes? And the document

is interpreted exactly that way. No changes in strategy, no changes in equipment.

If you can assess the effect of the flood and say that it doesn't effect FLEX, as I've designed it and as I've submitted to the NRC, you would document that fact. In the process, if there's -- there shouldn't be any changes in either the -- well there can't be or you'd be in the next block.

Any changes to the FLEX design or for the actions necessary to implement FLEX or the connection points or anything like that. You just verify that everything still works exactly as designed.

MEMBER CORRADINI: So one question about that. So once you go to that second lite blue box, does that analysis go back to what other systems might be still functional at the plant?

MR. RILEY: Well yes. I believe the answer to that question is yes, but let me explain a little further.

When we were talking about evaluating FLEX we're talking about evaluating all three phases of FLEX. Phase 1 would be the plant equipment that's necessary to take you from whatever the current plant condition is to a situation where you can install the plant equipment.

1 MEMBER CORRADINI: So from the three
2 phases.
3 MR. RILEY: Yes.
4 MEMBER CORRADINI: It's not just Phase 2
5 and 3.
6 MR. RILEY: That's correct.
7 MEMBER CORRADINI: It's Phase 1, 2 and 3.
8 MR. RILEY: It's all three phases.
9 MEMBER CORRADINI: Okay. All right.
10 MR. RILEY: And the next block is, can I
11 modify FLEX to make it work? And that could be an even
12 number of things, as perhaps in consequential as the
13 timing of your operator actions, to as consequential
14 as changing connection points, deployment pathways, et
15 cetera.
16 But if you decide to take that approach,
17 then you evaluate the success of that result in design
18 and strategy. And that is your mitigating strategies
19 assessment.
20 I'll talk on the next slide a little bit
21 more about how we do that assessment. But that's what
22 we mean by modifying FLEX.
23 MEMBER CORRADINI: So just to follow up
24 with that. So this process is what, and again, I should
25 have remember this, what is being proposed or what the

1 staff is accepting?

2 MR. RILEY: It is what's being proposed.

3 We've meet with the staff on this once. And we have

4 another meeting setup next week.

5 MEMBER CORRADINI: Okay, that's all. I

6 just couldn't remember.

7 MR. RILEY: Okay.

8 MEMBER CORRADINI: Thank you.

9 MR. RILEY: All right. So if it's not

10 practical to modify FLEX to deal with the reevaluated

11 hazard, the next strategy is what we're calling an

12 alternate mitigating strategy. Which makes use of a

13 combination of FLEX equipment and install plant

14 equipment as necessary to deal with the reevaluated

15 hazard.

16 And in doing so, maintains the three key

17 safety functions that are identified in NEI 12-06.

18 Those being core and spent fuel pool cooling and the

19 maintenance of the containment function.

20 And finally, if an alternate mitigating

21 strategy doesn't work, then the targeted hazard

22 mitigating strategy would be employed. Which, as I

23 indicated, means that you have -- that bypassing the

24 containment is part of your success strategy and you

25 minimize offsite exposures to ensuring that the core

1 -- the fuel, no matter where it's located, is cooled.
2 So that's the general lay of the land. And
3 in each one of those cases, the idea is that you layout
4 your strategy in a timeline kind of an approach, similar
5 to what is described in NEI 12-06 document. And then
6 you evaluate to make sure that the strategy works.
7 The scope, as we've already talked about,
8 thanks to the question a couple minutes ago, includes
9 all three phases of FLEX. Phase 1, Phase 2 and Phase
10 3.
11 It uses the reevaluation, the flood
12 reevaluation that was done in response to the 50.54(f)
13 letter. And uses the guidance in NEI 12-06 for the
14 evaluation of your strategy.
15 And that means if you look at 12-06,
16 there's a lot of good guidance in there with respect
17 to the design of FLEX. And if you look at the FLEX
18 validation procedure, which will be incorporated into
19 NEI 12-06 as Appendix E with Rev 1, we use that to make
20 sure that the operator actions that are being planned
21 can be carried out as planned in your strategy.
22 So what we're really doing here is you've
23 designed FLEX in accordance with your design-basis
24 flood parameters. You've got this new flood
25 information and you're basically reestablishing that

1 FLEX can perform in accordance with the same guidance
2 that you used initially to design it.
3 Or if FLEX, for some reason has some
4 problems, that you've adopted another strategy via an
5 AMS or a THMS to deal with the results of the flood.
6 The end result of this is documented. And
7 all of that, including the guidance that I've been
8 talking about and the documentation expectations et
9 cetera, are contained within NEI 12-06 Appendix G.
10 MEMBER SKILLMAN: Jim, before you move,
11 back to your Slide 3 please. As we view the slides,
12 should we be thinking this is the prospective approach
13 or should we be thinking those two blocks on the right,
14 the last two on the right, represent some subset of the
15 facilities in the country today that really are not
16 successful and do need --
17 MR. RILEY: Are you asking --
18 (Simultaneously speaking)
19 MR. RILEY: I'm sorry, are you asking how
20 many do I think would fall under each of blocks or --
21 MEMBER SKILLMAN: Yes, sir. That's what
22 I'm asking.
23 MR. RILEY: Yes. We did a survey on this.
24 And I don't want to hold -- please don't hold me to these
25 numbers because this has been evolving over time.

1 The numbers that we're coming up with are
2 approximately, oh let's say, 40 percent of the plants
3 will probably be able to make FLEX work as it is. About
4 40 percent would be able to modify it in some way to
5 make it work. And the remaining 20 percent, roughly,
6 would be able to -- would have to go to AMS or THMS kinds
7 of strategies.
8 MEMBER SKILLMAN: Thank you. Let me just
9 ask one more. Is there a specific design that pushes
10 you to the last 20 percent?
11 MR. RILEY: Specific approach you mean?
12 MEMBER SKILLMAN: Design.
13 MR. RILEY: No. It's really highly
14 dependent on the conditions at the individual plants.
15 And what -- how the floods affecting the plant --
16 MEMBER SKILLMAN: Okay.
17 MR. RILEY: -- they have available, how
18 much warning time that they have for the event, et
19 cetera. So we don't have any standard design.
20 MEMBER SKILLMAN: Okay.
21 MR. RILEY: The idea, is as you can tell
22 from what we're saying here that, whatever you've come
23 up with, you have to apply to the NEI 12-06 guidance
24 and show that it's going to be successful.
25 MEMBER SKILLMAN: Yes, thank you. Thank

1 you.

2 MEMBER RICCARDELLA: Could you go back to

3 the chart for a minute. Now I really like this chart.

4 It seems like a really good approach.

5 Do you anticipate a similar chart or

6 approach to address the seismic concern?

7 MR. RILEY: I don't know yet. We don't

8 have the seismic guidance developed to the point where

9 we're able to really answer that question.

10 MEMBER RICCARDELLA: Okay.

11 MR. RILEY: In fact, we're still engaged

12 with the staff on developing that. So.

13 MEMBER RICCARDELLA: I mean it seems that

14 there are some natural parallels. I mean you could go

15 across and you could say, well I've got my new GMRS and

16 it's bounded by my current SS, you know, my current SSC

17 bounds it, therefore I'm in one of that first

18 categories.

19 But then you have, as you know, a bunch of

20 plants that -- where the new GMRS is operating and it

21 would put you over to the right on this chart. But the

22 latest version of 12-06, that we just got and read, you

23 know, doesn't have any of that. Anything like that in

24 it.

25 MR. RILEY: Yes. And like we're saying,

1 we're still working on Appendix H. Actively working
2 on it I might say. And then engage with the staff on
3 meetings, et cetera. But it hasn't developed at this
4 point to decide whether this chart works good or not.
5 MEMBER CORRADINI: Can I get back to
6 Dick's question? Or at least the thinking process
7 where you gave him kind of proportions.
8 Did you give an example? I was trying to
9 come up with an example in your, AMS can implemented
10 to respond box.
11 You gave an example of the, how to modify,
12 an easy way, a not so easy way. Can you give me an
13 example of that box since here in what you said 20
14 percent of them make it through the first blue boxes
15 and you got to do something. So can you give me an
16 example there?
17 MR. RILEY: Well often an example could be
18 that if flood waters leave your diesel generators high
19 and dry. Your regular plant diesel generators. And
20 you could be able to use those in the event of a flooding
21 event.
22 You may lose your switch gear, you may have
23 to run cables from those emergency diesel generators
24 to the equipment that you need to power, but the plant
25 equipment is still available. And if your emergency

1 diesel generators are still available, you can use
2 them.
3 MEMBER CORRADINI: Okay. So I guess my --
4 the AMS can be implemented box, in some sense, once you
5 passthrough the other ones, turn out to be a case by
6 case analysis by the potential -- by the
7 owner/operator?
8 MR. RILEY: That's a decision that needs
9 to be made on how practical is it to modify FLEX to deal
10 with these reevaluated hazard. And that decision is
11 what lands you on one side or the other of that box.
12 MEMBER CORRADINI: Okay.
13 MEMBER BALLINGER: Is there a sort of
14 typical set of conditions that gets you in the far right
15 box?
16 MR. RILEY: I'd say that you have
17 everything submerged. I think is really what it
18 involves.
19 If you've got an event that really has
20 everything under water, your choices are somewhat
21 limited. And in some cases plants can open the doors,
22 lift the head, if they got warning time to do so, and
23 allow the cooling to take place because of the fact you
24 got flood waters that are everywhere.
25 You know, that's typically what lands you

1 over in that far right box. Is you've got very little
2 warning time and a very significant flood that you've
3 got to deal with.
4 Okay. So, where are we? We submitted
5 Appendix G to the NRC at the end of April. We've gotten
6 two sets of comments from them, as you can see. And
7 we've had one meeting, some phone calls. Another
8 meeting is scheduled next week.
9 And at this point, based on the document
10 that we've given them and the one meeting and our
11 responses to the comments, I'm hopeful that we don't
12 have any significant roadblocks between us and approval
13 of this document. I'll be able to tell you a little
14 bit more about that of course after the June 17th
15 meeting.
16 You know, sometimes the devil turns up late
17 in the process when the details come up. But from where
18 I stand right now, I have a good feeling that we'll be
19 able to put a final document together.
20 And so as to get it essentially complete,
21 to support the rulemaking package, and then endorsed
22 by the NRC by the end of this summer. So that when the
23 mitigating strategies assessments start, need to be
24 performed, then we'll be able to have a document out
25 there so folks have guidance on how to perform them.

1 MEMBER RICCARDELLA: And will that
2 include Appendix H?
3 MR. RILEY: Presently no. Not by
4 September. The Appendix H is working on a different
5 timeline.
6 CHAIRMAN STETKAR: Let me --
7 MR. RILEY: The plan is not to have a final
8 version of Appendix H by September. It's just G.
9 CHAIRMAN STETKAR: Let me, for the record
10 anyway, kind of clarify what the ACRS has received, what
11 we've looked at. We've received Appendix G in support
12 of our May meetings. We haven't received anything more
13 on Appendix G.
14 Just within the last day or two we
15 received, I think what maybe an update to the NEI 12-06
16 Rev 1 from what we saw in May. But without Appendix
17 G or Appendix H that has not necessarily been
18 distributed to all of the members because it's yet
19 incomplete. And we haven't seen anything on Appendix
20 H obviously, as you've mentioned.
21 Also for the record, you're aware that ACRS
22 is on record saying that the draft rulemaking packing
23 should not be issued until the draft regulatory
24 guidance that endorses NEI 12-06 is complete and the
25 supporting documents, in particular NEI 12-06, include

1 all of its appendices, are available for the staff to
2 endorse.
3 So if you're not going to be ready through
4 September on Appendix H that seems to be pushing out
5 the time, at least from our perspective.
6 MR. RILEY: Okay. All right, any other
7 questions?
8 CHAIRMAN STETKAR: Anything more for --
9 MR. RILEY: Jim.
10 CHAIRMAN STETKAR: -- NEI? Any comments,
11 questions for NEI? Steve?
12 MEMBER SHULTZ: I have one question, John.
13 CHAIRMAN STETKAR: Okay.
14 MEMBER SHULTZ: And that goes right to the
15 last bullet on the slide where it says, most licensees
16 would be complete by 2016. Jim, can you amplify that
17 as to where you think things are going to be? How many
18 licensees are not going to be done by the end of the
19 year.
20 MR. RILEY: Thanks for asking that
21 question, Steve. I missed that bullet when I was
22 talking.
23 We've done a little survey of the industry
24 to see how long folks think it would take them to
25 complete a mitigating strategies assessment. And what

1 we're hearing back is that they believe getting it done
2 in the timeframe of about a year seems like a doable
3 thing.
4 However, not everybody will have their
5 flooding evaluation reports submitted by the end of
6 2015. Some are on extension. Usually most of them are
7 for U.S. Army Corps of Engineers evaluations that are
8 taking awhile to go through.
9 So those extensions that are -- have been
10 requested beyond the end of 2015, are those that I would
11 lump with those that aren't going to be completed by
12 the end of 2016. And it depends on when they finish
13 their evaluations, Steve.
14 The numbers we're talking about are, I'm
15 working from memory here, I think somewhere in the
16 neighborhood of six. The plants that have received
17 extensions into 2016 for their flood hazard
18 evaluations.
19 Which, as you know, are the starting point
20 for this, as I indicated in my slide a couple steps ago.
21 And you'll probably have been briefed by the staff that
22 they intend to issue mitigating strategies, input
23 letters I guess we could call them, to document what
24 the input parameters are that should be used in an MSA.
25 Those letters are scheduled right now for

1 September and December, for those sites that have
2 completed their flood hazard evaluations. If you
3 haven't completed your evaluations, you don't have the
4 inputs to find it. And that would be the one, Steve,
5 that fall within 2016.
6 MEMBER SHULTZ: Is there any scope of work
7 that can be performed by licensees, in anticipation
8 that they're going to be in the last two boxes?
9 And is the industry -- it seems like if
10 you're going to wind up in one of the boxes where you
11 have to do this additional work, you're probably going
12 to know it sooner than later. You may not have all the
13 details of the input parameters that the staff would
14 be satisfied with, but you know you're going to be
15 there.
16 And I guess my question is, in terms of the
17 work that needs to be done, is there some portion of
18 it that can be started early so that we don't drag this
19 out with people, the licensees, waiting for input
20 knowing that they're going to actually have to do
21 certain scope of work?
22 MR. RILEY: It seems, Steve, that the
23 sites would know, probably in advance, which one of
24 these they're probably going to end up with.
25 MEMBER SHULTZ: Right.

1 MR. RILEY: They wouldn't start the
2 evaluation until they were sure of their input. But
3 I would imagine that it would be in their minds to what
4 kind of strategies they were going to have to develop
5 and what their approach might be.
6 We're not suggesting anything in
7 particular be done in advance. But I supposed if I was
8 in that boat, so to speak, I'd be thinking about what
9 I was going to do so that I, you know, get myself ready
10 to do it.
11 I don't think also, we're not talking about
12 a huge amount of delay here. I don't think those delays
13 that have been requested into 2016 are significantly
14 into 2016. Like years. So we're probably talking
15 months.
16 But that's the best I can offer, Steve. We
17 haven't -- I'm sure there are things that they're
18 thinking about. But there's nothing that we've
19 requested of utilities in the way of preempt or
20 reaction.
21 MEMBER SHULTZ: And in that regard, is
22 there some sort of a working group, is there some sort
23 of a team approach that is going to be available for
24 those licensees that are in those last two boxes?
25 MR. RILEY: Well we have a couple of

1 industry phone calls and I have a task force, a flooding
2 task force that meets regularly. And among other
3 things that we talk about, we talk about whatever issues
4 individual utilities have come up with and share
5 approaches and questions.
6 To that extent that would be available.
7 And if it proved to be advantageous to have some group
8 work together on some of this, it would seem to me that
9 that would be the avenue where you'd start.
10 As I mentioned, some of the difficulty here
11 is each individual plants approach to this could be
12 quite different. Depending on the specifics of the
13 flood at their site. So coming up with a generic
14 approach may not be quite so easy.
15 MEMBER SHULTZ: No. But I was thinking of
16 sharing of approaches and sharing of lessons learned
17 and so forth would be valuable.
18 But it sounds like you're headed in that
19 direction for that piece of. By maintaining the
20 communication.
21 MR. RILEY: Yes. We have a pretty active
22 industry involvement in these weekly phone calls that
23 we have. There's several of them.
24 MEMBER SHULTZ: Understood. Thank you.
25 CHAIRMAN STETKAR: Anything else for NEI?

1 If not, Jim, thanks a lot for the briefing. I
2 appreciate it.
3 MR. RILEY: Thank you.
4 CHAIRMAN STETKAR: And we'll ask the staff
5 to come up. Let's see if I can turn this thing off.
6 MR. REED: Thanks. We were --
7 CHAIRMAN STETKAR: Tim? Tim? Tim?
8 Push the magic button. This is a retraining process.
9 (Off record comments)
10 MR. REED: Well thanks for the opportunity
11 to come in and brief the ACRS again. We were asked to
12 talk about two subjects today.
13 One in which was to walk through our
14 response to your letter of April 22nd. You have that
15 response dated May 15th. I have some slides and we'll
16 walk through that.
17 Now I didn't know at the beginning, the
18 Chair mentioned that as part of the agenda, we can do
19 that if you like or we can go right to the guidance,
20 it's your call. We have both our slides.
21 And then of course Eric is here also to
22 discuss where we stand on this status of the guidance.
23 As you all know, that's been a challenge and continues
24 to be a challenge that we're working on.
25 So I can just go, if you want, I'll continue

1 walking through that and just start with our response
2 to your letter of April 22nd. There's not going to be
3 any surprises here. I'm sure you've all read that.
4 But first, we focused mostly on the two
5 conclusions and recommendations. And then we left the
6 balance of that.
7 Because I think, you know, we'll continue
8 interacting through the next year or so with the
9 Committee for sure. And those issues will evolve.
10 And I think it's better to leave those issues where they
11 are right now and let that conversation continue.
12 So starting with your conclusion in
13 Recommendation 1, first of all we do appreciate the fact
14 that you, you know, endorsed issuance of the proposed
15 rule for public comment. I think we do, we agree.
16 We think it's a substantial amount of
17 information. And I think it's enough, I think, to
18 allow for fully informed and external stakeholder
19 feedback and get ourselves to a final rule that will
20 be a, you know, a good fire of rules.
21 That's the how objective of rulemaking.
22 This is really just an interim step to get that external
23 stakeholder feedback to get us to the final product.
24 So we appreciate that.
25 Now you also indicated, and we've heard

1 this from external stakeholders too, that they're
2 probably going to get a request for an extension for
3 a comment period. Extend the comment period. The
4 current comment period is of course 75 days.
5 We would of course consider an extension
6 for request from stakeholders, but as this Committee
7 is well aware, we're on a very aggressive rulemaking
8 schedule. That 75 day comment period, if I worked the
9 timeline a little bit, this gets to be very, very
10 challenging.
11 We meet with the commission on July 9th.
12 The commission gives us an SRM, let's say in July, and
13 takes us into August to respond to that SRM, put the
14 package out into the federal register and then do 75
15 days.
16 That will work you into September, October
17 to the middle of November. And we could get a very
18 large number of comments during Thanksgiving and
19 Christmas.
20 Bringing us into 2016, addressing those
21 fully, revising an entire package, which you're well
22 aware is very large and complex. And then going
23 through a concurrence process.
24 So I'm trying to say, there is no fat in
25 that schedule. It's an aggressive rulemaking

1 schedule. So we'll balance that request against that
2 schedule.
3 That's all I'm really saying in that
4 response. So that's a little more than we have in our
5 letter, but that is unfortunately the way it is right
6 now.
7 I've said before, and I continue to say
8 this to right now, I think the safety gains are all
9 occurring right now. As a result of the actions we're
10 taking right now, I don't think there's a safety reason
11 to go fast in this rulemaking.
12 As a result, but nonetheless, that's the
13 driver and so that's what's forcing us to go the way
14 we're going on this. In fact it's going to be part of
15 what we're doing with the draft guidance that we'll hear
16 in a moment. Yes, sir?
17 MEMBER CORRADINI: So can I say it
18 differently?
19 MR. REED: Sure.
20 MEMBER CORRADINI: So you'll take our
21 suggestion into consideration?
22 MR. REED: Absolutely. Yes. And --
23 MEMBER CORRADINI: But that's as much as
24 you'll promise.
25 MR. REED: Yes. Yes, I'll be honest with

1 you --

2 MEMBER CORRADINI: I just want to get down

3 to the --

4 MR. REED: I mean, if someone were to

5 suggest doubling it to 150 days let's say, I would say

6 absolutely no way I'll go for an extension request right

7 off the top. We can't possibly make it.

8 You know, so if any extension request, if

9 all -- if any, would be accepted, it would have to be

10 a reasonable one I think. So I don't really -- I'm

11 speaking to external stakeholders, I know that we're

12 probably going to get that.

13 So again -- and you made, I think a very

14 direct recommendation in terms of complete guidance.

15 And I'm sure you're well aware, I'm a big fan putting

16 guidance on proposed rules. It really helps to make

17 the process a lot better.

18 That guidance provides one acceptable way.

19 It provides a lot more meaningful content to the

20 rulemaking package. A lot of people don't understand

21 what we really mean. And so that is very, very

22 important as part of our CR process.

23 We fully support that. We're working very

24 hard to do that, as you're well aware. And that was

25 the last --

1 VICE CHAIRMAN BLEY: It saves a lot of time
2 on the back-end of it too.
3 MR. REED: Yes it does. And when you get
4 it wrong and you get a schedule extensions, I can go
5 into the nightmares of all that. I've experienced it
6 both ways.
7 So yes. So we're trying to work that
8 process and do what we can to meet that CR process and
9 get all that draft guidance. Either if it's not from
10 industry, you'll see us supplementing ours out of the
11 draft guide, as we'll talk about here in a second.
12 CHAIRMAN STETKAR: Okay, Tim.
13 MR. REED: Yes, sir.
14 CHAIRMAN STETKAR: Given your discussion
15 about the very aggressive rulemaking schedule and what
16 we just heard from the industry, the fact that Appendix
17 H in NEI 12-06 is not available, will not be available.
18 The draft guidance, DG-1301, should address Appendix
19 H.
20 So how are you going to meet the proposed
21 rule schedule? You're worrying about a 75 day comment
22 period when the draft, and you agree in writing, that
23 the draft guidance should be complete and available in
24 the proposed rule that's sent out for public comments.
25 It will not be.

1 MR. REED: Well I want don't want to steal
2 Eric's thunder, but I'll start the answer.
3 MEMBER CORRADINI: He's got the rabbit
4 with the hat.
5 MR. BOWMAN: Yes, exactly.
6 MR. REED: But there's two ways to doing
7 this. You know, the NRC can put the draft guidance out
8 itself.
9 Obviously we like to relay on NEI
10 documents, again, that's what we typically do when we
11 endorse it. But if we don't get that, we'll do it.
12 And so what we need to do in that regard
13 is put out a draft guide with seismic, addressing
14 seismic reevaluation information that's sufficient,
15 would be a fully informed comment.
16 And I would hope then that the comment in
17 fact be exactly what we're suggesting. You know, a
18 better way of doing what we suggested in that draft
19 guidance.
20 So that is a way that we can do it. It's
21 not optimal, but we can do it.
22 CHAIRMAN STETKAR: Okay.
23 MR. REED: And that's -- unfortunately
24 because of the schedule drivers, that's the path we're
25 proceeding on.

