

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of

DUKE ENERGY CAROLINAS, LLC

(William States Lee III Nuclear Station, Units 1 and 2)

Docket Nos. 52-018-COL
52-019-COL

ORDER
(Setting Deadline for Proposed Transcript Corrections)

The Commission held an evidentiary hearing on October 5, 2016, at its Rockville, Maryland headquarters to receive testimony and exhibits in the uncontested portion of the captioned proceeding. The hearing transcript is appended to this Order. Pursuant to my authority under 10 C.F.R. § 2.346(a) and (j), the parties may file any proposed transcript corrections no later than October 17, 2016. Transcript corrections should be limited to the identification of transcription errors that are material to the substance of the testimony or statements involved. The parties may coordinate their responses and file a joint set of corrections.

IT IS SO ORDERED.

For the Commission

NRC SEAL

/RA/

Annette L. Vietti-Cook
Secretary of the Commission

Dated at Rockville, Maryland,
this 11th day of October, 2016.

Official Transcript of Proceedings

NUCLEAR REGULATORY COMMISSION

Title: Hearing on Combined Licenses for William
States Lee III Nuclear Station, Units 1 and 2:
Section 189a of the Atomic Energy Act

Docket Number: N/A

Location: Rockville, Maryland

Date: October 5, 2016

Work Order No.: NRC-2611

Pages 1-161

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1 UNITED STATES OF AMERICA

2 NUCLEAR REGULATORY COMMISSION

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4 HEARING ON COMBINED LICENSES FOR WILLIAM STATES LEE

5 III NUCLEAR STATION, UNITS 1 AND 2: SECTION 189a OF

6 THE ATOMIC ENERGY ACT

7 + + + + +

8 WEDNESDAY,

9 OCTOBER 5, 2016

10 + + + + +

11 ROCKVILLE, MARYLAND

12 + + + + +

13 The Commission met in the Commissioners'

14 Hearing Room at the Nuclear Regulatory Commission, One

15 White Flint North, 11555 Rockville Pike, at 9:00 a.m.,

16 Stephen G. Burns, Chairman, presiding.

17 COMMISSION MEMBERS:

18 STEPHEN G. BURNS, Chairman

19 KRISTINE L. SVINICKI, Commissioner

20 JEFF BARAN, Commissioner

21
22 ALSO PRESENT:

23 ANNETTE VIETTI-COOK, Secretary of the Commission

24 MARGARET DOANE, General Counsel

25

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1 NRC STAFF:

2 FRANCIS AKSTULEWICZ, Direct, Division of New Reactor
3 Licensing (DNRL), Office of New Reactors (NRO)

4 DAN BARSS, Office of Nuclear Security and Incident
5 Response

6 PEYTON DOUB, Office of New Reactors (NRO)

7 BRIAN HUGHES, Senior Project Manager, Office of New
8 Reactors (NRO)

9 ANDREW KUGLER, Office of New Reactors (NRO)

10 SAMUEL LEE, Acting Deputy Director, Division of New
11 Reactor Licensing (DNRL), Office of New
12 Reactors (NRO)

13 VONNA ORDAZ, Deputy Director, Office of New Reactors
14 (NRO)

15 ROBERT ROCHE-RIVERA, Structural Engineer, Office of
16 New Reactors (NRO)

17 GERRY STIREWALT, Office of New Reactors (NRO)

18 KENNETH THOMAS, Emergency Preparedness Specialist,
19 Nuclear Security and Incident Response

20 PATRICIA VOKOUN, Project Manager, Office of New
21 Reactors (NRO)

22 MEGAN WRIGHT, Counsel for NRC Staff

23
24 ALSO PRESENT:

25 CHRISTOPHER FALLON, Vice President, Nuclear

1 Development, Duke Energy
2 ROBERT KITCHEN, Director, Licensing Nuclear
3 Development, Duke Energy
4 DAVID LEWIS, Attorney, Pillsbury Winthrop Shaw
5 Pittman
6 PAUL SNEAD, Manager, Siting and Licensing Support,
7 Duke Energy
8 LAWRENCE TAYLOR, Lead, Procedure and Program
9 Development, Nuclear Development, Duke Energy
10 JOHN THRASHER, Director, Engineering Nuclear
11 Development, Duke Energy
12 LANCE VAIL, Senior Research Engineer, Pacific
13 Northwest National Laboratory

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

<u>Exhibits:</u>	<u>Marked</u>	<u>Received</u>
DEC 1-21	13	13
NRC 1-14R	17	17

P R O C E E D I N G S

8:53 a.m.