1 CHAIRMAN STETKAR: Okay. We'll let Eric
2 grab at it.
3 MR. BOWMAN: We'll just to add to that, I
4 don't have a need to address Appendix H if Appendix H
5 doesn't exist.
6 CHAIRMAN STETKAR: That's true.
7 MR. BOWMAN: I have a need to address the
8 seismic hazard. And I've put together a framework in
9 Draft Guide 1301, if you will, that does that to a
10 certain extent.
11 CHAIRMAN STETKAR: And we've not seen
12 that.
13 MR. BOWMAN: I've provided a copy of the
14 latest draft to Kathy. I think it was on Monday.
15 CHAIRMAN STETKAR: Yes, yesterday.
16 MR. BOWMAN: Well it is --
17 CHAIRMAN STETKAR: Okay.
18 MR. BOWMAN: -- it's still a work in
19 progress. It may be that the draft guide goes out in
20 whatever state it's in, when we get the direction to
21 publish the proposed rule with whatever changes are
22 necessary.
23 And then we get Appendix H as a comment from
24 external stakeholders. Or as part of a comment.
25 There are a number of ways it can happen. But --

1 CHAIRMAN STETKAR: Kind of disappointing
2 to me in a way that we --
3 MR. BOWMAN: -- we will put together as
4 much as we can to get at the appropriate comment that's
5 necessary. The appropriate stakeholder input to come
6 to a conclusion on how the requirements of the proposed
7 rule should be satisfied.
8 CHAIRMAN STETKAR: I've personally found
9 it really useful to be able to read through the NEI
10 guidance, where it was available, and the draft
11 guidance, and compare the two and kind of think about
12 them in terms of understanding the path forward. And
13 I guess it's, to me personally, it's kind of
14 disappointing that we -- it sounds like we won't have
15 an opportunity to be able to do that with the draft
16 guidance on seismic.
17 MEMBER CORRADINI: But just, if I might
18 say it back to you and then you can correct me if I've
19 got it wrong, is that under your first bullet, the
20 schedule is driving the actions, not the need for some
21 issue of adequate protection.
22 MR. BOWMAN: Well as Tim mentioned, the
23 mitigating strategies order is going in place as we
24 speak. All of the safety improvements or 95 percent
25 of the safety improvements are going in place now.

1 The other aspects of the proposed rule,
2 things like severe accident management guidelines,
3 those are already in place as a voluntary industry
4 initiative.
5 So we have the safety improvements going
6 in place on the schedule that they're going in place
7 on. The rulemaking just makes it -- puts the ribbon
8 on it and it makes it generically applicable so that
9 it's laid out for all to understand what's required for
10 new reactor applicants and anyone else. And all the
11 stakeholders can understand just what we did and what's
12 going forward.
13 MR. REED: We definitely understand this
14 to be a challenge. In fact, we actually have a focused
15 question on whether we can implement this in a
16 timeframe, a two year timeframe, and everything else.
17 So we understand this.
18 And I suspect we're going to get feedback
19 on this issue, no doubt about it. And we may have to
20 make adjustments on implementation, you know,
21 timeframe for the final rule too. But yes, that's
22 definitely schedule driven and not safety. At least
23 on our views.
24 Then going, I think to the second
25 conclusion and recommendation, and this probably is not

1 too much of a surprise. We are, and our response
2 indicated this, we continue to conclude that a broader
3 symptom based integration that would include flood
4 response and fire response, in addition to the three
5 guideline sets that we're considering, that that should
6 remain a Tier 3 issue and address that appropriately
7 under that.
8 So we haven't changed our position. That
9 remains a position in our package. And that was all
10 we have in our response back to you.
11 So as such, the current proposed rule does
12 not contain any such broad integration that's built
13 into it right now. So that stays, you know, pretty much
14 as we've spoken before.
15 MEMBER SHULTZ: Jim, what's the, this is
16 Steve, what's the process to backfit later? You know,
17 you're saying, we'll well keep it as a Tier 3 task and
18 the current proposed rule does not include a
19 requirement for such integration.
20 How do you bring that back in through the
21 Tier 3 process and how do you bring it back in to another
22 aspect of rulemaking? You know, how do you do it later?
23 MR. REED: Well, Dr. Shultz, the way that
24 would be done is it would be -- I can say it goes back
25 to square one. You would look at the tier -- every Tier

1 3 issue has a new potential regulatory action. You
2 start at the beginning.
3 You basically do regulatory basis
4 development. You say, do I have regulatory problem,
5 is it plant specific, is it generic, what's my success
6 criteria if I identify that, what's appropriate -- if
7 I do have a problem that's generic, you know, what's
8 the tool I use to address it. Is it rulemaking or is
9 it something else.
10 Basically you go back and you start at the
11 very beginning. And anything you do of course peruse
12 in that regard, you want to make sure you're addressing
13 the problem not creating new problems.
14 So you really do fundamentally regulatory
15 basis. You create it like -- treat it like a brand new
16 issue. So that's -- I would suspect that that's
17 exactly what the process would entail.
18 CHAIRMAN STETKAR: I'm sorry, does that
19 make any sense whatsoever?
20 MR. REED: I hope it does. It --
21 CHAIRMAN STETKAR: It certainly doesn't
22 to me. I mean if the industry and the agency is going
23 through a major effort to develop SAMGs to develop, well
24 SAMGs are developed, let's say to revise if necessary,
25 SAMGs or enhance them.

1 To better integrate them with the existing
2 procedures, to develop FLEX guidelines, which are being
3 developed from scratch, and integrate them and go
4 through this major effort. And train operators on how
5 to use these things, is it reasonable to then say, well
6 sometime in the Tier 3 process we're going to go ask
7 people to redo all of that?
8 Certainly as a operator it doesn't seem
9 fair to me to do that.
10 MR. BOWMAN: That prejudges what the
11 outcome of the consideration would be. We have not yet
12 come to a conclusion that we have a regulatory problem
13 that needs to be addressed by directing a specific form
14 of integration of the fire response procedures or the
15 flood response procedures.
16 When we got the ACRS recommendation in
17 2011, regarding integration of fire response
18 procedures, along with the rest of the integration for
19 Recommendation 8, we ran it through a structured
20 process to consider, was it related to Fukushima, do
21 we have a regulatory problem. And bend the response
22 to that particular recommendation, along with the
23 seismically induced fires and flooding.
24 The latest set of recommendations that you
25 provided in April of this year, expanded that to include

1 flooding response. It was a little bit late in the
2 process of putting together the proposed rule to add
3 on flooding response to the already large amount of
4 integration that was going on with the other guidance
5 sets that are being incorporated in the integrated
6 response capability.
7 I've discussed this with the
8 Recommendation 3 lead. We're adding the flooding
9 response that you recommended this last April to the
10 scope of what we're going to look at in the
11 Recommendation 3 process.
12 But we have to actually set out a scope of
13 work and proceed with the scope of work if we are going
14 to have any chance of achieving the regulatory goals
15 of the integration or any of the post Fukushima actions.
16 We can't just keep adding on to it and delaying it. So
17 in my opinion, it's appropriate to address a specific
18 regulatory problem.
19 If we do come to the conclusion with the
20 input from the Committee that it's appropriate, we have
21 a regulatory problem, we'll have to look at, is it
22 something that we can justify through the backfit
23 process as well.
24 CHAIRMAN STETKAR: I'm on record, I don't
25 have any more comments. I think this is an example of

1 the staff, again, looking at isolated issues and trying
2 to use a schedule driven process for clearing off those
3 isolated issues without looking at the larger picture.
4 MR. REED: Should I go to the next slide
5 then? Are we okay? All right.
6 So I think with that, as I've just
7 mentioned, we didn't respond to the rest. That's
8 really all that last slide said. And we'll continue
9 our interactions on all those issues in your letter as
10 we go forth.
11 And we'll move onto Eric's discussion on
12 the status of the guidance. So, Eric.
13 MR. BOWMAN: Okay. Since we last met
14 we've continued to make progress on the supporting
15 guidance.
16 As you heard from Mr. Riley, we've had one
17 meeting and interchanged comments with the industry
18 working group on the draft, Appendix Gulf to NEI 12-06.
19 We've written further guidance,
20 clarifying guidance, in the Draft Guide 1301. We've
21 provided a copy just the other day or provided the ADAMS
22 link to Ms. Weaver. So she'll get that to you so you
23 can take a look at it.
24 As far as the seismic hazard, we are
25 addressing, in broad, high level terms, in the Draft

1 Guide 1301, the types of things that should be looked
2 at. And anticipate getting further input from
3 external stakeholders on how those things will be
4 looked at. But as you've heard from Mr. Riley,
5 Appendix Hotel to NEI 12-06 is not yet available.
6 The status on the path forward CER process
7 requires that we publish the draft guidance. And we
8 intend to do it.
9 Oh, one other item in Draft Guide 1301,
10 there is Appendix Alpha for the designs feature portion
11 for new reactors. There is a public meeting scheduled
12 for the first of July to discussion with the public and
13 other -- and industry stakeholders that --
14 MEMBER CORRADINI: Eric, can you say that
15 again? I'm sorry.
16 MR. BOWMAN: In Draft Guide 1301 --
17 MEMBER CORRADINI: Which version?
18 CHAIRMAN STETKAR: Both of them.
19 MR. BOWMAN: Everyone --
20 MEMBER CORRADINI: Okay.
21 MR. BOWMAN: -- that you've got, it hasn't
22 changed. Appendix Alpha is the appendix that
23 discusses the design features for new reactors.
24 MEMBER CORRADINI: Oh.
25 MR. BOWMAN: It's not Appendix Alpha at

1 NEI 12-06, it's Appendix Alpha to the draft guide.
2 There is a public meeting scheduled for the
3 first of July to interact with the industry and external
4 stakeholders on the subject of that guide.
5 MEMBER CORRADINI: Thanks.
6 CHAIRMAN STETKAR: Eric, just for --
7 because we're doing fine on time here, I think. I got
8 the update to Draft Guide, DG-1301. But I haven't had
9 a chance to read through it because we just received
10 it.
11 Is there a brief summary of what changed
12 in the version that came in this week, compared to what
13 we saw in May? I didn't even have a chance to do a
14 side-by-side comparison of them. Is there anything --
15 MR. BOWMAN: The previous version, the
16 bullet said in Section 6, was reserved for the
17 reevaluated hazard portion. We've added content to
18 that.
19 The Section 6.1 is on the seismic hazard.
20 And that's where we've got the high level discussion
21 of the types of things that will need to be looked at
22 in assessing the capability of the mitigating
23 strategies, to be functional in the context of the
24 reevaluated seismic hazard.
25 Section 6.2 is on the flooding hazard.

1 CHAIRMAN STETKAR: I'm sorry, I'm looking
2 at -- I'm looking in the wrong section. So the primary
3 difference is flushing in, yes, there it is.
4 MR. BOWMAN: Yes.
5 CHAIRMAN STETKAR: Section 6, okay.
6 MR. BOWMAN: Right.
7 CHAIRMAN STETKAR: Nothing else is
8 changed?
9 MR. BOWMAN: I think I corrected it.
10 CHAIRMAN STETKAR: Other than maybe typos
11 or something. Okay.
12 MR. BOWMAN: But there's no other
13 substantive changes.
14 CHAIRMAN STETKAR: Great, thank you.
15 MEMBER SHULTZ: Eric, this is Steve. As
16 you go into the meeting to discuss appendix, is it
17 Appendix A to DG-1301? For the new reactor
18 application.
19 MR. BOWMAN: Yes, it is.
20 MEMBER SHULTZ: Are you going into that
21 meeting with an intent to describe what you have done
22 or are there particular issues that you intend to put
23 on the table and ask for feedback?
24 MR. BOWMAN: That will be led by the office
25 of new reactors. John McKirgan's here. He can

1 address the intent of the meeting.

2 MR. MCKIRGAN: So yes --

3 MEMBER SHULTZ: Thank you.

4 MR. MCKIRGAN: Thank you, Dr. Shultz. So

5 yes, we do plan to have a public meeting July 1st.

6 We're looking forward to presenting the staff's views

7 on this.

8 Really the purpose of this meeting is to

9 enable a robust comment period. So the staff will be

10 presenting our views, how we've developed the guidance,

11 where we're coming from. NEI has asked to make a

12 presentation and we'll certainly welcome that.

13 I'm mindful of where we are in the process

14 as this is not out for public comment yet. So we want

15 to be true to our process. But we do anticipate some

16 good discussion during that meeting.

17 We're also very mindful of the comments we

18 heard from the Committee. I would certainly

19 anticipate some of the industry offering similar

20 perspectives as to what we heard in the Committee, at

21 that meeting.

22 So we're looking for a good dialogue, but

23 we want to be true to the process of where we are.

24 MEMBER SHULTZ: Thank you.

25 MR. BOWMAN: That's it. We're ahead of

1 schedule.

2 CHAIRMAN STETKAR: Okay. Any other

3 questions for the staff? All right. We've been

4 updated.

5 Let me now ask for, if there's anyone in

6 the room, members of the public who'd like to make a

7 comment, please come up to the microphone and do so.

8 We're in the process of -- we had one line

9 open for Steve so that he could communicate directly

10 and we're getting the other bridge line open, I believe,

11 so that anyone listening in can have an opportunity to

12 make a comment.

13 Okay. If, as always, if someone who is on

14 the bridge line from the public, if you could help us

15 out and just say hello so that we can confirm that the

16 bridge line is in fact open.

17 MEMBER SHULTZ: I'm here.

18 CHAIRMAN STETKAR: Good, thank you.

19 Believe me, the high tech -- if you're not familiar with

20 this process, it's the best we can do.

21 Now if there's a member of the public on

22 the bridge line who would like to make a comment, please

23 identify yourself and do so.

24 Hearing none, I would like to thank both

25 NEI and the Staff for the update on the status so that

1 we're up to date on what's going on, the plans going
2 forward. And with that, we are now recessed until 1
3 o'clock.
4 (Whereupon, the above-entitled matter
5 went off the record at 11:20 a.m. and resumed at 1:20
6 p.m.)
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A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

(1:02 p.m.)

CHAIRMAN STETKAR: We are back in session, and the subject that we'll be hearing about is reactor operations, and Dick Skillman will lead us through this section.

MEMBER SKILLMAN: Mr. Chairman, thank you. First of all, I want to take responsibility for the title; this title is "Summary of ROP Assessments for Calendar Year 2014;" that is an error. This is really a discussion about operating experience in 2014; there is an ongoing ROP activity by the staff. This is a part of that, but the ROP assessment is something very different and much broader than this. So what I wanted to do is to give my colleagues an update on data from the fleet for the calendar year 2014. As we are listening, if there is a member of the public that has music operating in the background, may we ask you please to silence that music. Having made that request, I'll proceed.

I'm going to identify how many plants are under evaluation for the year--calendar year 2014; you can see that by region, the total is 99 plants for 2014. On slide 3, I bring your

1 attention to the quantitative thresholds; what
2 these thresholds do is allow events to be
3 categorized as green or white or yellow or red based
4 on the event's specific impact by core damage
5 frequency change or by large early relief frequency
6 change. And as you can see from the slide 3, that
7 green is the most mild and the red event is the most
8 serious. We had no red events in 2014, and we'll
9 talk about the data as we proceed.
10 For the performance indicator, a green
11 item is an item where all of the expected
12 level--excuse me, where all of the expected
13 cornerstone objectives have been met; white is
14 performance is outside of an expected range of
15 nominal performance parameters, but the related
16 cornerstone objective is met. Yellow is where
17 there is a minimal reduction in safety margin in
18 that cornerstone, and red is where there is a
19 significant reduction in safety margin. Next
20 slide, please. In 2014, we had three white
21 findings; the first of the three was at
22 Fitzpatrick, and the parameter was unplanned power
23 changes for 7,000 critical hours. As you might
24 remember, 7,000 critical hours is a nominal reactor
25 year of operation, and notice that the white

threshold is greater than six. And so Fitzpatrick has been running along with significant power changes in their operating history in the year 2014.

MEMBER BROWN: Sorry about that. Why is it--power change, what's so worrisome about a power change?

MEMBER SKILLMAN: It isn't the power change, Charlie; it's unplanned power changes.

MEMBER BROWN: What does that mean?

MEMBER SKILLMAN: Planned means that you intended to drive the plant to a different power level; unplanned means it was initiated by something beyond your intent.

MEMBER BROWN: Okay let me--I guess I need to have something explained to me. I'm used to if the demand goes down, the power level goes down; if the demand goes up--but that's not the case?

MEMBER SKILLMAN: In the world that you came from, maneuvering was very much a part.

MEMBER BROWN: No, maneuvering never touched anything, it was just if you opened the throttle or closed it, the reactor fire went up and down, so that's what I'm used to seeing. Now

1 you're--I've forgotten some of my earlier
2 education--
3 CHAIRMAN STETKAR: These plants
4 operate base load 100 percent of the time.
5 MEMBER BROWN: I understand that, but
6 that doesn't necessarily mean--
7 CHAIRMAN STETKAR: Yes it does.
8 MEMBER BROWN: Somebody's always got
9 to be demanding that they stay at that--their power
10 goes--
11 CHAIRMAN STETKAR: The grid demands--
12 MEMBER BROWN: That's what I'm saying,
13 so if the grid demand goes down, the power doesn't
14 go down?
15 CHAIRMAN STETKAR: Not these plants,
16 other plants. Not these plants. Other plants go
17 down. It means they aren't controlling their
18 plants as they're expected to. It's a loss of
19 control.
20 MEMBER BROWN: You're just telling me
21 if I've got 20 nuclear plants and 52 oil fired
22 plants or coal fired plants, some other plant may
23 have a--
24 MEMBER SKILLMAN: No, no, that's not
25 what we're saying here. The plant has a plan for

how that core is supposed to be operated, and when the core is forced to operate differently than planned, then this performance indicator is an indicator that communicates something is not what was intended.

MEMBER BROWN: Okay, but it's a demand from inside the plant, within the plant, not the grid.

CHAIRMAN STETKAR: It can be anything that makes it not within their control. A loss of offsite power could be something, or it could be a feed water heater bursting, or it could be anything that is not the control--

MEMBER RICCARDELLA: Let me ask maybe a clarifying question. If a plant planned to load follow weekly, and every weekend it came down and then went back up, that wouldn't go in this category?

MEMBER SKILLMAN: Correct; that would be--

(Simultaneous speaking)

MEMBER SKILLMAN: That is correct; that would be a planned power change.

MEMBER RICCARDELLA: Does that help, Charlie?

1 MEMBER SKILLMAN: Charlie it's planned
2 versus unplanned.
3 MEMBER BROWN: I don't see any reason
4 at all to oppose these guys myself, so--if somebody
5 did something in the plant which says I can't meet
6 the demand, I can't follow my plan from an inside
7 the plant problem, but if somebody did something
8 wrong, they don't enough prompts, they don't have
9 enough feed water or something tripped off or what
10 have you, that I can see happening. But just
11 because something external happens that gets them
12 out of their plan, I wouldn't have agreed with it.
13 I think that's nuts.
14 MEMBER SKILLMAN: I think what we need
15 to have, maybe sometime offline, is a discussion
16 about why the PIs are what they are what they are.
17 MEMBER BROWN: Yes, performance--
18 MEMBER SKILLMAN: Performance
19 indicators. This is driven by the performance
20 indicators; there are seven cornerstones, and that
21 are part of the revised oversight process, and
22 that's what this presentation is about.
23 MEMBER BROWN: Yes, I have a big
24 understanding of the cornerstones, it's just I
25 don't understand why some external event that's not

as a result of the plant having a problem causing them to have a white indication because they didn't do their--it happened--they didn't have any control over it; it was offsite. That's all.

MEMBER SKILLMAN: I understand your comment; that's what the--

MEMBER BROWN: It doesn't seem to make any sense to me.

MEMBER SKILLMAN: Okay. Next slide. River Bend PI has to do with unplanned scrams with complications; notice they went for three quarters with none, and then two in the fourth quarter. Now why is that an issue? Because when the plant goes into an unplanned scram with complications, you probably have other issues that you're dealing with within the plant in terms of material condition or plant behavior, plant operations; it could be personnel knowledge.

CHAIRMAN STETKAR: To help Charlie along--I was trying to look at it in your slides here--you don't really explain why Fitzpatrick had all of those. Why did they? Do you know?

MEMBER SKILLMAN: I did not do the research there. They had bad condenser problems. They've had a bad problem with condenser tube

leaks, and it's been recurring. They've had to come down in power because of condenser tube leaks because of--

MEMBER BROWN: So that's their plant?

MEMBER SKILLMAN: That's their plant. Fitzpatrick has been--that's the reason for this.

MEMBER BROWN: And I understand if it's in plant, but if their maintenance, they don't do their maintenance properly, something happens and it doesn't--they get outside their plan performance, that's fine. It's just external to the plant that I don't understand, not in this case, in Fitzpatrick.

CHAIRMAN STETKAR: Not in this case it does not.

MEMBER BROWN: Thank you.

CHAIRMAN STETKAR: You're welcome.

MEMBER POWERS: Unplanned scrams are a performance indicator because they challenge safety systems and it becomes an issue of defensive depth.

MEMBER SKILLMAN: So the third item there is Salem 1 unplanned scrams; notice for three quarters they were below the threshold, and they scrammed again and it pushed them over the--

1 MEMBER POWERS: Even though their
2 below the threshold, they're fantastically high
3 compared to the average plant, about one unplanned
4 scram--
5 MEMBER SKILLMAN: Every two or three
6 years is the common.
7 MEMBER POWERS: And so they two and a
8 quarter, two in one quarter, three in the next.
9 MEMBER SKILLMAN: The dividing line,
10 they had one.
11 MEMBER POWERS: What in the world is
12 going on up at Salem?
13 MEMBER SKILLMAN: Bingo.
14 MEMBER POWERS: Maybe I'll have to
15 change my early site--
16 (Simultaneous speaking)
17 CHAIRMAN STETKAR: This is actual
18 data, which is what I committed to provide. And
19 unfortunately, I don't know Salem. I just happened
20 to remember Fitzpatrick because I've read a bunch
21 of--
22 MEMBER POWERS: Do you know what the
23 complications at River Bend were?
24 MEMBER SKILLMAN: We can dig it out; we
25 just didn't research it. Just trying to give you

1 an idea of what the indicators look like.

2 MEMBER POWERS: These numbers are

3 distressing, not so much because of the threshold,

4 but because of the baselines. I mean well, there

5 are lots of young operators at plants that have

6 never seen an unplanned scram.

7 MEMBER BROWN: How do you have

8 something other than introduced scrams?

9 MEMBER SKILLMAN: Per 7,000 hours.

10 MEMBER BROWN: For fourth quarter; is

11 there 7,000 hours--

12 MEMBER SKILLMAN: It's a cumulative

13 running total.

14 (Simultaneous speaking)

15 MEMBER SKILLMAN: -- they're going to

16 divide it out and define the PI, and that's how that

17 unit will be seen in the ROP. Slide 7. These are

18 inspection findings. We're going from the

19 performance indicators, which are the main

20 cornerstones, to inspection findings.

21 MEMBER CORRADINI: So can I--in Region

22 IV when they did this, they did a quick review of

23 this, but the seven cornerstones were based on CDF,

24 delta CDF and delta LERF. These are based on

25 purely inspectors compared to what their tech specs

1 and regulations are for their licensing base.
2 MEMBER SKILLMAN: That's correct, and
3 the significance determination comes out of the
4 significance determination process for that
5 particular plant.
6 MEMBER CORRADINI: Which is not
7 necessarily risk informed, it's based on
8 regulations and--
9 MEMBER SKILLMAN: No, it's basically a
10 PRA.
11 MEMBER CORRADINI: Oh, is it PRA?
12 MEMBER SKILLMAN: It's basically a
13 PRA. Oh yes.
14 MEMBER POWERS: But the finding is
15 against the plant's license basis.
16 MEMBER SKILLMAN: That is correct.
17 MEMBER BROWN: And green is not good in
18 this case, wherein green before was good.
19 MEMBER SKILLMAN: Yes, inspection
20 findings, green are those of very low significance
21 in terms of safety or security; white is low to
22 moderate; yellow is substantial; and red is high
23 safety significance for safety and for security.
24 MEMBER BROWN: Is that bad?
25 MEMBER SKILLMAN: Yes, it's bad. Very

bad.

MEMBER BROWN: But I thought you gust said green wasn't good--green is not good? Why is it green?

MEMBER SKILLMAN: We want none.

MEMBER POWERS: Because there's no colors for none.

MEMBER SKILLMAN: That's correct.

MEMBER POWERS: Because there's no finding--

(Simultaneous speaking)

VICE CHAIRMAN BLEY: There would be no finding if there were no event that the inspector found.

MEMBER SKILLMAN: That's the kind of finding that ought to be color coded white or something.

MEMBER BROWN: That would make it green; it's a big plant with no problems. If you have an event, it ought to be green, but you don't want any events.

MEMBER SKILLMAN: You don't any events, Charlie.

MEMBER BROWN: Now I understand why I didn't understand the stuff we see in some of these.

1 MEMBER CORRADINI: Charlie, did you
2 not get lunch?
3 MEMBER BROWN: I didn't have any sugar;
4 that's the problem.
5 MEMBER CORRADINI: Will somebody go
6 get him a donut?
7 (Simultaneous speaking)
8 MEMBER CORRADINI: So now when they
9 showed us this, they had a little cartoon image
10 about this, so these are partly have risk bases,
11 but there's duplication; in other words, if memory
12 serves me, Peach Bottom went into a red when they
13 found a recirc line on their safety injection.
14 There was something to do when they were out of
15 service relative to Peach Bottom in some situation,
16 but it appeared to turn them red both in inspection
17 findings because it had existed for a long period
18 of time, and because of cornerstone.
19 MEMBER SKILLMAN: It could.
20 MEMBER CORRADINI: So it can go back
21 and affect the other sets of--
22 MEMBER SKILLMAN: Into the performance
23 indicator, that's exactly right. And perhaps
24 that's the lesson for those who haven't been out
25 in the fleet, of what the ROP does. The ROP looks

1 at the cornerstones, but it looks at day-to-day.
2 And we've been in the room here ex-residents whose
3 job it was to inspect and find issues. And
4 inspectors can find issues that they later say gee
5 whiz, that's not an issue at all, or an inspector
6 can find an issue that at the surface appears to
7 be very mild, but under further discovery can be
8 red or yellow. And so no findings is best; a green
9 is a finding of very little significance, and
10 white, yellow and red are of increasing
11 significance. And we're going to talk about one
12 or two of those in a minute here.
13 MEMBER CORRADINI: So it can still be
14 a violation in the green, for the green finding.
15 MEMBER SKILLMAN: All right, let's go
16 on to slide 8. There is an action metrics
17 assessment for all plants; the plants are assessed
18 actually constantly, but they're looked at on an
19 annual basis. And if you're in a Column 1 plant,
20 you're doing what you should be doing, generally.
21 You might have some minor findings, but by and
22 large, you are doing exactly what your license
23 requires you to do. IF you're in Column 2, you
24 probably have some regulatory response items.
25 You've got some findings that have been more than

1 insignificant, and you are being viewed with a
2 thicker magnifying glass than you were when you
3 were in Column 1. Charlie?
4 MEMBER BROWN: By licensee response,
5 you mean the local plant inspector found something
6 that did not require any regulatory response from
7 the NRC or whatever? Meaning the licensee--
8 (Simultaneous speaking)
9 MEMBER SKILLMAN: Generally speaking,
10 yes.
11 MEMBER POWERS: Typically it means
12 that the--all the findings were in the corrective
13 action program.
14 MEMBER BROWN: Yes, and that's fine.
15 (Simultaneous speaking)
16 MEMBER SKILLMAN: They are doing what
17 they should be doing.
18 MEMBER BROWN: Thank you.
19 MEMBER SKILLMAN: Generally speaking.
20 Now Column 2, one would say the licensee has
21 probably tripped the wire, and the NRC has chosen
22 to add additional oversight resources to that site
23 for whatever reason.
24 MEMBER POWERS: And typically is
25 responding to a branch chief in the region.

1 MEMBER SKILLMAN: Could be. But to
2 get a couple of findings that are white, or if there
3 is discovery that the corrective action program or
4 other key programs are not being managed properly,
5 you can end up in regulatory response. At level
6 3, you've got a degraded cornerstone.
7 MEMBER POWERS: There you're probably
8 getting a chance to talk to the region, or the head
9 of the region office.
10 MEMBER SKILLMAN: When you get up into
11 4, you've got multiple repetitive degrading
12 cornerstones, and in Column 5 your performance is
13 unacceptable, it means you're shut down.
14 MEMBER POWERS: You're getting a
15 chance to talk to--well, five great Americans.
16 MEMBER SKILLMAN: If you're in Column
17 5, you lost your keys and you have to get your keys
18 back. When you're in 3 and 4, you're in programs
19 that are well known as 95002 and 95003, where the
20 inspection requirements actually bring in
21 augmented inspection teams, and if you were to talk
22 to the licensees of what they fear the most about
23 Column 3 and Column 4, you'd find that to get out
24 of Column 4, you'll probably spend 50 or 100 man
25 years to bail your way out; if you're in Column 5

1 you might spend 200 or 300 man years. Davis-Besse
2 was a Column 5.
3 MEMBER POWERS: If you were lucky it
4 would be 200 or 300--
5 (Simultaneous speaking)
6 MEMBER SKILLMAN: The subtle
7 descriptors appears quite mild, but if you're in
8 the top two, you're in deep, deep trouble. And if
9 you're in Column 3, you're headed for trouble.
10 It's just how the revised oversight process evolved
11 after SALP, which was the Systematic Assessment of
12 Licensee Performance. However, industry endorses
13 this, and I would say, at least my experience for
14 the last 15 or 20 years, licensees have come to
15 respect the inspector's role in feeding into this
16 program and this process. It's highly effective
17 in driving performance.
18 MEMBER POWERS: And it's probably
19 useful for members to be reminded that the ACRF
20 played an incredibly important role in setting this
21 up. I bet we met on this for a year. Literally
22 every meeting, meeting with Mike Johnson going over
23 this whole ROP business.
24 MEMBER SKILLMAN: Well that precedes
25 my time here, but I lived with this, so I understand

it real well.

MEMBER POWERS: I mean, the first thing that they came in with was just horrible to replace SALP, and then they gave it to Mike Johnson, and he worked his little tail bone off, and he had lots of help from us. The ACRS really gave him rigorous critique. So every aspect of it has been honed like crazy.

MEMBER RICCARDELLA: Let me check my understanding. You get into one of these columns based on either performance indicators, inspection findings, or both?

MEMBER SKILLMAN: Yes.

MEMBER RICCARDELLA: And is that like a yearly assessment, or is it--

MEMBER SKILLMAN: It's quarterly.

MEMBER RICCARDELLA: Quarterly.

MEMBER SKILLMAN: And you can fall into a change at the change of a quarter, and actually you can be forced up one or two, or you can be dropped one based on trailing indicators.

MEMBER POWERS: There is an algebra because how you add, you know, how to apply findings, add those findings and things like that, there's a whole algebra on that, and it basically

1 comes down to how badly are you degrading a
2 cornerstone. If you get three white findings in
3 one cornerstone area, that's much worse than three
4 white findings in different cornerstones.
5 VICE CHAIRMAN BLEY: And if you're
6 having trouble guessing why the licensees are happy
7 with this, it deals with the first word in the SALP
8 process; it ended up not being as systematic as
9 people hoped, and they--most licensees found it
10 very arbitrary, and if the guys were having a bad
11 day or somebody was really after you, you could get
12 --
13 (Simultaneous speaking)
14 VICE CHAIRMAN BLEY: It was a high level
15 management review of the plants that was done
16 regularly, and through their judgment together,
17 they would put you into a special category for
18 needing more attention based on their
19 interpretation of what they'd read.
20 MEMBER SKILLMAN: This replaced it and
21 quantified it, that's correct.
22 MEMBER POWERS: And as Dick points out,
23 you can move between columns here fairly easily,
24 whereas in the old SALP process, once you became
25 a SALP 1 plant, you tended to stay there, and the

1 SALP--what is it, five--the bottom level, it was
2 almost impossible to get out of that, once you were
3 at the bottom of SALP. All the politics in the
4 world wouldn't pull you out of that.
5 MEMBER CORRADINI: But just to broaden
6 it a little bit more, unless I mis-remember, the
7 INPO had their own set of quarterly measures that
8 in some sense overlap on some of these--
9 MEMBER SKILLMAN: That's correct.
10 MEMBER CORRADINI: --their algebra is
11 similar, and in some sense, they're looked upon
12 within the industry as much as in some areas,
13 because I think it's radiation protection; there's
14 some other areas that don't overlap, if my memory
15 serves me.
16 MEMBER SKILLMAN: No, I think that
17 that's accurate.
18 MEMBER POWERS: Well INPO has a lot a
19 lot related to more to economic performance--
20 MEMBER CORRADINI: Right, but in their
21 safety performance--I mean they have unplanned
22 scrams, they have a lot of these similar--
23 MEMBER SKILLMAN: Right. INPO has a
24 number of metric around availability, unplanned
25 unavailability, equipment reliability,

1 organizational effectiveness. So INPO has a much
2 broader view of some of the metrics that really get
3 into the day-to-day operation in the facility,
4 independent from compliance with regulation. The
5 ROP is really more on the compliance with
6 regulation, and do you view your design bases. And
7 as you've heard me say in this room a number of
8 times, most of the time when people are in trouble,
9 it's because they have found themselves in Appendix
10 B to 10 CFR 50, the corrective action program, which
11 is criterion 1684, almost always criterion 3, which
12 is design control. And design control is your
13 license. So Mike, you're right. INPO has one set
14 of metrics, and the NRC has an independent but very
15 closely related set--
16 MEMBER POWERS: They're not
17 independent. When we set up the metrics, there was
18 an intense interest that they easily collected and
19 that there not be any controversy over the number.
20 And as it emerges, because of the way INPO works
21 within the industry, INPO's metrics are
22 considered--everybody agrees with them, and so we
23 kind of took their metrics, a subset of them, to
24 come into ROP because we knew there wouldn't be any
25 game playing in how you got the number. Actually

1 it was not--it didn't do burden for the licensee
2 to collect the number.
3 MEMBER SKILLMAN: Thank you. I did
4 not appreciate the degree to which the ACRS had been
5 involved in designing and constructing the ROP;
6 this is new information for my--
7 MEMBER POWERS: Very, very heavily. I
8 mean, it was unbelievable the time we spent on this.
9 MEMBER SKILLMAN: Okay, we're now on
10 slide 9, and entering into slide 9 I want to bring
11 you back to slide 2, which showed 99 plants were
12 under ROP evaluation in 2014, and if you do the
13 arithmetic, you will find that there are 99 plants
14 represented in 2014, and that is the sum of the 81,
15 16, 1 and 2. So let me--
16 MEMBER POWERS: Are there some plants
17 that aren't under the ROP?
18 MEMBER SKILLMAN: No sir. All plants
19 are under ROP. 99.
20 MEMBER POWERS: So 99--so that's what
21 I thought--
22 MEMBER SKILLMAN: Yes, yes, that's the
23 fleet. That's the fleet. Now, we've moved from
24 cornerstones to findings on slide 10.
25 MEMBER RICCARDELLA: I just did the

1 arithmetic; these add up to 100.

2 CHAIRMAN STETKAR: Within one percent

3 accuracy.

4 MEMBER RICCARDELLA: We're

5 engineers, what do you expect? That's the first

6 thing we do is add them up.

7 CHAIRMAN STETKAR: Let's keep it

8 moving; Dick has about 18 more slides to go through.

9 MEMBER SKILLMAN: All right, we're on

10 to slide 10. Now these are inspection findings.

11 These are the findings that come from the resident

12 inspector and sift the item through the assessment

13 process, and what you find there are the inspection

14 findings against the safety cornerstone. Well,

15 what does that really mean? Well, notice at the

16 bottom are the green findings. You would like to

17 have no findings in the course of your operating

18 year, but you do have some, and notice that the bulk

19 are green, and those are of very low significance

20 based on CDF and LERF, for delta CDF and delta LERF.

21 But you might notice that in total, there are 49

22 in security and of the 49, there were eight that

23 were greater than green. So what does that mean?

24 It just means that in the course of inspection

25 through the year, this is the aggregate number.

1 Let's move up to the white. Say what?
2 (Off microphone comment)
3 MEMBER SKILLMAN: That's correct.
4 And that's the way the NRC will communicate that
5 metric. What they're really saying is it's more
6 than minor, but it's not a point where it merits
7 the white, Charlie. So that's the way the--that's
8 the way--
9 (Off microphone comment)
10 MEMBER SKILLMAN: For the safety
11 cornerstones yellow, there are two plants, and
12 notice that they are represented two times. Two
13 for initiating events, and two for mitigating
14 systems. So what does that mean? The way the
15 cornerstones are described, that particular plant
16 had an incident that affected both units and
17 affected two safety cornerstones on each unit, and
18 if you'll look to the next slide, there's more
19 information. This was the drop of the rotor at
20 ANO. That was a shock; you might remember we had
21 a little discussion about that in Dallas; this is
22 where there was a fatality, but the consequence of
23 the rotor drop was to shear fire mains that revealed
24 flooding barriers that were not sealing. So as a
25 consequence of the drop of the rotor, you will see

1 on slide 12 the issue was the failure to follow the
2 materials handling program during the stator move,
3 and the citation there is under Criterion 5 of
4 Appendix B to 10 CFR 50. But also, there was an
5 impact on the mitigating system cornerstone, which
6 is the flooding, that was the consequence of the
7 shear of the fire main. It affected both units.
8 So those were the two pairs of yellow
9 for 2014. Now if my arithmetic is correct, on the
10 whites there are 13. I think the numbers need to
11 change; Clarence and I worked on this together, so
12 there are inaccuracies just due to timing, but
13 they're off by one or two just the way we put these
14 slides together. And what I'd like to is talk
15 about some of these whites if you wish to, but let
16 me give you some examples of what the whites are.
17 At Calvert Cliffs, the issue was emergency
18 preparedness, and it was the radiation monitors and
19 an inaccurate calculation of EAL levels that would
20 come from the radiation monitors on the main steam
21 lines. They actually replaced the main steam
22 lines, and they found that with the replacement,
23 the EAL levels would have been inaccurate.
24 What are the EAL levels? Those are the
25 emergency action levels that you take for a

1 radiation casualty in your emergency plan. And
2 the violation was that Exelon didn't independently
3 verify the new EAL levels before using those
4 instruments, for example. Another example, the
5 vibrations at Dresden, the main steam line piping
6 under the EPU conditions was vibrating so greatly
7 that it rendered the ERVs, the emergency relief
8 valves, inoperable. That was a white finding. At
9 Fort Calhoun, from the time the plant was built
10 until the middle of 2013, the high energy line rate
11 calculations and the EQ design requirements were
12 not fulfilled, so it was a long-standing,
13 multiple-year violation basically of design
14 control. And so I have a little tip for each one
15 of these if you might interested; I would just offer
16 one or two that I think are perhaps most
17 representative of some of the stuff that we're
18 doing here.
19 At St. Lucie, St. Lucie replaced some
20 conduit down in the basement of the building, and
21 it was later found that those conduits were not
22 sealed, and as a consequence, under very heavy
23 rains, they poured 50,000 of water into the
24 basement. Violation. At Vogtle I and Vogtle II,
25 the violation was emergency preparedness and rad

1 safety. In this particular case, they had a
2 calculational error in the radiation threshold
3 levels for their EALs, and they were
4 under-predicting their site area emergency levels
5 by a factor of 60, which means had they not caught
6 this, they would have been well beyond their
7 allowed radiation levels for that particular set
8 of plants. That was a white finding.
9 And finally at Vogtle II, it's assessed
10 against both Vogtle I and II, they actually put type
11 B quantity red waste in a type A cask, and they sent
12 it to Barnwell, and when Barnwell received the
13 cask, they communicated back to Vogtle asking what
14 the cask identification number was, and Vogtle said
15 it was a cask identification number supposed to be
16 thus and so, and Barnwell said no, that's not the
17 cask we've got; we've got a different cask, and
18 guess what? What's in the cask is much higher in
19 activity than what it's supposed to be. So these
20 are the types of inspection findings that roll up
21 into the table that you see on page 10.
22 I'm going to move on now to page 15, the
23 greater than green were all security; none of that
24 information is publicly available. Just know that
25 the inspectors do find that information and they

1 process that information in accordance with the
2 revised oversight process. There's another
3 category of items that are reviewed, and these are
4 cross-cutting items, and this is where you might
5 find multi-organizational or multi-process issues
6 that really threaten the capability of the plant
7 to do what it's supposed to do. And we just
8 identified three here; Duane Arnold is on page 17;
9 that has to do with consistency of process, and this
10 really has to do with corrective actions and
11 implementing the corrective actions or attending
12 to the corrective actions the way they're supposed
13 to be corrected. And while they were making
14 progress in 2013, they had not really completed
15 their work, so this carried over into 2014.
16 At Monticello--this is page
17 18--conservative bias. We probably all know what
18 that is just intuitively, but in a plant setting,
19 it is certainly the inspector's perception that the
20 behavior of the plant personnel may be more biased
21 towards production or more biased towards work
22 completion as opposed to bias towards caution and
23 bias towards conservative decision-making. And
24 hence, a finding here at Monticello is a
25 cross-cutting issue having to do with conservative

1 bias, and at Prairie Island of all things,
2 documentation, page 19. It doesn't sound like a
3 biggie, but it depends on what that documentation
4 is. It could be as important as plant operating
5 procedures or emergency procedures or flooding
6 procedures or whatever it might be, and it really
7 attending to dotting the I's and crossing the T's.
8 MEMBER CORRADINI: So it is of
9 significant finding after the documentation
10 was--how do they--one raises a cross-cutting
11 issue? Maybe you said and I missed it.
12 MEMBER SKILLMAN: We'd probably find
13 if we dug into this that there were either
14 procedures or instructions that probably crossed
15 multiple organizations, and--
16 MEMBER CORRADINI: And this is again an
17 inspection?
18 MEMBER SKILLMAN: Yes, absolutely.
19 MEMBER CORRADINI: Okay.
20 MR. WIDMAYER: So probably what you'd
21 have is several green findings in different
22 cornerstones, and so the inspector connected the
23 dots--the dots; there we go. So you probably had
24 several green findings in different cornerstones,
25 and the cross-cutting issue was that they found the

1 same issue with documentation and so it was a green
2 finding.
3 MEMBER CORRADINI: So some sort of
4 generic--
5 MEMBER SKILLMAN: Correct. Remember
6 when I identified cross-cutting issue, they've
7 identified a multi-organizational or culture issue
8 at the site.
9 MEMBER POWERS: And like Derek says, if
10 you--cross-cutting issues usually emerge from
11 inspection of the corrective action program.
12 MEMBER SKILLMAN: Right. On slide 20,
13 I asked Derek to please pull this information
14 together; why did I do that? We live in a culture
15 where we have the drug and alcohol abuse issues all
16 around us, and the nuclear industry is immune from
17 that, and I can recall when Part 26 was rolled out,
18 that's the Fitness for Duty, and I've been curious
19 over the years just what did the data look like?
20 And I thought the members might appreciate just two
21 or three minutes on this. Notice that the positive
22 rate, the positive rate of 100 say, in this case
23 of 200 at random or forced tests, for cause tests,
24 how many are positive, maybe one in 200, maybe half
25 a percent. Is that a big number? I don't know; it

1 depends on who those people are. We'll talk about
2 that in a minute.
3 MEMBER CORRADINI: But at least at INPO
4 when I was on part of the board, they would compare
5 that to other industries like the airline industry
6 and others which have essentially fitness for duty
7 things, so there must be a comparison.
8 MEMBER SKILLMAN: I'm sure there is.
9 MEMBER CORRADINI: Okay.
10 MEMBER SKILLMAN: Just trying to give
11 you an idea of what we have in nuclear. For the
12 year 2013, the total tests declined by 9.7 percent;
13 I believe what that means is that the for cause
14 decreased, and that would suggest to me that at
15 least there's an awareness that workers have that
16 it's probably imprudent to be under any form of
17 influence, either showing up for work or applying
18 for work. Notice that the positives and the
19 refusals generally show up at pre-access; these are
20 the people who show up, knock on the door, fill out
21 an application, attempt to find employment. And
22 so many of the positives occur at pre-access, and
23 also the subversion attempts, that is where there
24 is an overt attempt to hide substance abuse, if you

1 will, substituting another fluid for urine or doing
2 that type of thing, the subversion attempts are
3 really at pre-access; people trying to game the
4 system, gain access.
5 On page 4 21, 81 percent of the
6 positives are the aggregate of marijuana and
7 alcohol and cocaine, and apparently there's an
8 increase in amphetamines; I don't really know why.
9 That would be an interesting study; don't know
10 where that comes from. And again, the positives
11 are generally at the pre-access, and the
12 construction sites are about 5.8 percent of all
13 tests, and they account for almost 18 percent of
14 the positives. If you go on a construction site,
15 you know how easy it is for the workers to bring--
16 MEMBER CORRADINI: Mischief.
17 MEMBER SKILLMAN: --yes, bring
18 something with them when they come on site.
19 MEMBER CORRADINI: So maybe you said at
20 the beginning with these sorts of tests, so is it
21 strictly down to the limited detection, or is there
22 a lower level below which it's not considered of
23 consequence? If you can detect it at all, you're
24 out.

1 MEMBER SKILLMAN: There's a legal
2 threshold for alcohol; there is a process if you're
3 called for fitness for duty and you refuse, you're
4 assumed positive. If you--
5 MEMBER POWERS: You're actually
6 calculating it as a refusal.
7 MEMBER SKILLMAN: It's a refusal, yes.
8 MEMBER CORRADINI: But then you can't
9 go to work.
10 MEMBER SKILLMAN: That's correct.
11 MEMBER POWERS: The outcome is the same
12 for you, but legally--
13 MEMBER CORRADINI: So that's for
14 alcohol; what about the other two?
15 MEMBER SKILLMAN: The other two are the
16 same thing, but there's a lower limit, not just I
17 can't detect it, therefore--or the moment I can
18 detect it, it's there.
19 VICE CHAIRMAN BLEY: If you remember,
20 we had somebody from NSIR here talking about that
21 a few months ago.
22 MEMBER SKILLMAN: Okay. All right.
23 22 What I really wanted to get to was the second
24 two bullets. Of the 42 reportable events or 24

1 reportable events, 17 are supervisors, and 12
2 involved licensed operators and the 38 reports a
3 very significant increase from actually '12 into
4 '13, and a bunch of those are involved in the
5 process and the procedures regarding the blind
6 performance test samples.
7 MEMBER BALLINGER: Does the license
8 operator lose his license?
9 MEMBER SKILLMAN: I've been at a site
10 where an on-shift operator has tested positive, and
11 that individual was taken off shift for three
12 months, put in counseling, went through a rehab
13 problem, and was brought on watch after that time
14 period. So the answer is no, it's not automatic
15 termination; it depends on the company; I think in
16 most cases after the second--the second incident,
17 is termination.
18 MEMBER BALLINGER: So the NRC doesn't
19 come into the picture?
20 MEMBER SKILLMAN: Well the NRC is very
21 well aware of it, because it's a notification.
22 MEMBER BALLINGER: But the license is
23 from the NRC, the 1:45:59--
24 MEMBER SKILLMAN: That's correct.

1 That's correct.

2 MEMBER RICCARDELLA: Dick, what's this

3 15 days versus 30 day versus 24 hour; I don't

4 understand that.

5 MEMBER SKILLMAN: It's just--it's the

6 reporting requirements in Part 26; it is part of

7 the regulation that identifies your 24-hour

8 reports, and I think your 24-hour report is someone

9 who's probably on license duty, whereas a 30-day

10 report I think is someone who's now on license or

11 on, if you will, official--

12 MEMBER RICCARDELLA: It's not related

13 to the severity of, you know, what your blood level

14 is.

15 MEMBER SKILLMAN: No.

16 MEMBER BROWN: Dick, does that mean you

17 have to report this to the NRC within 24 hours? Is

18 that what that means?