CHAIRMAN BURNS: Before we proceed to this morning's hearing, we have an affirmation item to come before us and I'll ask the Secretary to read us through that please.

MS. VIETTI-COOK: This matter involves the application of the U.S. Department of Energy National Nuclear Security Administration to export up to 130 kilograms of highly enriched uranium to France's CERCA facility at the Institute Laue-Langevin. The Commission is being asked to act on a Memorandum and Order that would respond to a request for hearing and petition to intervene filed by Dr. Allen Kuperman on his export license application.

The Commission has voted to approve a Memorandum and Order that denies Dr. Kuperman's hearing request and directs the Office of International Programs to issue the export license. Would you please affirm your votes?

(Chorus of ayes.)

MS. VIETTI-COOK: That's all I have. Thank you.

CHAIRMAN BURNS: All right. We'll close the affirmation session and then we'll proceed to

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1 today's hearing. I'll ask counsel to come to the
2 table for the applicant and for the staff. While
3 they're getting settled, I want to welcome Duke Energy
4 Carolinas, members of the NRC staff, members of the
5 public and those who may be observing or listening to
6 today's hearing remotely.

7 The Commission is hear to conduct an
8 evidentiary hearing on Duke Energy Carolinas'
9 application for combined licenses to construct and
10 operate two new nuclear power plants at a site in
11 Cherokee County, South Carolina. This hearing is
12 required under Section 189 of the Atomic Energy Act of
13 1954, as amended.

14 The Commission will also be reviewing the
15 adequacy of NRC's staff environmental impact analysis
16 under the National Environmental Policy Act of 1969,
17 commonly referred to as NEPA. The general order of
18 the hearing is as follows:

19 Duke and the staff will provide testimony
20 and witness panels that provide an overview of the
21 application, as well as address safety and
22 environmental issues associated with its review, with
23 Commission questions following the panels.

24 The Commission expects to issue a decision
25 after the hearing promptly with due regard to the

1 complexity of the issues after it makes the following
2 necessary findings. On the safety side, the
3 Commission will determine (1) whether the applicable
4 standards and requirements of the Atomic Energy Act
5 and the Commission's regulations, specifically those
6 in 10 C.F.R. Section 52.97 have been met; (2) whether
7 any required notifications to other agencies or bodies
8 have been duly made; (3) whether there is reasonable
9 assurance that the facility will be constructed and
10 will operate in conformity with the license, the
11 provisions of the Atomic Energy Act and the
12 Commission's regulations; (4) whether the applicant is
13 technically and financially qualified to engage in the
14 authorized activities; and (5) whether issuance of the
15 license would be inimical to the common defense and
16 security or to the health and safety of the public.

17 On the environmental side, under 10 C.F.R.
18 51.107 subparagraph (a), the Commission will (1)
19 determine whether the requirements of the National
20 Environmental Policy Act, Sections 102(2)(a) and
21 (2)(c) and (2)(e) and the applicable regulations in 10
22 C.F.R. Part 51 have been met.

23 Second, independently consider the final
24 balance among conflicting factors contained in the
25 record of the proceeding, with a view to determining

1 the appropriate action to be taken, and (3) determine
2 after weighing the environmental, economic, technical
3 and other benefits against environmental and other
4 costs and considering reasonable alternatives, whether
5 the combined license should be issued, denied or
6 appropriately conditioned to protect environmental
7 values; and (4) determine whether the NEPA review
8 conducted by the staff has been adequate.