19 MEMBER SKILLMAN: That's right.

20 That's right.

21 MEMBER BROWN: Okay.

22 MEMBER SKILLMAN: Yes. And I would

23 offer just another experience that I personally

24 had. This can be operators, this can be

1 supervisors; I was involved with one incident where
2 it was an armed roving security officer, and it was
3 alcohol, and he was over detectable level. And so
4 this finds its way into all persons of our nuclear
5 culture, which is really why I wanted to bring it
6 up here, because you know we have a tendency to
7 think that maybe we're immune. We're not. The
8 societal problems are very much in our control
9 rooms and in our plants and in our people. And that
10 is all I wanted to present. I wanted to give you
11 an idea of what the cornerstone status is, what the
12 data are relative to findings from the inspection
13 results, and give you an idea about fitness for
14 duty.
15 MEMBER BALLINGER: Can one of these
16 fitness for duty things find their way into the
17 flags and things like that? Can that impact a
18 utility's--
19 MEMBER BROWN: The white, green, red--
20 MEMBER BALLINGER: --yes.
21 MEMBER BROWN: The column stuff.
22 MEMBER SKILLMAN: The quick answer is
23 I don't know, sir. It's Part 26, it's a different
24 set of the regulations, I would suspect--and I'm

1 just winging it now--but I would suspect if
2 management did not take action, then it might find
3 its way up into the ROP; but if management takes
4 action in accordance with Part 26, my hunch is it
5 does not show up over on that side.
6 MEMBER CORRADINI: You think it would
7 affect the safety culture.
8 MEMBER POWERS: Fitness for duty is
9 part of the inspection program. The fitness of
10 duty program is part of what the inspectors look
11 for, so they would look for deficiencies in the
12 fitness for duty program, and they're not so much
13 as what have been found.
14 MEMBER SKILLMAN: What it found,
15 that's what I'm saying. So I would think, to Ron's
16 question or to Charlie's question, what happens in
17 the red, white, yellow metric, individuals found
18 under influence I do not believe find their way up
19 into that portion of the metric; they find
20 themselves over on the Part 26 portion of the
21 regulation. If the utility's Part 26 program is
22 not healthy, then I think it would show up over on
23 the ROP.
24 MEMBER POWERS: You would not want to

1 put in a finding against the owner-operator because
2 people had been detected as being drugged and
3 whatnot; that's a disincentive for him to find
4 things. And so you would specifically avoid doing
5 that.
6 MEMBER SKILLMAN: Okay. Charlie?
7 MEMBER BROWN: Were the detections as
8 a result of specific random tests, or were these
9 based on somebody coming on and smelling it or
10 whatever? I mean, there is breakdown--
11 MEMBER SKILLMAN: It's both. It's
12 both. At every nuclear plant, whether you know it
13 or not, every individual that shows up with a badge,
14 there's probably a random number generation, and
15 you could show up on duty--
16 MEMBER BROWN: Oh I understand that
17 process.
18 MEMBER SKILLMAN:--okay, and in
19 addition to that, there is the for cause.
20 MEMBER BROWN: So somebody actually
21 comes through and they come in, and somebody
22 notices that they're a little erratic or--
23 [Crosstalk]
24 MEMBER SKILLMAN: I've had individuals

1 come to me and say "I am very concerned about him."
2 And what's interesting is when that occurs, the
3 duty of the supervisor is to make a personal
4 assessment of that person and take action positive
5 or action negative; you can't duck it. You have
6 to go and assess, and you've got to be able to back
7 up your assessment.
8 VICE CHAIRMAN BLEY: And failure to do
9 that is a violation.
10 MEMBER SKILLMAN: And failure to do
11 that is--actually, it's a fireable offense to the
12 supervisor. I've been involved in a number of
13 those. It's the real deal, and that's why I wanted
14 to show this, because--
15 MEMBER BROWN: Who identifies if the
16 supervisor does not follow--I mean if Operator A
17 comes and tells the supervisor hey, I think I got
18 a problem with Operator B; Operator A goes back to
19 his station, how does he know whether the
20 supervisor follows up or not? Is there a--
21 MEMBER SKILLMAN: My experience is the
22 grapevine is faster than the neutrons coming out
23 of a polonium--
24 [Crosstalk]

1 CHAIRMAN STETKAR: No, no. If
2 Operator A has enough concern to do that, Operator
3 A is going to find out whether the supervisor
4 followed up.
5 MEMBER BROWN: Well you would hope so;
6 that's all I'm saying. They'd go find out did you
7 check, what was your conclusion, what have you.
8 MEMBER SKILLMAN: Unless there are
9 questions, let me--
10 MR. WIDMAYER: I wanted to answer one
11 thing. The amphetamine use increase, if memory
12 serves me correctly, that's just following the
13 trend in society; it wasn't alarming because
14 there's more amphetamine use in the general public.
15 MEMBER SKILLMAN: And I want to thank
16 Derek for his work on these slides, as imperfect
17 as they are, Derek and I share the responsibility
18 --
19
20 [Crosstalk]
21 MEMBER SKILLMAN: No, Derek and I
22 worked together--
23 CHAIRMAN STETKAR: One of the things
24 that we've learned is that two engineers working

1 can come within about plus or minus two percent of
2 adding to about 100.
3 MEMBER BROWN: Just one other question
4 just for my information. Today there's a number
5 of states that legalize marijuana, and those
6 cities. Even though the federal law says no, in
7 the states it's legalized.
8 VICE CHAIRMAN BLEY: Impairment is
9 impairment.
10 CHAIRMAN STETKAR: Well, alcohol is
11 legal.
12 MEMBER BROWN: It's a matter of--
13 CHAIRMAN STETKAR: Alcohol is legal
14 everywhere.
15 MEMBER BROWN: I understand that.
16 CHAIRMAN STETKAR: But marijuana is
17 like--they're trying to get a handle on that.
18 There was just a report the other day that some kid
19 was flown into the hospital because his parents
20 brought in marijuana-laced brownies and the kid got
21 into the brownies, and all of a sudden they're in
22 the hospital so--well the whole bunch, it was a
23 nasty circumstance.
24 MEMBER SKILLMAN: Charlie, you raise a

1 good point. I'm going to opine here for a minute.
2 I'm going to believe that the operators are going
3 to take a zero tolerance policy for marijuana. I
4 don't think that they have an option to not do that.
5 It's been very clear for years that the operators
6 are not to be impaired; if they are called on random
7 and found with THC or any of the screen panel
8 positives, my view is that the company will simply
9 say we will not tolerate this. I don't think the
10 companies can afford to tolerate it.
11 VICE CHAIRMAN BLEY: But also to
12 Charlie's point, you don't have to be on drugs or
13 alcohol. If you come in and you're impaired
14 because you're tired, you're sick, you can't
15 perform, it's the same duty on the supervisor as
16 for alcohol.
17 MEMBER BROWN: If the guy doesn't
18 outfit his station or something like that--
19 MEMBER SKILLMAN: I think the real
20 issue is being called on random and being found
21 positive, and what they have done, and that was the
22 issue about the panels, they've been very, very
23 clear and getting very specific about what the for
24 cause chemistry is for urine, and of course if

1 you're challenged on urine, you have the option to
2 require a blood test. Very often it doesn't go
3 that far; people cave and say you're right, I've
4 been caught. But the science has gotten to a
5 point, and the detectors have gotten to a point
6 economically where tests can be formed very
7 quickly and very accurately.
8 MEMBER BROWN: Good. Appreciate
9 that.
10 MEMBER RICCARDELLA: But it gets back
11 to this threshold question, because you know with
12 alcohol, you can drink one weekend and go to work
13 on Monday and you're fine. Marijuana, you could
14 be 30 days later, you can be tested and found
15 positive.
16 MEMBER BANERJEE: What about meth?
17 MEMBER SKILLMAN: Yes, that's
18 Derek's--that's amphetamines.
19 CHAIRMAN STETKAR: Sanjoy, just push
20 your button so you're on the record.
21 MEMBER BANERJEE: It is detectionable
22 30 days out? I'm just wondering what the window
23 is.
24 [Off mic comments]

1 MEMBER BANERJEE: So when they do drug
2 testing for us, can they detect if you're on meth?
3 CHAIRMAN STETKAR: Yes.
4 MEMBER BANERJEE: I presume they can--
5 CHAIRMAN STETKAR: They do a full drug
6 panel.
7 MEMBER SKILLMAN: As we are ending, are
8 there any members of the public that would like to
9 ask a question or make a comment here? And can we
10 open the bridge line, please? On the bridge line,
11 is anybody there? The record shows that there's
12 no one on the bridge line, thank you. And there
13 are no comments from the public, and so with that,
14 Mr. Chairman, I turn the meeting back to you.
15 Thank you.
16 CHAIRMAN STETKAR: Thanks, Dick. The
17 next topic on our agenda will begin in about two
18 minutes, so let's officially go off the record for
19 a couple of minutes here so we don't pick up
20 extraneous conversation.
21 [Whereupon, the proceedings went off
22 the record from 1:57 p.m. to 2:07 p.m.].
23
24

1 Grand Gulf MELLA+ License Amendment discussion

2 (Closed)

3

PSEG Early Site Permit
Advisory Committee on Reactor Safeguards

June 10, 2015

PSEG
Power LLC

PSEG – Overview

Christopher Schwarz
Vice President
Operations Support

PSEG Power LLC

PSEG Corporate Overview

PSEG

PSE&G

Traditional T&D

Electric Customers: 2.2M
Gas Customers: 1.8M

~6,300 – Employees

PSEG Power LLC

Regional Wholesale Energy

Nuclear Capacity: 3,661 MW
Total Capacity: 13,446 MW

Nuclear – ~1,500
Fossil – ~1,000
ER&T and Power Support – ~90
Power Ventures / Solar Source – ~10

Total – ~2,600

PSEG LONG ISLAND

Traditional T&D

Electric Customers: 1.1M

~2,100 – Employees

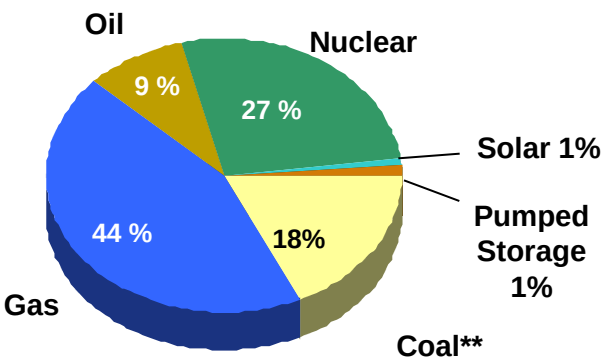
Services Company – ~1,000 Employees

Total – ~12,000

PSEG Power Portfolio – 2013

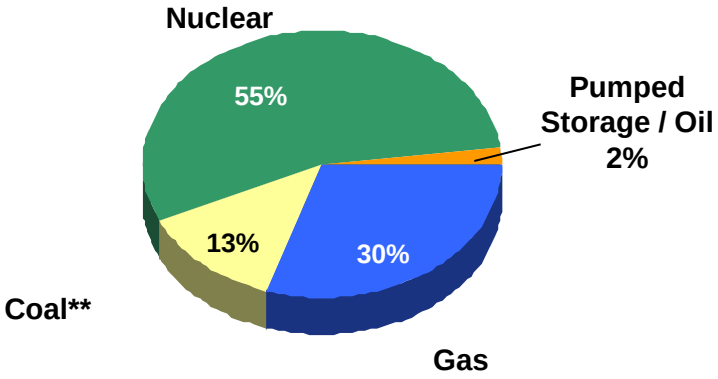
Fuel Diversity

Total MW: 13,466



Energy Produced

Total GWh: 54,264



Coal - includes NJ units that fuel switch to gas**

Solar <1%

- 4th largest generator in PJM
- Generating assets in four states – New Jersey / New York / Connecticut / Pennsylvania

PSEG Power LLC

PSEG Nuclear – Salem and Hope Creek

Second largest site in country

- Approximately 3,575 MWe
- Enough electricity for ~3 million homes

Each unit licensed for 60 years (license renewal completed)

- Salem Unit 1 (PWR, 1180* MW) – August 2036
- Salem Unit 2 (PWR, 1175* MW) – April 2040
- Hope Creek (BWR, 1219* MW) – April 2046

*Mean Annual Net Rating

Factors Influencing Our Future Fuel Diversity

Polar Vortex

- First concerns related to ‘winter’ peak vs ‘summer’ peak
- Challenges gas supply and availability

New Jersey High Electric Demand Day (HEDD)

- Peaking capacity required to shut down in 2015

Nuclear retirements

- In the next 20 years, a significant number of nuclear units reach their end of life (60 yrs)
- Fukushima changes could accelerate nuclear retirements as plants are no longer economic

Early Site Permit – Overview

Jamie Mallon
ESP Manager

PSEG Power LLC

Early Site Permit Application

PSEG Power LLC and PSEG Nuclear LLC are applicants

Reactor technology has not been selected

Application includes:

- Site Safety Analysis Report to address impacts of the environment on the plant, including hurricanes and earthquakes
- Emergency Plan – consistent with existing plants
- Environmental Report

ESPA based on a "plant parameter envelope" (PPE)

- Assumes single large unit or two smaller units
- Impacts address footprints and other parameters such as water use
- Up to 2200 MWe for the two unit plant [Westinghouse AP-1000]

Early Site Permit Application Contents

Part 1 – Administrative Information

Part 2 - Site Safety Analysis Report

- Chapter 1 – Introduction and General Description
- Chapter 2 – Site Characteristics and Site Parameters
- Chapter 3 – Aircraft Hazards
- Chapter 11 – Radioactive Waste Management
- Chapter 13 – Emergency Planning
- Chapter 15 – Transient and Accident Analysis
- Chapter 17 – Quality Assurance

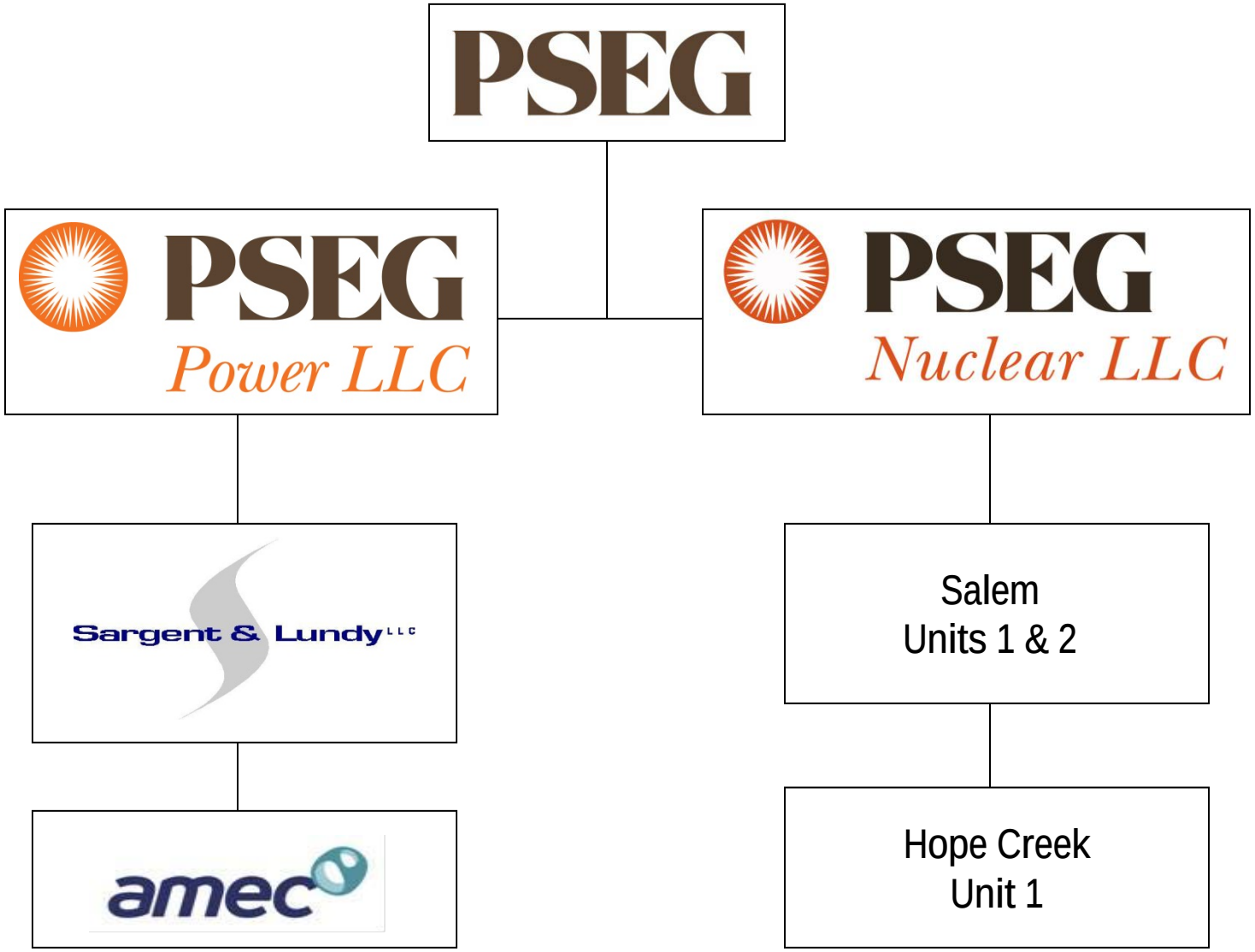
Part 3 – Environmental Report

Part 4 – LWA – Not Used

Part 5 – Emergency Plan

Part 6 – SUNSI Information – Not Used

PSEG Early Site Permit Organization



Site Location

Existing 734 acre PSEG property located on southern part of Artificial Island

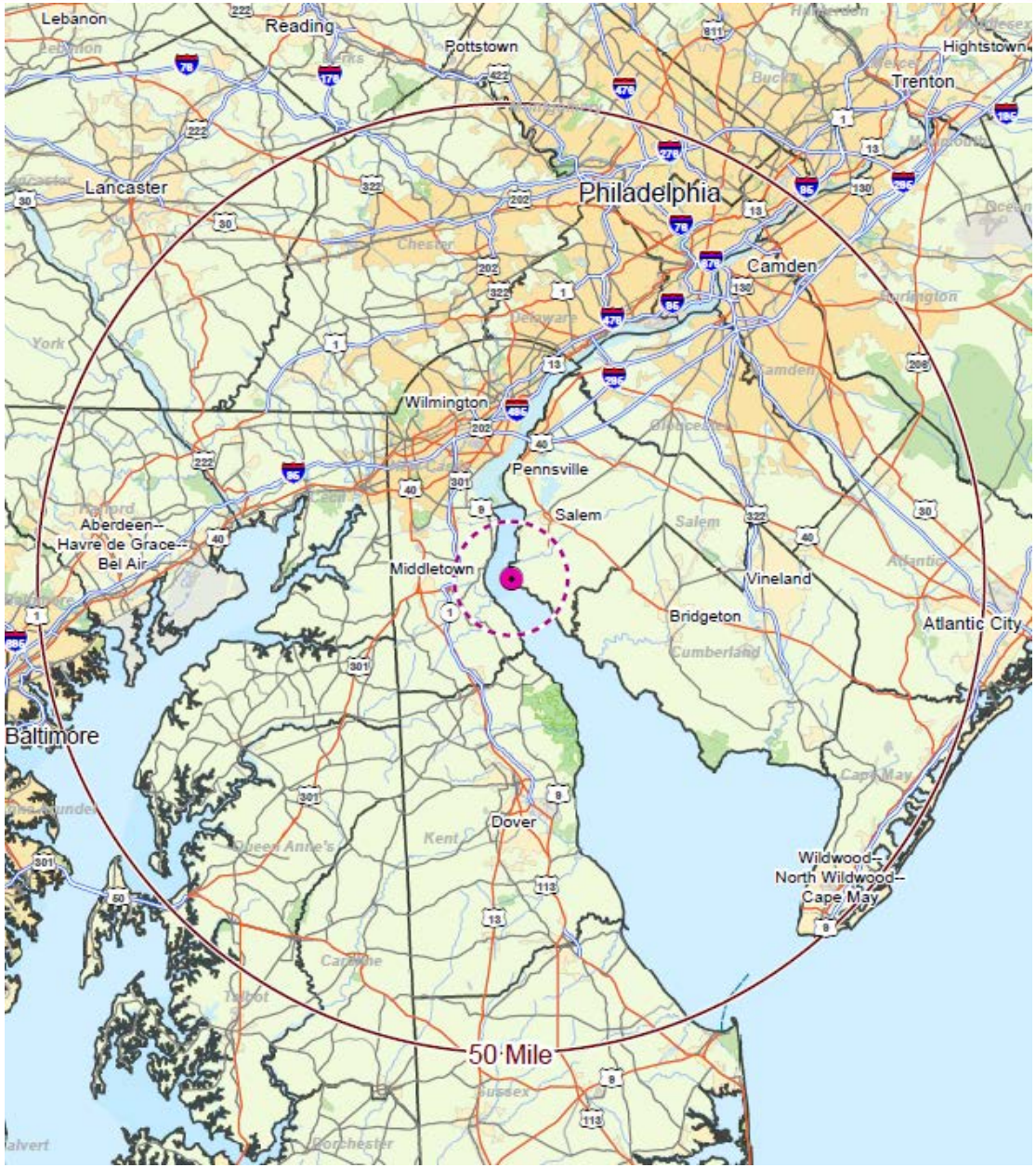
- 15 miles south of Delaware Memorial Bridge
- 18 miles south of Wilmington, Delaware
- 30 miles southwest of Philadelphia, Pennsylvania
- 7-1/2 miles southwest of Salem, New Jersey

Currently three operating nuclear reactors on Artificial Island

- Salem Units 1 and 2 - Westinghouse PWRs - 3459 MWt each
- Hope Creek Unit 1 – GE BWR - 3840 MWt

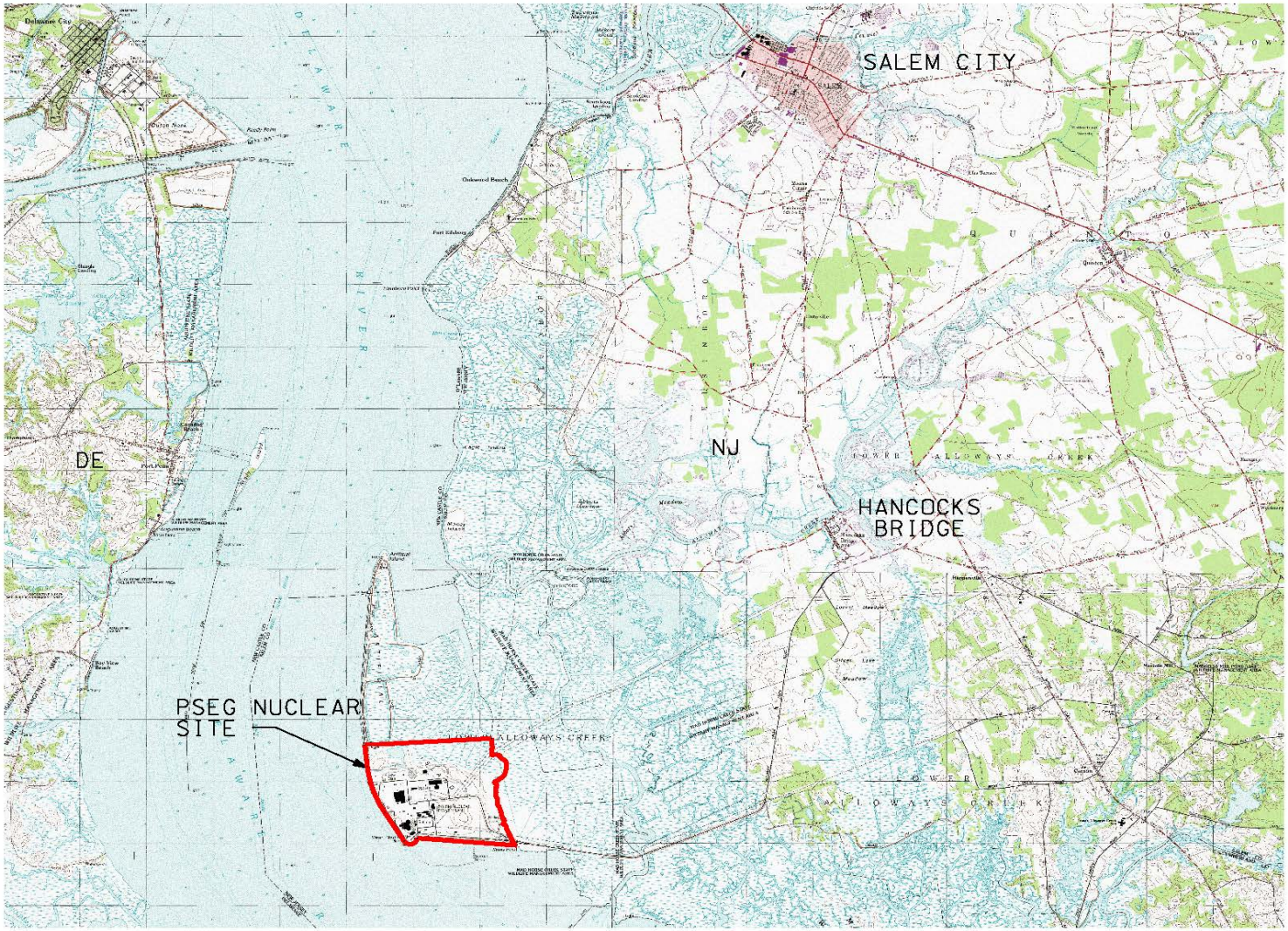
PSEG is in negotiation with U.S. Army Corps of Engineers (USACE) to acquire an additional 85 acres immediately north of Hope Creek Generating Station (HCGS)

PSEG ESP Site and Regional Vicinity (NJ, DE, PA AND MD)



PSEG Power LLC

Current PSEG Site And Local Vicinity



PSEG NUCLEAR SITE

LOCAL.sgn 5/18/2009 5:45:21 PM

PSEG Site

PSEG Power LLC

PSEG Site

PSEG Power LLC

Early Site Permit Application Development

Regulatory guidance to prepare the application

- 10 CFR Part 52 – Subpart A
- RG 1.206 - Combined License Applications for Nuclear Power Plants (LWR Edition)
- NUREG – 0800 - Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition
- RS-002 – Processing Applications for Early Site Permits

Studies and processes

- Site Studies and Investigation Programs
- Conceptual Design and Analysis
- Plant Parameter Envelope

Plant Parameter Envelope Development

Follow the Part 52 process as designed

Reactor technology designs not yet mature

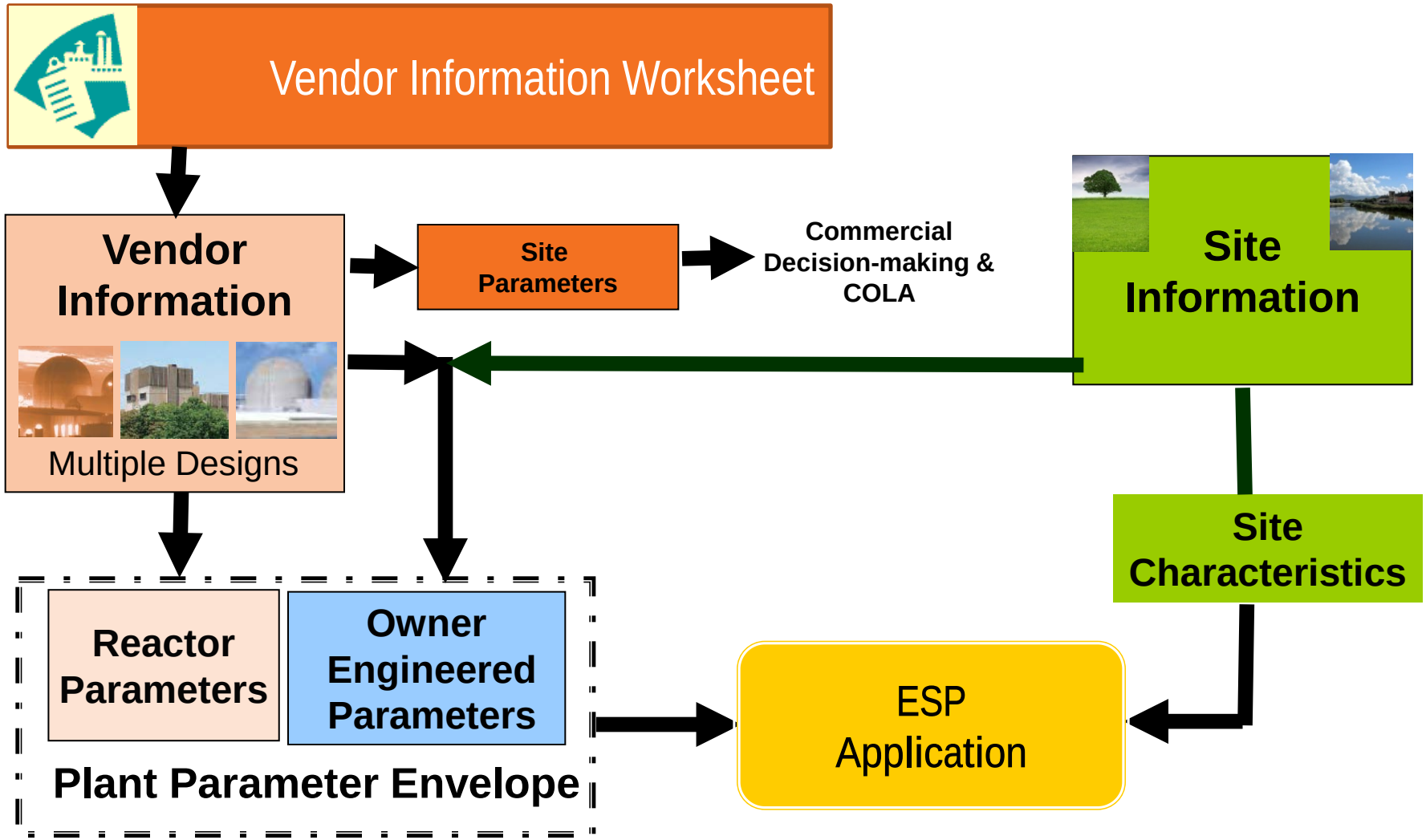
- Regulatory risk exists until Design Certification reviews are complete
- Technology and commercial risks exist until detailed designs are more complete

Bounding values for parameters that define facility's interaction with the environment

Reactor technology designs considered:

- Single Unit ABWR
- Single Unit U.S. EPR
- Single Unit US-APWR
- Dual Unit AP1000

Plant Parameter Development Approach



Plant Parameter Development Approach (Cont.)

PPE Table (SSAR Section 1.3)

- Reactor Parameters
  - Radiological Effluents
  - Chemical Emissions
- Owner Engineered Parameters
  - Site Layout Acreages
  - Normal Plant Heat Sink

Sample Format

PPE Item		Design Parameter	Definition
1	**Structure**		
1.1	**Building Characteristics**		
1.1.1	Height	234 ft.	The height from finished grade to the top of the tallest power block structure, excluding cooling towers.
1.1.2	Foundation Embedment	39 ft. to 84.3 ft.	The depth from finished grade to the bottom of the basemat for the most deeply embedded power block structure.

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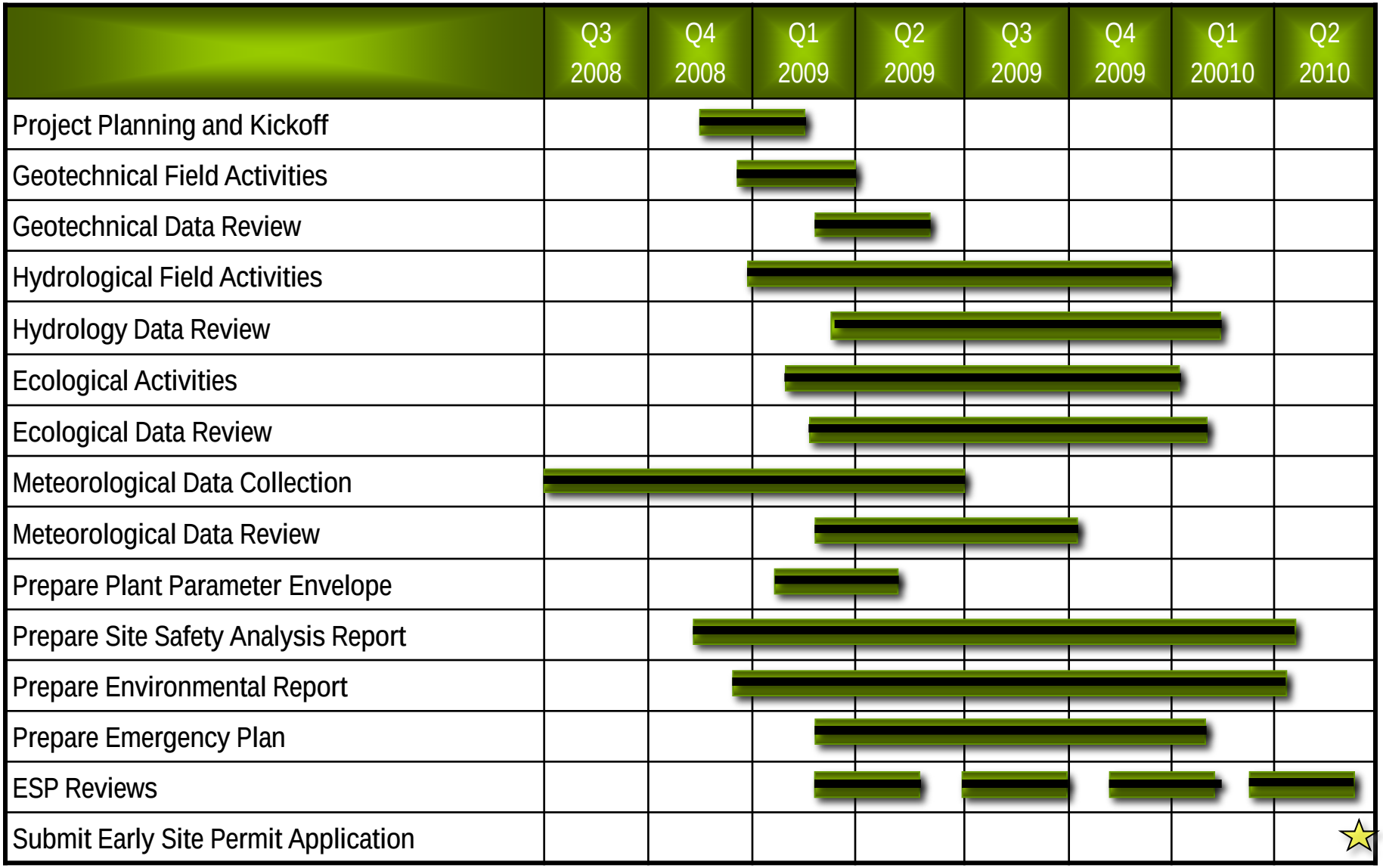
Plant Parameter Development Approach (Cont.)

Parameter Categories

- Structure
- Normal Plant and Ultimate Heat Sink
- Potable/Sanitary/Demineralized/Fire Protection Water System
- Miscellaneous Drain (Discharge)
- Unit Vent/Airborne Effluent Release Point
- Solid and Liquid Radwaste System
- Auxiliary Boiler System
- Onsite/Offsite Electrical Power System
- Standby Power System
- Plant Characteristics
- Construction
- Miscellaneous Parameters

Early Site Permit Application – Submitted May 25th 2010



NRC Site Safety Visits

Pre-application Subsurface Investigation	January 2009
PPE Development	March 2009
Hazards Analysis	December 2009
Post-application ESPA Overview	June 2010
Hydrology Audit	February 2011
Quality Assurance	June 2011
Geotechnical Audit	September 2011
Seismic Analysis	Sept./Dec. 2012
Flood Re-analysis	July/Sept. 2013
Hydrology Audit	February 2014

Application Timeline

ESP Application Timeline

▪ Application Submitted	May 25, 2010
▪ Application Docketed	August 4, 2010
▪ Review Schedule Issued	November 29, 2010
▪ Hydrology Audit	February 15 - 16, 2011
▪ Fukushima EQ and Tsunami	March 11, 2011
• Flooding	
– RAI #67 Issued – PMSS	September 27, 2012
– Flood re-analysis	July - September 2013
– Initial Response to RAI #67	September 27, 2013
– Hydrology Audit	February 4 - 6, 2014
– Revised Response to RAI #67	April 15, 2015
– ASER – SSAR 2.4 Issued	April 22, 2015

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Application Timeline (Cont.)

ESP Application Timeline

- Seismic
  - Mineral VA M5.8 EQ — August 23, 2011
  - Geotechnical Audit — September 29 - 30, 2011
  - NUREG-2115, CEUS-SSC Issued — January 2012
  - RAI # 61 Issued – Vib. Ground Motion — June 7, 2012
  - Seismic Re-analysis — July - December 2012
  - ASER – SSAR 2.5 Issued — July 14, 2014

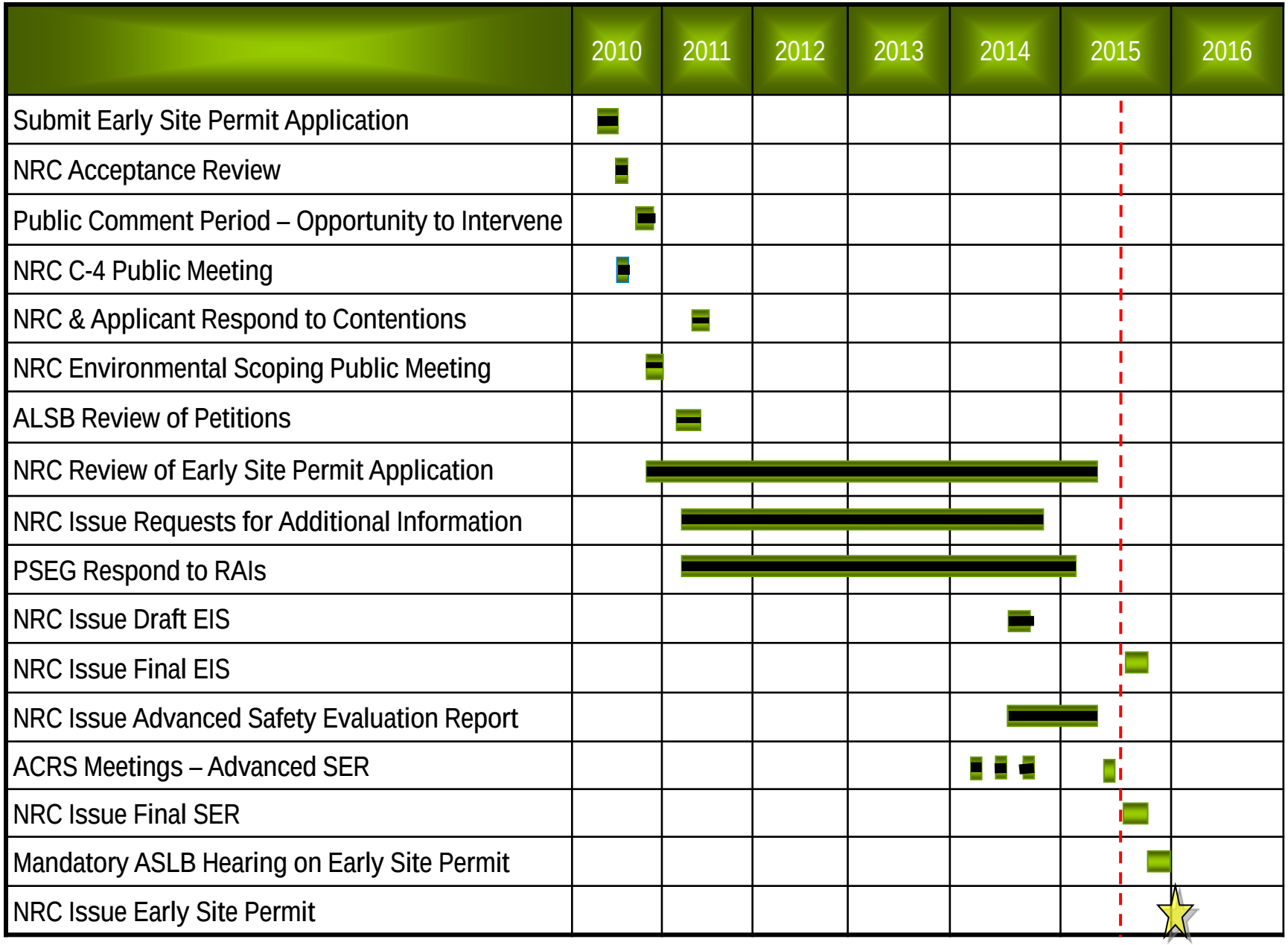
ESP Application, Revision 4, submitted June 5, 2015

- Addresses all Confirmatory Items
- Closes all open licensing commitments

ASER/ACRS Committee Timeline

- Initial ASERs Issued — October 31, 2013
- 2nd Set ASERs Issued — January 8, 2014
- 3rd Set ASERs Issued — January 15, 2014
- ACRS Subcommittee Meeting — March 19, 2014
  - SSAR Sections 3.5.1.6, 11.2/11.3 13.3, 15.0.3, 17.5
- ASER – SSAR 2.5 Issued — July 14, 2014
- ACRS Subcommittee Meeting — September 29-30, 2014
  - SSAR Sections 2.1/2.2, 2.3, 2.5
- ASER – SSAR 2.4 Issued — April 22, 2015
- ACRS Subcommittee Meeting — June 9, 2015
  - SSAR Section 4
- ACRS Full Committee Meeting — June 10, 2015

ESP Project Update - Licensing Process

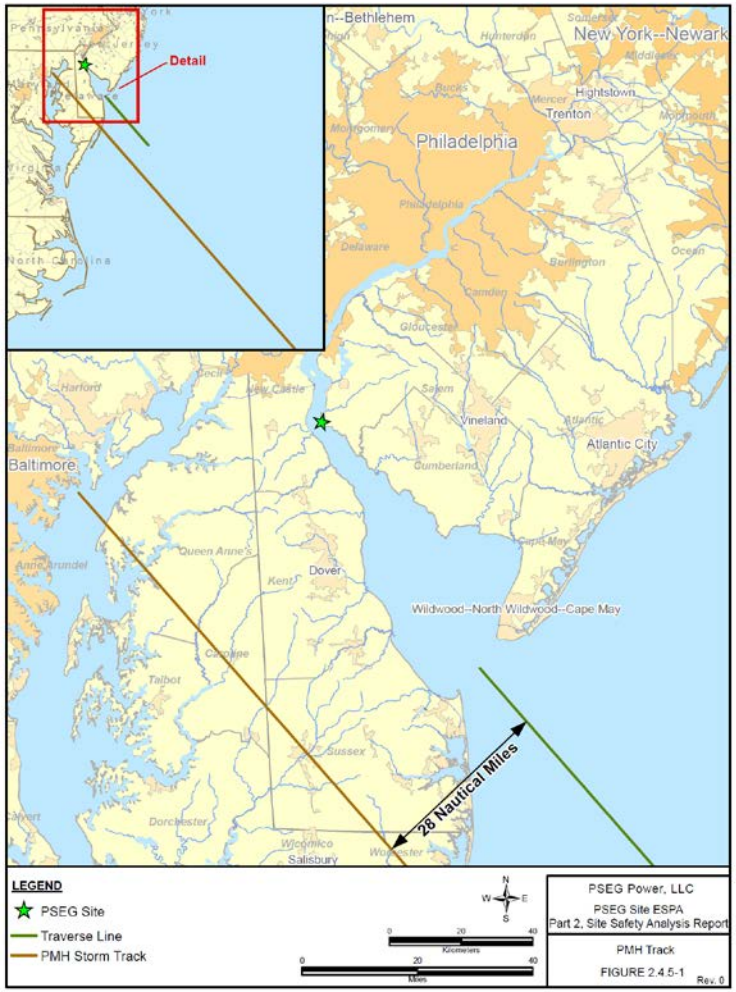


Chapter 2 – Section 2.4.5
Probable Maximum Surge
And Seiche Flooding

PSEG Power LLC

2.4.5 Probable Maximum Surge and Seiche Flooding

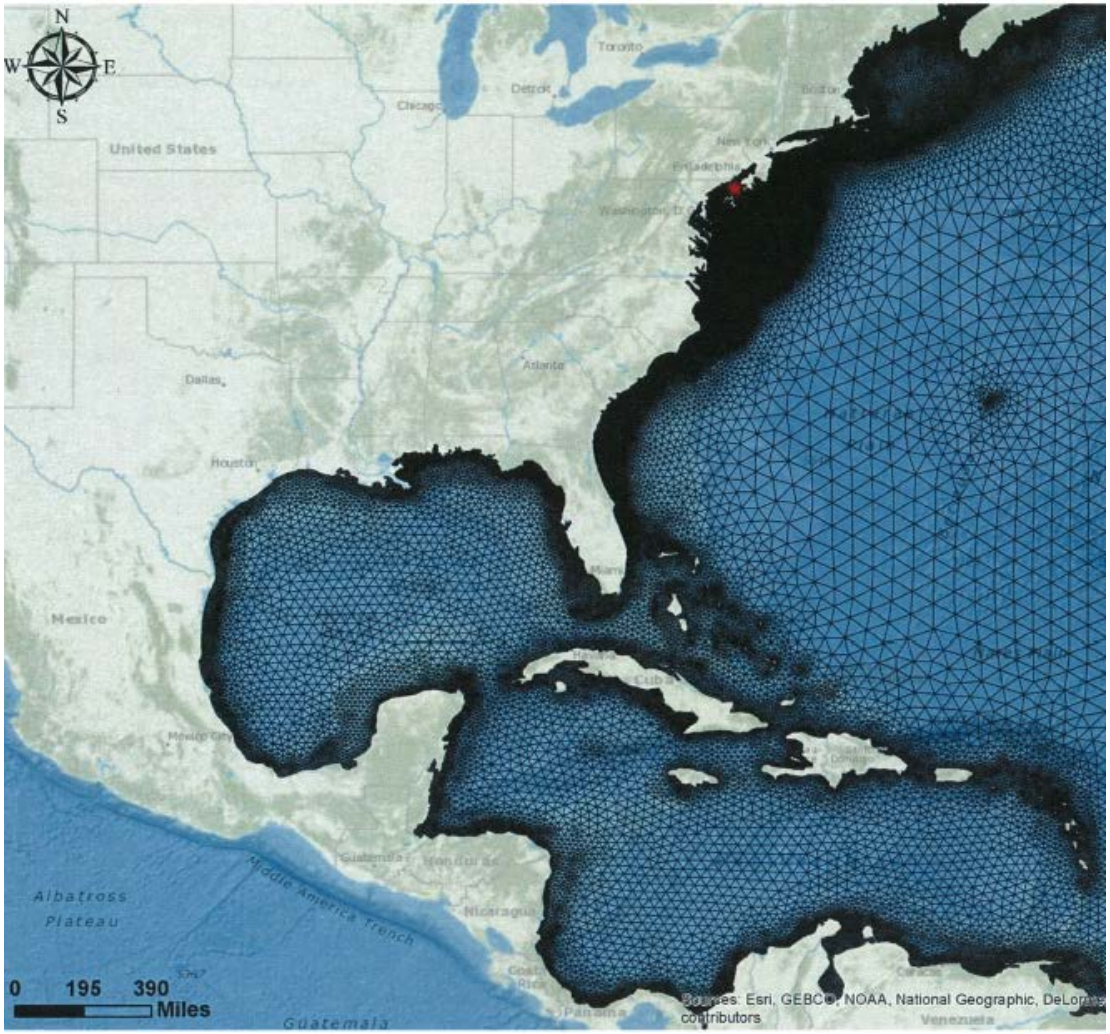
Probable Maximum Hurricane (PMH) Storm Meteorological Parameters based on NWS 23



Probable Maximum Surge and Seiche Flooding (Cont.)