9 This meeting is open to the public and we
10 do not anticipate the need to close the meeting to
11 discuss non-public information. However, if a party
12 believes that the response to a question may require
13 reference to non-public information, then that party
14 should answer the question to the extent practicable
15 with the information in the publicly available record,
16 and file any non-public response promptly after the
17 hearing on the non-public docket.

18 Before we proceed, I'd ask my fellow
19 Commissioners whether they have any opening remarks.
20 Commissioner Svinicki.

21 COMMISSIONER SVINICKI: Thank you Mr.
22 Chairman. Good morning, and I join you in welcoming
23 the applicant witnesses and the many staff experts who
24 are gathered here today to engage in a defense of
25 their review of the application. This seems like it's

1 deja-vu all over again, because we recently had a
2 mandatory hearing not dissimilar from today and I
3 think I was noting this morning, I think this has to
4 be true, that at this point Mr. Chairman, you have
5 presided over more Part 52 COL mandatory hearings than
6 any chairman in the history of the NRC.

7 I realize there's some artificialities in
8 that statistic. But I congratulate you on that and --

9 CHAIRMAN BURNS: We'll go for a win
10 wherever we get it.

11 COMMISSIONER SVINICKI: Okay, there you
12 go. All right. Well thank you again.

13 CHAIRMAN BURNS: Thanks Commissioner.
14 Commissioner Baran.

15 COMMISSIONER BARAN: Well I also want to
16 thank the witness and the staff and from Duke in
17 advance for their preparation. I know it takes time
18 to prepare, but I think these uncontested hearings are
19 very valuable. This is the fifth uncontested hearing
20 during my time on the Commission and your time as
21 chairman, and although we haven't been here for all
22 seven like Commissioner Svinicki has been, but I've
23 been consistently impressed with how helpful they are
24 to our deliberations on whether to issue a particular
25 combined license.

1 And my observation is that the hearings
2 are getting smoother and smoother as the staff and
3 applicants get more and more familiar with them. I
4 think the NRC staff at this point has gotten pretty
5 used to these, and I suspect actually the Duke folks
6 aren't far behind at this point. So I look forward to
7 your presentations and responses to our questions.
8 Thanks.

9 CHAIRMAN BURNS: Thank you, Commissioners.
10 We'll proceed now with some other preliminaries, and
11 first we'll start with the swearing of witnesses.
12 I'll ask counsel for Duke to introduce yourself.

13 MR. LEWIS: My name is David Lewis. I'm
14 from the law firm Pillsbury Winthrop Shaw Pittman,
15 representing Duke Energy.

16 COMMISSIONER SVINICKI: I think it was
17 off.

18 MR. LEWIS: Should I do it again?

19 CHAIRMAN BURNS: Yeah. I think that
20 probably would be a good idea.

21 MR. LEWIS: My name is David Lewis. I'm
22 from the law firm Pillsbury Winthrop Shaw Pittman, and
23 I'm representing Duke Energy.

24 CHAIRMAN BURNS: Okay, thanks. What I'm
25 going to ask you to do now counsel is read the names

1 of Duke's witnesses, and as the witness hears their
2 name read, I would ask them to stand.

3 MR. LEWIS: Duke's witnesses are Mr.
4 Christopher Fallon, Mr. Robert Kitchen, Mr. John
5 Thrasher, Mr. Lawrence Taylor and Mr. Paul Snead.

6 CHAIRMAN BURNS: Okay. Thanks gentlemen.
7 Is there any -- what I'm going to ask first is that
8 you raise your right hand while I read the oath, and
9 at the end of the oath obviously answer the question.
10 Do you swear or affirm that the testimony you will
11 provide in this proceeding is the truth, the whole
12 truth and nothing but the truth?

13 WITNESSES: I do.

14 CHAIRMAN BURNS: I acknowledge that each
15 of them answered affirmatively. Are there any
16 objections counsel for the staff, to including the
17 witness list as part of the record?