PSEG developed a high resolution 2-D storm surge model (ADCIRC+SWAN) to support development of the response to RAI No. 67

- 2-D models are recognized as a more accurate storm surge modeling tool
- FEMA Region III coastal flood study



2.4.5 Probable Maximum Surge and Seiche Flooding (Cont.)

Use high resolution ADCIRC+SWAN Model to determine total design basis WSEL for the selected PMH storm

Finite element mesh refined at project site

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2.4.5 Probable Maximum Surge and Seiche Flooding (Cont.)

PMH Maximum Total Water Surface Elevation

- 2-D ADCIRC+SWAN Model Results:
  - Antecedent Water Level 1.35 ft.
  - Maximum Still Water Level 20.2 ft. NAVD
  - Wave Runup 7.4 ft.
  - 10% Exceedance High Tide 4.5 ft.
  - Maximum Total Water Surface Elevation 32.1 ft. NAVD

Design Basis Flood Total WSEL is 32.1 ft. NAVD

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Chapter 2 – Section 2.5.2
Vibratory Ground Motion

PSEG Power LLC

Vibratory Ground Motion

Objectives

- Characterize potential earthquake hazard in the site region (200 m radius)
- Characterize seismic hazard at the site
- Characterize the seismic response of the site to develop the Ground Motion Response Spectrum (GMRS)

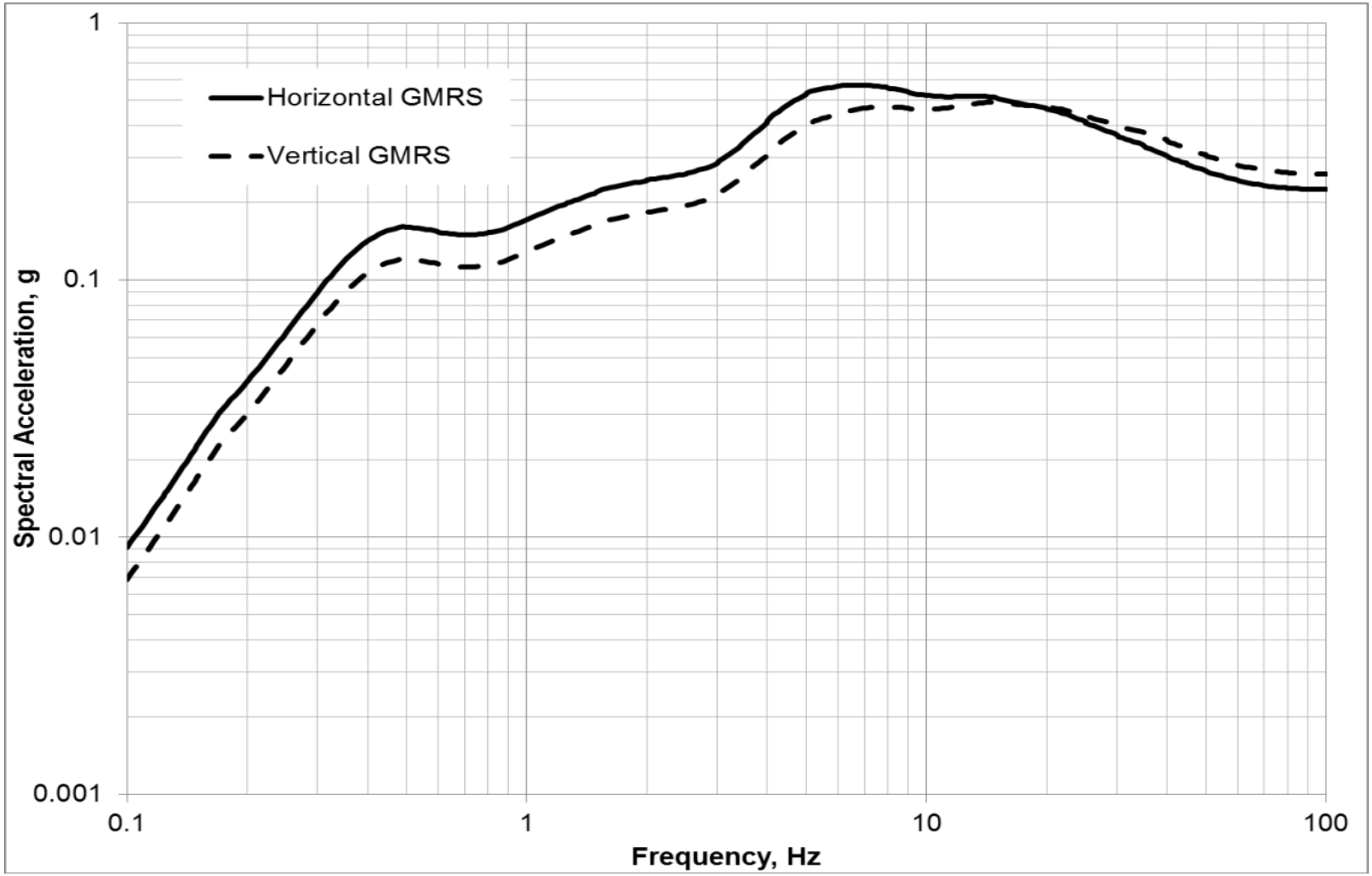
Vibratory Ground Motion (Cont.)

Methodology

- Used CEUS SSC as defined in NUREG-2115 in its entirety including all background sources and RLMEs
- Updated earthquake catalog (1/1/2009 to 12/31/2011) to characterize potential earthquake hazard in the site region (200 m radius)
- EQ recurrence rates for two RLMEs updated:
  - New Madrid Fault System (in-cluster branch)
  - Charleston (narrow source geometry branch)
- Used EPRI (2004, 2006) Ground Motion Prediction Equations
- Followed guidance in RG 1.208 to develop the horizontal and vertical GMRS

Vibratory Ground Motion (Cont.)

Soil Hazard Results



PSEG Power LLC

United States Nuclear Regulatory Commission

Protecting People and the Environment

Presentation to the ACRS Full Committee

Safety Review of the PSEG Site Early Site Permit Application

Presented by

Prosanta Chowdhury, Project Manager

NRO/DNRL/LB1

June 10, 2015

PSEG Site ESP Application

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- PSEG requests permit approval for a 20-year term along with approval for complete and integrated emergency plans
- PSEG does not seek approval for limited work authorization (LWA) activities
- PSEG developed Plant Parameter Envelope (PPE) using 1-Unit U.S. EPR, 1-Unit ABWR. 1-Unit US-APWR, and 2-Unit Passive AP1000

Site Overview

- Site located on eastern shore of lower Delaware River / upper Delaware Bay
- 18 mi south of Wilmington, DE, and 30 mi southwest of Philadelphia, PA
- Adjacent to Salem and Hope Creek Operating Units (Salem County, NJ)
- Nearest population center:

  city of Wilmington, DE, with its nearest boundary distance of 14.8 mi, estimated population of 72,868 people in 2007
- Proposed site grade is 36.9 ft NAVD88

Looking north over Salem/ & Hope Creek Operating Units

Staff Review

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- Staff presented to the Full Committee (FC) the scope of an ESP and concept of PPE (*May 8, 2014*)
- Staff performed Pre-application Site Visit, Emergency Planning Site Visit, Hydrology Site Visit and Audit, Quality Assurance Audit, Geology Site Visit and Audit, Meteorology Site Visit, and Seismic Software Audit (*January 2008 - September 2013*)
- Staff cooperated with U.S. Army Corps of Engineers (USACE), U.S. Coast Guard (USCG), U.S. Geological Survey (USGS), Federal Emergency Management Agency (FEMA), New Jersey Department of Environmental Protection (NJDEP), National Oceanic and Atmospheric Administration (NOAA)
- Staff completed all Advanced Safety Evaluations (ASEs) with no Open Items (OIs) and presented to ACRS Subcommittee (*March 2014 – June 2015*)

Staff Review

Staff proposed **9 Permit Conditions (PC)** in the following areas of review:

- Exclusion Area Authority and Control (**PC 1**) (Ch. 2.1.2)
- Evaluation of Potential Accidents/ Flammable Vapor Clouds (**PC 2**) (Ch. 2.2.3)
- Surface Faulting/ Geologic Mapping (**PC 3**) (Ch. 2.5.3)
- Stability of Subsurface Materials and Foundations/ Liquefaction Potential (**PC 4**) (Ch. 2.5.4)
- Emergency Planning:
  - Fukushima NTTF Recommendation 9.3 (**PC 5 & 6**) (Ch. 13.3.4.3.2)
  - Enhancements to Emergency Preparedness Regulations (**PC 7**) (Ch. 13.3.4.3.2)
  - Emergency Action Level (**PC 8 & 9**) (Ch. 13.3.4.3.4)

Review Areas and Findings

United States Nuclear Regulatory Commission
Protecting People and the Environment

Hazards and Dose Consequences

- **Designated exclusion area** meets the regulatory requirements **subject to a Permit Condition**;
- All **potentially hazardous activities** on site and in the vicinity of the plant have been identified per regulatory requirements;
- Site characteristics and design parameters with respect to **evaluation of potential accidents** meet the regulatory requirements for determining the acceptability of the site;
- **Aircraft hazards** do not present an undue risk to the safe operation of nuclear units at the PSEG Site;
- **Radiological effluent release limits** associated with normal operation can be met for any individual located offsite;
- **Radiological dose consequences** of postulated accidents meet the 10 CFR 50.34(a)(1) criteria.

Review Areas and Findings

United States Nuclear Regulatory Commission
Protecting People and the Environment

Meteorology

- Onsite **meteorological monitoring system** provides adequate data to represent onsite meteorological conditions;
- Site characteristics and design parameters related to **Short-Term (Accident) Diffusion Estimates** acceptable;
- Characterization of **atmospheric dispersion and deposition conditions** are appropriate to demonstrate compliance with numerical guides for doses for any individual located offsite.

Review Areas and Findings

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Hydrology

- Applicant **considered most severe natural phenomena** that have been historically reported for the site and surrounding area, and appropriately estimated the design-basis flood (DBF) elevation (32.1 ft. NAVD88, vs Site Grade of 36.9 ft. NAVD88). **Sufficient margin** for safety related site grade SSCs;

- PPE Site Parameters:

Technology	Max Flood Level (ft below grade)	Max Groundwater Level (ft below grade)
U.S. EPR	1.0	3.3
ABWR	1.0	2.0
APWR	1.0	1.0
AP1000	0.0	2.0

Review Areas and Findings

United States Nuclear Regulatory Commission
Protecting People and the Environment

Fukushima Near-term Task Force Recommendations

Tier 1, 2.1 – **Flood Hazard**

- Applicant used Regulatory Guide 1.59 as supplemented by best current practices;

- Applicant's information on **flooding reevaluation** was **adequate**, as documented in ASE Sections 2.4.5 (Probable Maximum Surge and Seiche Flooding) and 2.4.6 (Probable Maximum Tsunami Hazards).

Review Areas and Findings

United States Nuclear Regulatory Commission
Protecting People and the Environment

Geology and Seismology

- **No tectonic or non-tectonic features** with the potential for adversely **affecting suitability and safety** occur in the site region, site vicinity, or site area or at the site location;
- **No potential for tectonic or non-tectonic surface deformation** in the site vicinity or site area or at the site location that could adversely affect suitability of the site;
- Applicant **thoroughly characterized the seismic sources** surrounding the site, **adequately addressed the uncertainties** through a PSHA;
- Applicant's **GMRS adequately represents** the regional and local seismic hazards **and accurately includes** the effects of the local site subsurface properties;
- Applicant adequately determined site-specific **engineering properties of the soil** underlying the ESP site following state of the art methodology for field and laboratory analyses.

Review Areas and Findings

United States Nuclear Regulatory Commission
Protecting People and the Environment

Fukushima Near-term Task Force Recommendations

Tier 1, 2.1 – Seismic Hazard

- Applicant used current guidance and methodologies, including consideration of the NUREG–2115 (CEUS-SSC) model;

- Applicant's information on **seismic reevaluation** was **adequate**, as documented in ASE Section 2.5.2 (Vibratory Ground Motion).

Review Areas and Findings

United States Nuclear Regulatory Commission
Protecting People and the Environment

Emergency Plans

- **Emergency plans provide an adequate expression** of the overall concept of operation and describe the essential elements of advanced planning and the provisions made to cope with emergency situations;
- The **overall state** of onsite and offsite emergency preparedness, when fully implemented, **will meet** the applicable regulatory requirements;
- Subject to the required conditions and limitations of the full-power license and satisfactory completion of the ITAAC, **there is reasonable assurance** that adequate protective measures can and will be taken in the event of a radiological emergency at the new unit(s), and that emergency preparedness at the PSEG Site is adequate to support full power operations.

Fukushima Near-term Task Force Recommendations

Tier 1, 9.3 – Emergency Preparedness Staffing and Communications

- Since the application is PPE based, staff proposed two **Permit Conditions** for COL applicant to describe in the emergency plan, enhanced staffing and communications capabilities.

Conclusions

U.S.NRC
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Protecting People and the Environment

- Staff found PSEG's PPE values reasonable
- PSEG provided sufficient design information to perform analysis required by 10 CFR 52.17(a)(1) to determine the adequacy of the proposed exclusion area boundary (EAB) and low population zone (LPZ)
- PSEG performed analysis for a broad spectrum of representative postulated design basis accidents (DBAs) to determine bounding radiological consequences
- Staff proposed for inclusion in the ESP, site characteristics and a bounding design parameter

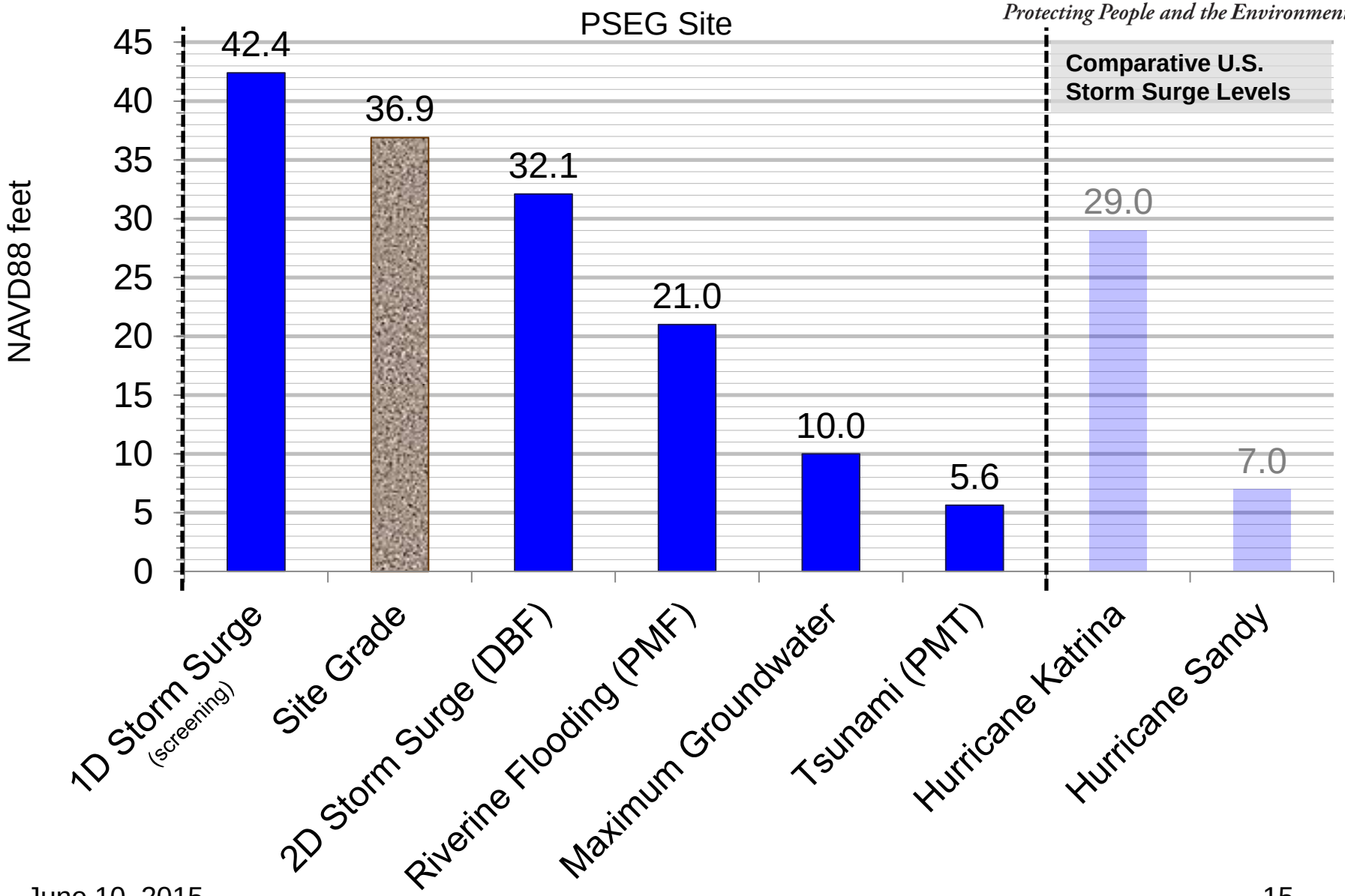
Conclusions

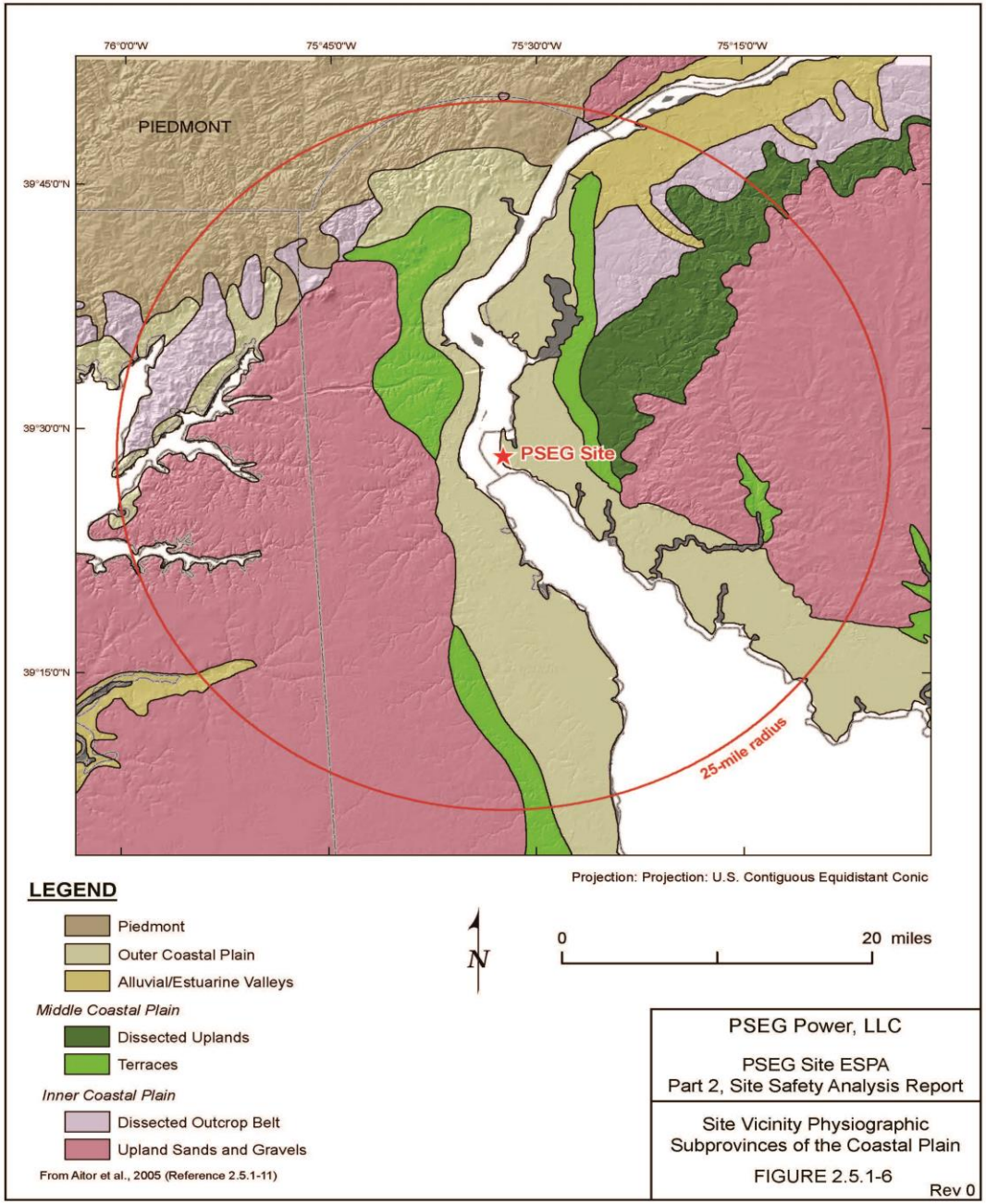
United States Nuclear Regulatory Commission
Protecting People and the Environment

Based on review of PSEG's Site Safety Analysis Report (SSAR), and Emergency Planning (EP) Information, staff concludes that -

- PSEG ESP site characteristics comply with 10 CFR Part 100, "Reactor Site Criteria"
- Subject to Staff's proposed conditions, one or two reactors, having characteristics within the site parameters, can be constructed and operated without undue risk to public health and safety
- Proposed EP ITAAC are necessary and sufficient

Water Levels and PSEG ESP Site Grade





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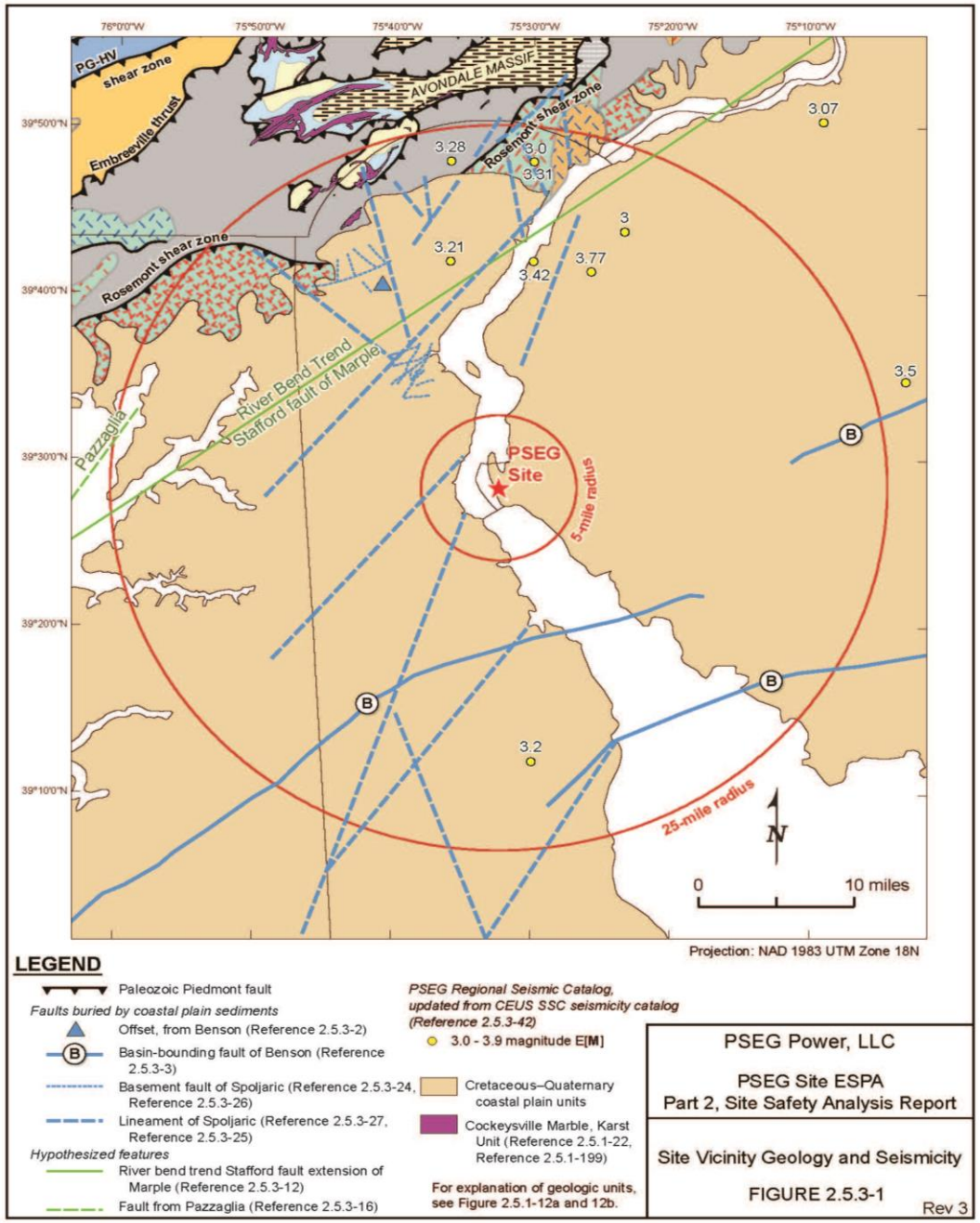
PSEG ESP site is located in the Outer Coastal Plain sub-province of the Coastal Plain physiographic province on the east side of the Delaware River.



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Locations of regional faults hypothesized by Pazzaglia (1993) and Marple (2004) to extend into the PSEG ESP site vicinity.

Based on field data, other proposed tectonic features shown in the site vicinity are not Quaternary in age, if they exist, and some features (i.e., the lineaments) are non-tectonic in origin.

Seismicity Updates

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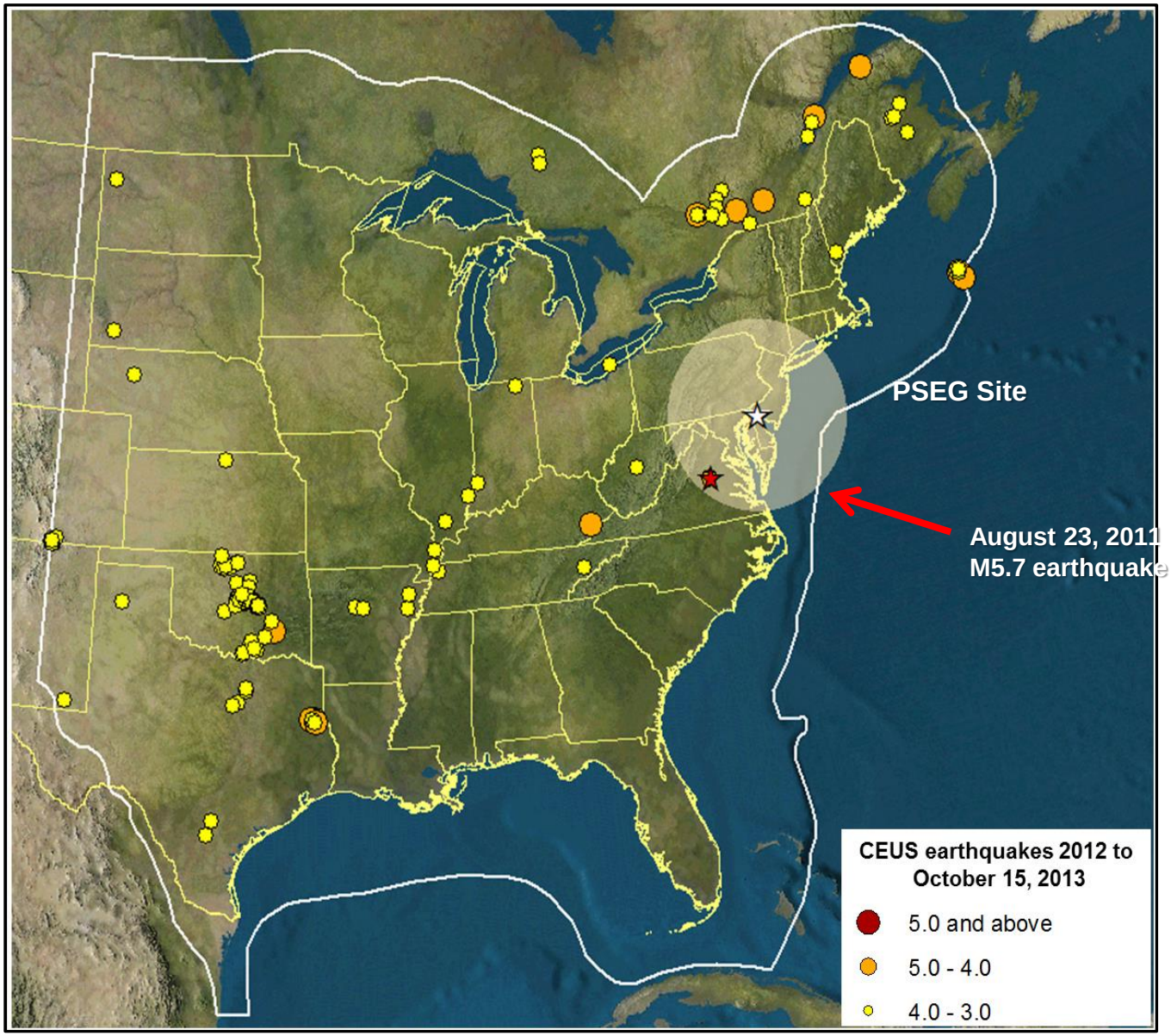
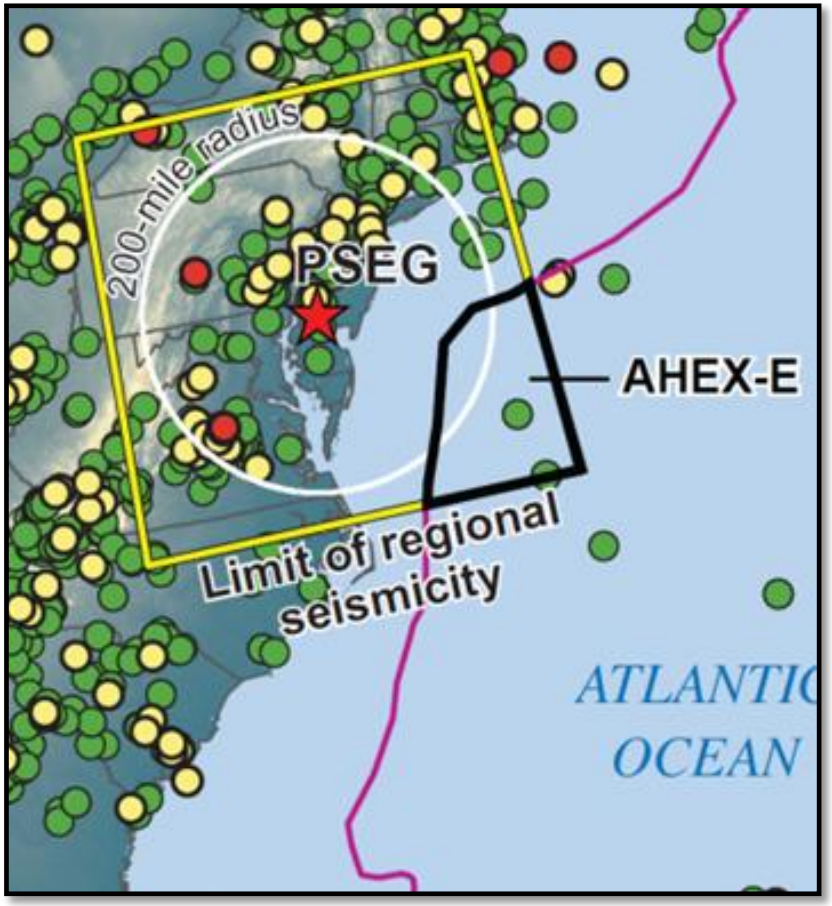


USGS Advanced National Seismic Network Catalog (ANSS)

Seismic Source Updates: AHEX-E

- NUREG-2115 model boundary does not cover the 320 km (200 mi) PSEG site region
- Applicant created a new seismic source zone (AHEX-E)
- Staff evaluation concluded that seismicity is very limited in this region, therefore there is no significant impact on the total seismic hazard calculations.
- Staff concludes PSHA inputs are consistent with RG 1.208



(Subset of Figure 2.5.2-57 from SSAR)

PSHA Confirmatory Calculations

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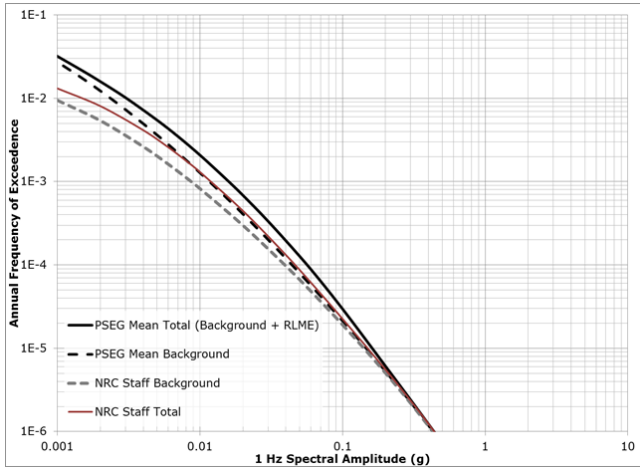
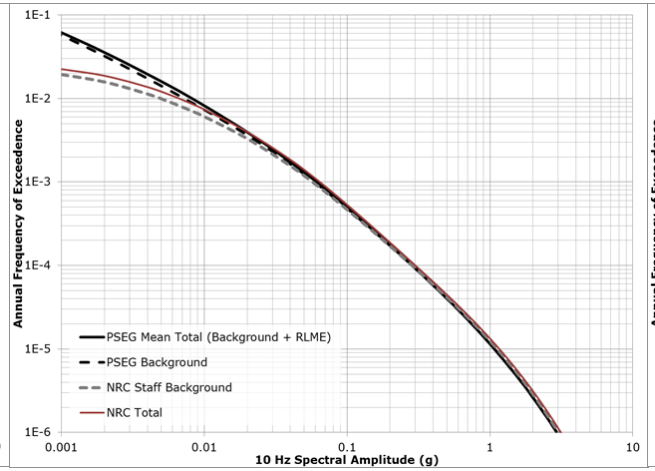
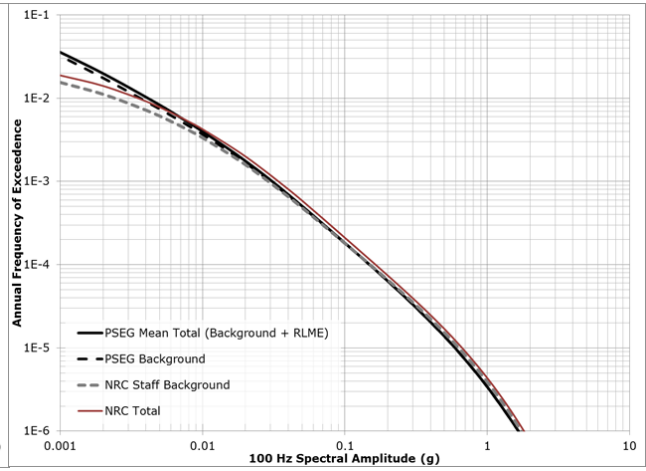
1 Hz **10 Hz** **100 Hz**

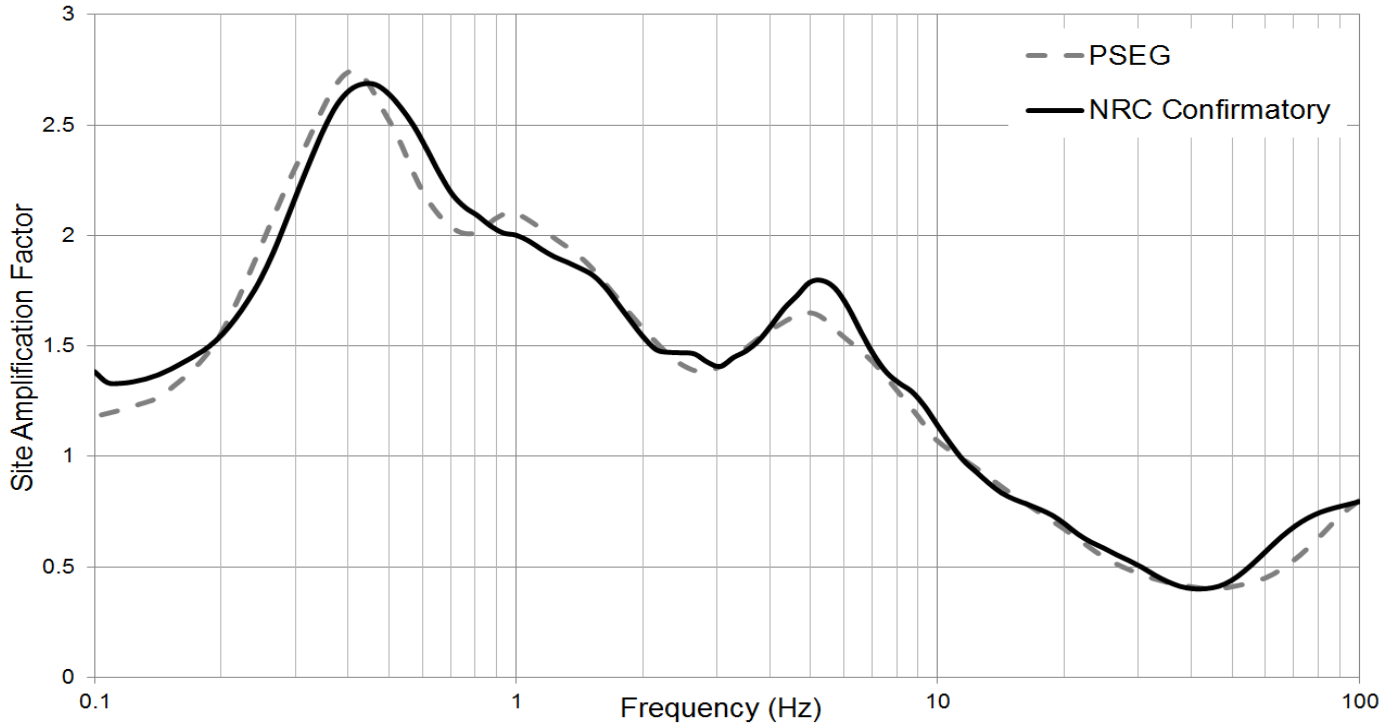






Staff independently calculated seismic hazard curves at the PSEG site. Comparisons show that the seismic hazard curves are in good agreement at the annual frequency of exceedances of interest: 10^{-4}, 10^{-5}, and 10^{-6}

Site Response Confirmatory Calculations



- Staff conducted confirmatory site response calculations using the same input parameters used by the applicant
- Staff also conducted alternative calculations to investigate potential impacts of parameter uncertainty in the calculations

Mitigating Strategies Assessment NEI 12-06, Appendix G

ACRS Full Committee Meeting

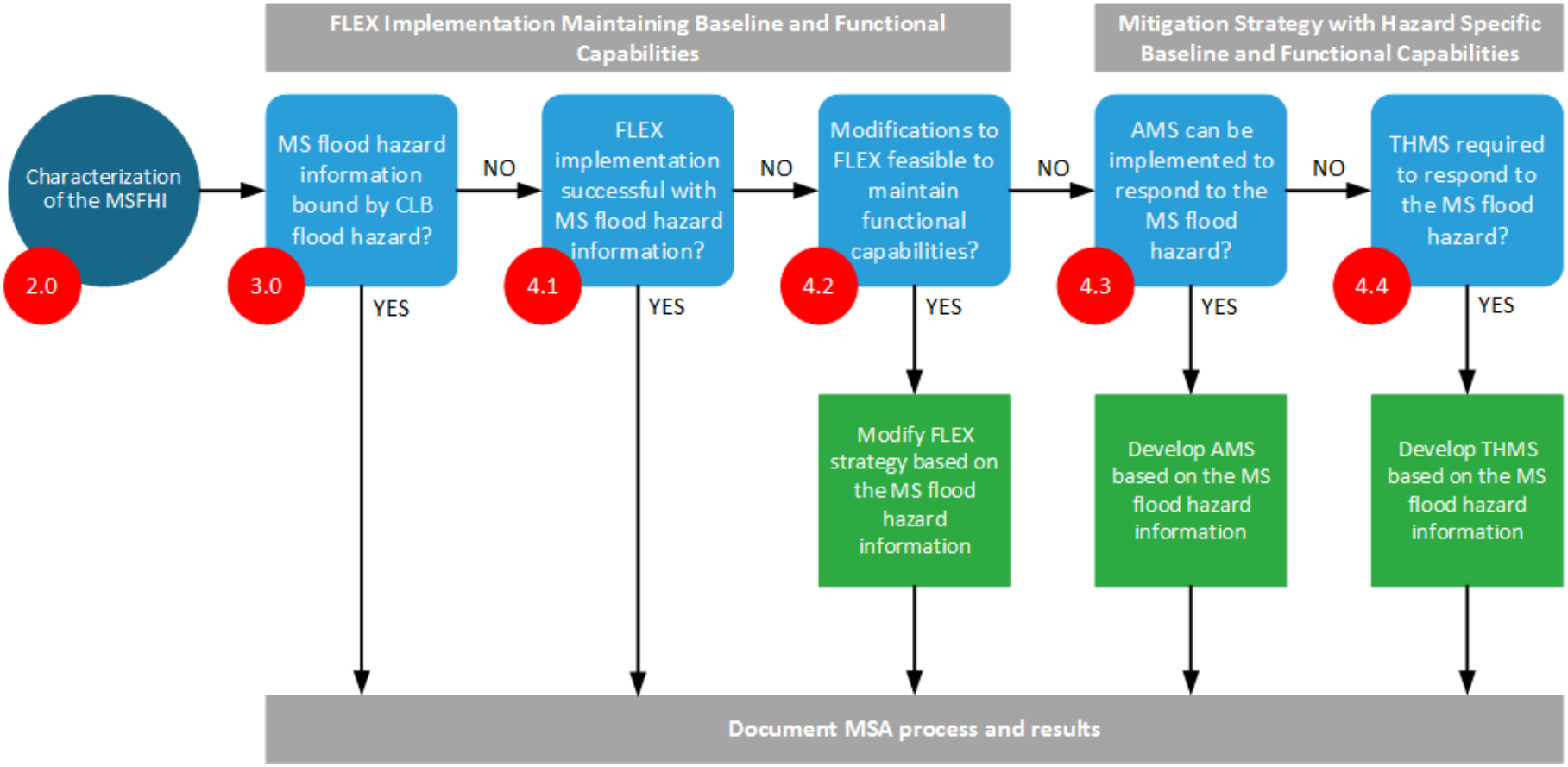
June 10, 2015

Jim Riley, Sr. Technical Advisor, NEI

Appendix G- Reevaluated Flood Hazard

- Provides five paths for Mitigation Strategies Assessment (MSA):
  - Use FLEX as is (2 of these)
  - Modify FLEX
  - Develop an Alternate Mitigating Strategy (AMS)
  - Develop a Targeted Hazard Mitigating Strategy (THMS)

NEI 12-06 App G
Mitigating Strategies Assessment



Approach

- Consistent with concepts in SRM to COMSECY 14-0037
- Scope
  - Evaluates implementation of all three phases of mitigating strategies under the conditions associated with the flood evaluation completed in response to the 50.54(f) letter
- Technical
  - Design guidance in NEI 12-06
  - Uses FLEX Validation process for operator actions (in NEI 12-06, rev 1)

Status

- Submitted to the NRC on April 27, 2015
- NRC comments received on May 11th and June 2nd
- Industry - NRC meetings on May 21st and June 17th
- No apparent significant issues remain
- Goals
  - Completed document to accompany the MBDBE rulemaking package in July
  - NRC endorsement by September
  - Most licensees complete MSAs by the end of 2016

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Mitigation of Beyond-Design-Basis Events (MBDBE) Proposed Rulemaking

Advisory Committee on Reactor Safeguards

Full Committee

June 10, 2015

Staff Response to ACRS April 22, 2015 Letter

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- ACRS Conclusion and Recommendation 1:
  - NRC staff will consider requests for comment period extensions
  - These requests will be balanced against the schedule to provide a final rule to the Commission in 12/2016
  - Staff agrees with the ACRS on the need to have complete guidance issued with the proposed rule
- ACRS Conclusion and Recommendation 2:
  - Staff continues to conclude that a broader consideration of integration should remain a Tier 3 task.
  - Current proposed rule does not include a requirement for such integration

Staff Response to ACRS April 22, 2015 Letter

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- Other ACRS Issues:
  - Staff did not address other issues raised in the ACRS letter
    - Design features for new (future) reactors
    - Training requirements
    - SAMG requirements
  - Staff expects that these issues will continue to be points of discussion with ACRS and external stakeholders as we continue with our interactions on this rulemaking

Update of Status of Guidance Development

- Since our meeting with the ACRS in April 2015 we have continued to make progress on development of supporting guidance
- Public meeting discussing guidance to address reevaluated hazards held on May 21 and scheduled for June 17
- Flooding reevaluated hazard guidance:
  - To be included in NEI 12-06 as Appendix G following June 17 meeting
  - Staff will address in DG-1301
- Seismic reevaluated hazard guidance:
  - Staff will address in DG-1301
  - Staff believes that external stakeholders could provide comments and/or guidance during public comment period for the proposed rule to inform development of final guidance

Status and Path Forward

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- The CER process requires that staff publish draft guidance with the proposed rule
  - Unless the Commission directs otherwise – staff will be required to meet this process requirement
- We are working to provide a sufficient level of detail in DG-1301 to meet the intent of CER
- Staff expects that by the final rule – complete guidance will be available
- Guidance for addressing reasonable protection is key to meeting 2 year implementation deadline

Backup Slide – CEUS SSC Corrected Mmax Values

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On July 28, 2014, EPRI notified the NRC of an error in the CEUS SSC report (ADAMS Accession No. ML14260A280).

Published and Corrected Mmax Values

PEZ-N		PEZ-W		IBEB	
CEUS SSC Report	Corrected Value	CEUS SSC Report	Corrected Value	CEUS SSC Report	Corrected Value
5.9	6.0	5.9	6.0	6.5	6.4
6.4	6.5	6.4	6.4	6.9	6.7
6.8	6.9	6.8	6.9	7.4	7.0
7.2	7.4	7.2	7.4	7.8	7.3
7.9	8.0	7.9	8.0	8.1	7.9

Backup Slide – CEUS SSC Corrected Mmax Values

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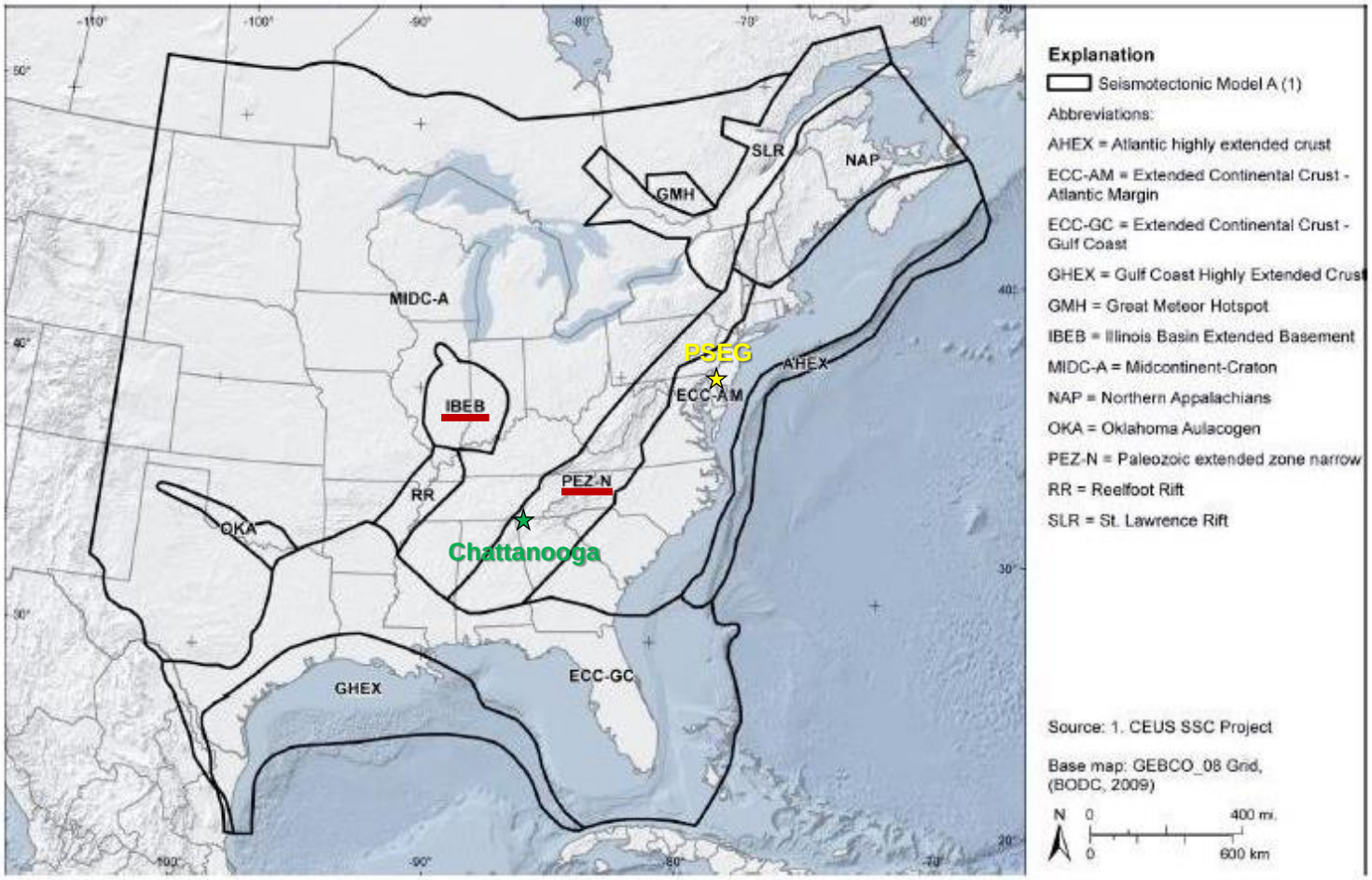

Backup Slide – CEUS SSC Corrected Mmax Values

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EPRI's Preliminary Sensitivity Study Results for the Chattanooga CEUS SSC test site (ADAMS Accession No. ML14260A280).

		Seismic Hazard			Equivalent GMRS at Hard Rock		
Frequency	Annual Exceedance Frequency	Using CEUS SSC Report Mmax (g)	Using Corrected Mmax (g)	Change (%)	Using CEUS SSC Report Mmax (g)	Using Corrected Mmax (g)	Change (%)
PGA	1.00E-04	0.338	0.340	0.6%	0.526	0.531	0.9%
	1.00E-05	1.113	1.124	1.0%			
	1.00E-06	2.592	2.622	1.2%			
10 Hz PSA	1.00E-04	0.624	0.629	0.8%	0.937	0.947	1.1%
	1.00E-05	1.963	1.986	1.27%			
	1.00E-06	4.542	4.610	1.5%			
1 Hz PSA	1.00E-04	0.115	0.116	0.9%	0.144	0.146	1.3%
	1.00E-05	0.288	0.292	1.4%			
	1.00E-06	0.677	0.698	3.1%			

Backup Slide – CEUS SSC Corrected Mmax Values

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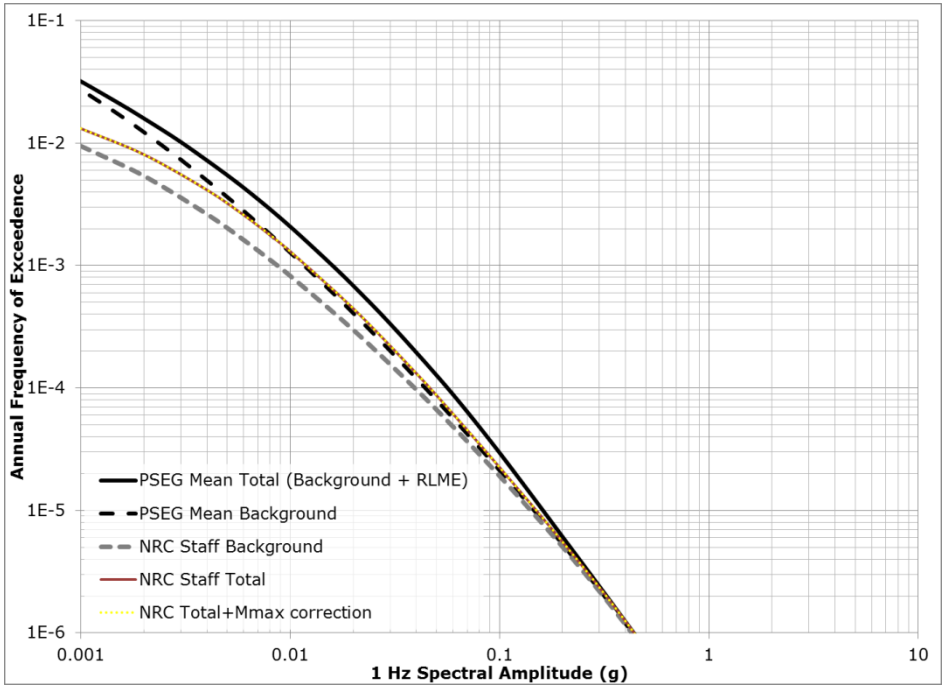
NRC staff's independent confirmatory calculations for the PSEG site

Frequency	10^{-4} UHRS change (%)	10^{-5} UHRS change (%)
0.5	0.0	0.2445
1	0.2157	0.0667
2.5	0.1934	0.0267
5	0.0487	0.0131
10	0.0665	0.0
25	0.0406	0.0055
100	0.0	0.0



Backup Slide – Induced Earthquakes

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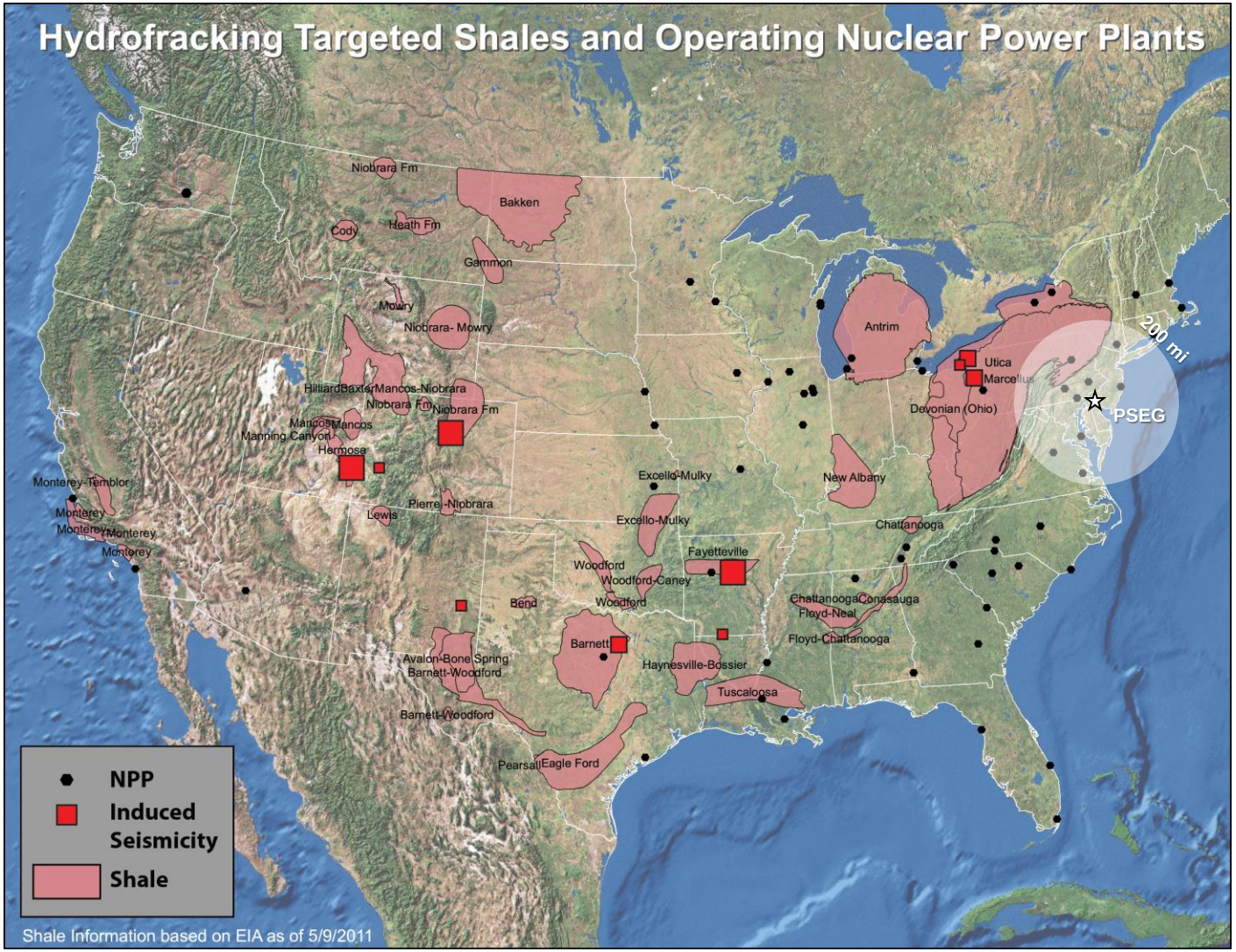
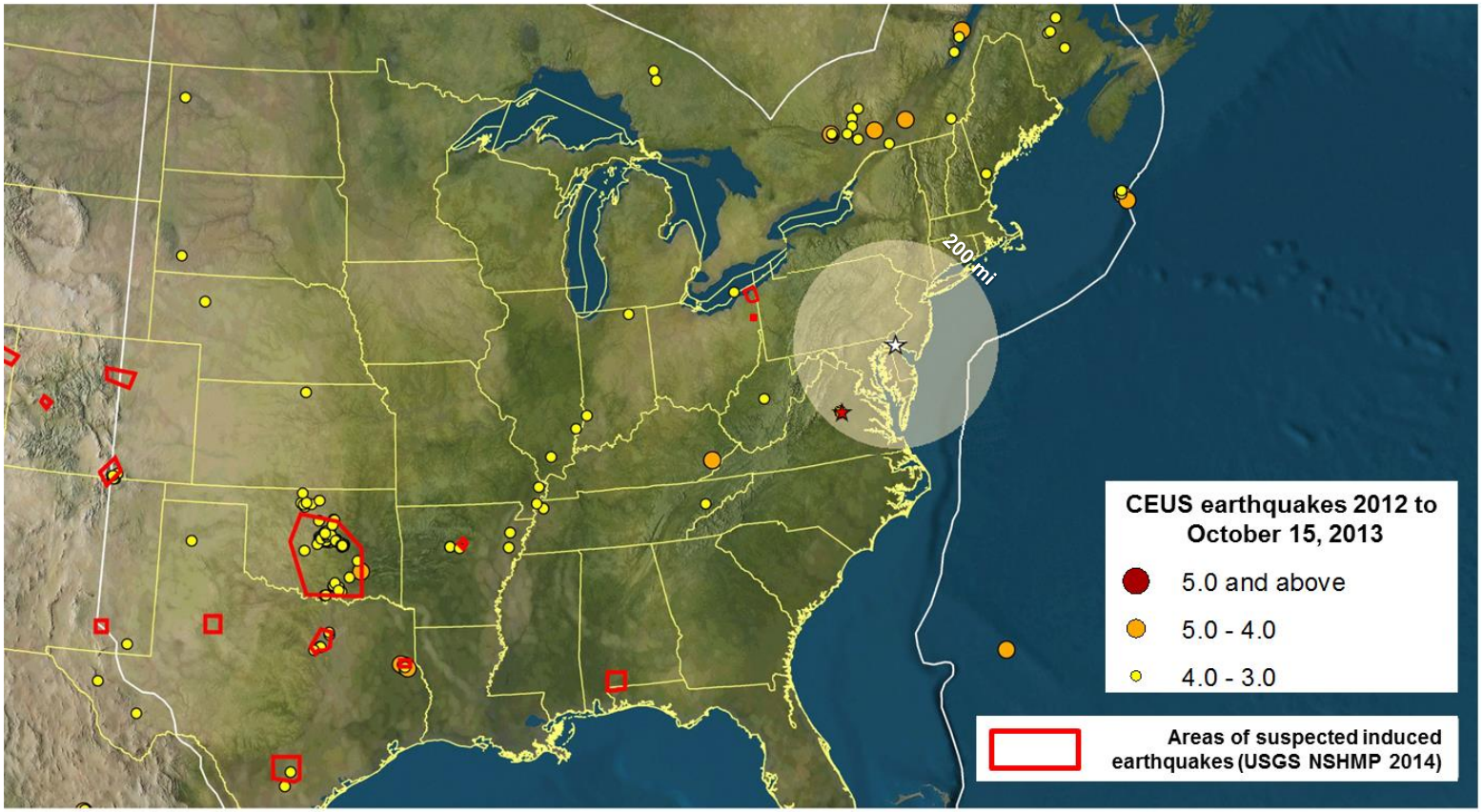


Backup Slide – Induced Earthquakes



- Map showing areas of suspected induced seismicity in the CEUS (red polygons), as defined by USGS NSHMP 2014. Figure modified from SER Figure 2.5.2-6.
- Areas of suspected induced seismicity, as defined by USGS NSHMP 2014, that are closest to PSEG Site are those areas in Ohio. The Ohio areas are located ≥ 482 km (300 mi) from the PSEG Site.

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ACRS 624th Full Committee Meeting

Summary of ROP Assessments for CY2014

Gordon Skillman, ACRS

June 10, 2015

CY2014 ROP

Total Number of Plants in ROP Evaluation:

Region I = 25

Region II = 33

Region III = 23

Region IV = 18

TOTAL = 99

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CY2014 ROP

Inspection Findings – Quantitative Thresholds

Red	
CDF	greater than 10-4ΔCDF or
LERF	greater than 10-5 ΔLERF

Yellow	
CDF	greater than 10-5 and less than or equal to 10-4 ΔCDF or
LERF	greater than 10-6 and less than or equal to 10-5 ΔLERF

White	
CDF	greater than 10-6 and less than or equal to 10-5 ΔCDF or
LERF	greater than 10-7 and less than or equal to 10-6 ΔLERF

Green	
CDF	less than or equal to 10-6 ΔCDF or
LERF	less than or equal to 10-7 ΔLERF

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CY2014 ROP

Performance Indicators

- **Green: performance within an expected level where all cornerstone objectives are met**
- **White: performance outside an expected range of nominal utility performance but related cornerstone objectives are met**
- **Yellow: related cornerstone objectives are met, but with a minimal reduction in safety margin**
- **Red: significant reduction in safety margin in area measured by the PI**

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CY2014 ROP

Performance Indicators

- **Three White**
  - **Fitzpatrick: Unplanned Power Changes per 7000 Critical Hours**

White Threshold > 6.0			
1Q	**2Q**	**3Q**	**4Q**
18.4	23.2	27.7	26.4

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CY2014 ROP

Performance Indicators

– **River Bend 1: Unplanned Scrams with Complications**

White Threshold > 1.0			
1Q	**2Q**	**3Q**	**4Q**
0.0	0.0	0.0	2.0

– **Salem 1: Unplanned Scrams per 7000 Critical Hours**

White Threshold > 3.0			
1Q	**2Q**	**3Q**	**4Q**
0.0	2.5	2.5	3.6

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CY2014 ROP

Inspection Findings

(Qualitative Definitions)

- **Green: a finding of very low safety or security significance**
- **White: a finding of low to moderate safety or security significance**
- **Yellow: a finding of substantial safety or secuirty significance**
- **Red: a finding of high safety or security significance**

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CY2014 ROP

ROP Action Matrix Assessment

- **Column 5: Unacceptable Performance**
- **Column 4: Multiple/Repetitive Degraded Cornerstone**
- **Column 3 Degraded Cornerstone**
- **Column 2: Regulatory Response**
- **Column 1: Licensee Response**

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CY2014 ROP

ROP Action Matrix Assessment

Number of Plants in Each Column (as of 4/1/15)				
Col 1	Col 2	Col 3	Col 4	Col 5
Licensee Response	Regulatory Response	Degraded Cornerstone	Multiple/Repetitive Degraded Cornerstone	Unacceptable
81	16	1	2	0

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CY2014 ROP

CY 2014 Inspection Findings

Insp. Find.	Number of Plants						
	Safety Cornerstone						
	Initiating Events	**Mitigating Systems**	**Barrier Integrity**	**Emerg. Prep.**	**Occ. Rad Safety**	**Pub. Rad. Safety**	**Security**
Red	0	0	0	0	0	0	0
Yellow	2	2	0	0	0	0	0
White	3	6	0	4	1	0	0
GTG	0	0	0	0	0	0	8
Green	60	86	52	35	27	9	49

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CY2014 ROP

Inspection Findings

- **Four Yellows**
  - **Two Each at Arkansas 1 and 2:**
    - **Initiating Events Cornerstone**
    - **Mitigating Systems Cornerstone**

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CY2014 ROP

Inspection Findings

- **Four Yellows** - Both each at **Arkansas 1 and 2:**
  - **Initiating Events Cornerstone:**
    - **Failure to Follow the Materials Handling Program during the Unit 1 Generator Stator Move**
    - 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings"
    - Initial CDF = 3.8E-4 (Red), subsequently lowered to Yellow
  - **Mitigating Systems Cornerstone:**
    - **Inadequate Flood Protection for Auxiliary and Emergency Diesel Fuel Storage Buildings**
    - 10 CFR Part 50, Appendix B, Criterion III, "Design Control"
    - 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings"
    - CDF = 1.0E-4

Update: CY2014 ROP

Arkansas 1 and 2

- 1st QTR CY2015: Revised Unplanned Scrams per 7,000 Critical Hours PI in the Initiating Events Cornerstone for Unit 2 so it will be White for the 2nd and 3rd QTRs of 2014, and Green for the 4th quarter of 2014
- Therefore - Placed in Column Four - Multiple/Repetitive Degraded Cornerstone
- NRC will be conducting Special Inspection 95003, “Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs or One Red Input.”

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CY2014 ROP

Inspection Findings

- **14 Whites**
  - **6 in Mitigating Systems Cornerstone:**
    - **Various Systems / Causes**
  - **4 in Emergency Preparedness Cornerstone:**
    - **3 for inaccurate or non-conservative EALs**

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CY2014 ROP

Inspection Findings

- **8 Greater-Than-Green**
  - **All in Security Cornerstone:**
    - **Not Publicly Available**

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CY2014 ROP

Open Cross-Cutting Issues

- **All Under "Human Performance"**
  - **Duane Arnold**
    - **SCCI H.13 –** "Consistent Process"
  - **Monticello**
    - **SCCI H.14 –** "Conservative Bias"
  - **Prairie Island 1 and 2**
    - **SCCI H.7 –** "Documentation"

Open Cross-Cutting Issues

- **Duane Arnold – SCCI H.13 – "Consistent Process"**
  - **Four 2014 inspection findings with this CCI**
  - **Also identified in Mid-Year 2012 – CAs implemented**
  - **2013 observed progress, but NRC remained concerned**

  - **Will remain open until:**
    - **Findings drops under four**
    - **CAs are proven effective**
    - **Sustained performance in H.13 is observed**

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CY2014 ROP

Open Cross-Cutting Issues

- **Monticello – SCCI H.14 – "Conservative Bias"**
  - **Adverse trend in this CCI identified in Oct 2013**
  - **Five inspection findings with this CCI in four straight quarters**
  - **CCI identified at Mid-Year 2014**
  - **Delays in responding with cause evaluation**

  - **Root Cause now completed and CAs implemented, but not all completed**
  - **Will remain open until:**
    - **Findings are reduced to below four (one finding was closed between Mid and End-Year)**
    - **CAs are proven effective**
    - **Sustained performance in H.14 is observed**

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CY2014 ROP

Open Cross-Cutting Issues

- **Prairie Island – SCCI H.7 – "Documentation"**
  - **Four inspection findings with this CCI in four straight quarters**
  - **CCI identified at Mid-Year 2014**
  - **Second year annual assessment has this SCCI concern**
  - **Root Cause completed and CAs implemented, but not all completed**

  - **Will remain open until:**
    - **Findings are reduced to below four**
    - **CAs are proven effective**
    - **Sustained performance in H.7 is observed**

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CY2014 ROP

Fitness for Duty*

- **Overall industry positive rate = 0.62%**
  - **Low and consistent with previous years**
- **Total test in CY2013 declined by 9.7%**
  - **First drop since 2002**
- **Approx 65% of positives and refusals occur at pre-access**
  - **Prevents access, directly protecting public health and safety**
- **Pre-access testing identified 76% of subversion attempts**

* 2013 Data; 2014 Data not yet available.

Fitness for Duty (cont.)

- **Three substances accounted for 81% of positives**
  - **Marijuana, Alcohol, Cocaine**
- **Amphetamine positives continued to increase**
  - **Increase is 5th year in a row**
- **Approx 65% of positives and refusals occur at pre-access**
  - **Prevents access, directly protecting public health and safety**
- **Reactor construction sites conducted 5.8% of tests**
  - **But accounted for 17.7% of positives**

Fitness for Duty (cont.)

- **Limit of Detection (LOD) testing significantly improves detection**
- **Forty 24-hour reportable events resulted**
  - **17 involved Supervisors**
  - **12 involved NRC-Licensed Operators**
- **Fifteen 30-day reports**
  - **166% increase from previous year**
  - **13 of 15 involved process/procedure problems with blind performance test samples (BPTS)**

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Questions?

Backup Slides

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CY2014 ROP

ROP Action Matrix Assessment Definitions

- **Column 5: Unacceptable Performance**
  - Case-by-case determination where NRC lacks reasonable assurance that the licensee can or will conduct its activities to ensure protection of public health and safety
  - Usually preceded by Column 4 and put under IMC 0350
- **Column 4: Multiple/Repetitive Degraded Cornerstone**
  - Repetitive degraded cornerstone, multiple degraded cornerstone, or multiple Yellows, or one Red
- **Column 3 Degraded Cornerstone**
  - One degraded cornerstone (two Whites or one Yellow or three Whites in one strategic area)
- **Column 2: Regulatory Response**
  - No more than two Whites in different cornerstones
- **Column 1: Licensee Response**
  - All performance indicators and cornerstone inspection findings Green

CY2014 ROP

Elements of Special Inspection 95003

- 1) provide the NRC with additional information to be used in deciding whether the continued operation of the facility is acceptable and whether additional regulatory actions are necessary to arrest declining licensee/plant performance
- 2) provide an independent assessment of the extent of risk-significant issues to aid in the determination of whether an unacceptable margin of safety or security exists
- 3) independently assess the adequacy of the programs and processes used by the licensee to identify, evaluate, and correct performance issues
- 4) independently evaluate the adequacy of programs and processes in the affected strategic performance areas
- 5) provide insight into the overall root and contributing causes of identified performance deficiencies; and
- 6) evaluate the licensee's third-party safety culture assessment and conduct a graded assessment of the licensee's safety culture based on the results of the evaluation.