18 MS. WRIGHT: None from staff.

19 CHAIRMAN BURNS: Okay. In the absence of
20 objections, the witness list is admitted to the
21 record. And gentlemen, you may sit down. Thank you.
22 Now I'll ask counsel for Duke to -- I'll ask whether
23 there are any changes to your exhibit list for this
24 proceeding?

25 MR. LEWIS: There are no changes.

1 CHAIRMAN BURNS: Would you read the range
2 of numbers of the exhibits to be admitted?

3 MR. LEWIS: Yes. Duke Energy's exhibits
4 are Exhibit DEC-1 through DEC-11.

5 (Whereupon, the above-referred to
6 documents were marked as DEC Exhibit Nos. 1 through 11
7 for identification.)

8 CHAIRMAN BURNS: Okay, thank you. Is
9 there a -- do you move to admit the exhibits?

10 MR. LEWIS: Yes, we do.

11 CHAIRMAN BURNS: Okay. Any objection?

12 MS. WRIGHT: No objections.

13 CHAIRMAN BURNS: Okay. In the absence of
14 objections, the exhibits and the exhibit list are
15 admitted into the record. So now we'll turn to the
16 staff and go through the same. Counsel, would you
17 please introduce yourself?

18 (Whereupon, the above-referred to
19 documents were received into evidence as DEC Exhibit
20 Nos. 1 through 11.)

21 MS. WRIGHT: Certainly. I'm Megan Wright,
22 counsel for NRC staff.

23 CHAIRMAN BURNS: Okay. Would you again
24 read the names of staff witnesses, and as the witness
25 name is read, please stand and if you are -- if you

1 cannot see me, you need to move to a place where we
2 have eye contact, because I know in this room there's
3 some pillars. So counsel, I ask you to proceed with
4 the reading of the list.

5 MS. WRIGHT: There are 13 names on the
6 list that was filed on September 30th of the staff
7 witnesses that are not present. Would you like me to
8 read those as well, or just the witnesses that are
9 present?

10 CHAIRMAN BURNS: I think -- well, the
11 witnesses who are not present aren't going to provide
12 testimony today; correct?

13 MS. WRIGHT: We don't expect them to.

14 CHAIRMAN BURNS: Okay. So why don't you
15 just proceed with the ones who are here and we would
16 expect to hear testimony from today.

17 MS. WRIGHT: Okay, thank you. Okay. For
18 our safety witnesses, we have Frank Akstulewicz,
19 Clinton Ashley, Dan Barss, Anthony Bowers, Robert
20 Caldwell, David Curtis, Stephanie Devlin-Gill,
21 Jennifer Dixon-Herrity, Steven Downey, Robert
22 Fitzpatrick, John Frost, Greg Galletti, Joseph
23 Giancinto, Anne-Marie Grady, Vladimir Grazier, Zachary
24 Gran, Syed Haider, Charles Harbuck, Michelle Hart,
25 Shawn Harwell, Raul Hernandez, Kaihwa Hsu, Brian

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1 Hughes, Joel Jenkins, Henry Jones, James Kellum,
2 Edmund Kleeh, Ronald LaVera, Samuel Lee, Yueh Li, Kos
3 Lois, Timothy Lupold, Michael McCoppin, Matthew
4 Mitchell, John Monninger, Wendell Morton, Lynn Mrowca,
5 Charles Murray, Ryan Nolan, Eric Olvera, Vonna Ordaz,
6 Pravin Patel, Michael Patterson (sic), Paul Pieringer,
7 Meralis Plaza-Toledo, Kevin Quinlan, Sheila Ray,
8 Robert Roche-Rivera, John Rycyna, Sujit Samaddar,
9 Thomas Scarbrough, Gerry Stirewalt, Angelo Stubbs,
10 Edward Stutzcage, Emil Tabakov, Frank Talbot, Albert
11 Tardiff, Kenneth Thomas, Vaughn Thomas, Boyce Travis,
12 Richard Turtill, Jennifer Uhle, Robert Vettori, Weijun
13 Wang, Yuken Wong, Deanna Zhang and Jack Zhao.

14 CHAIRMAN BURNS: Okay, thanks. So I ask
15 the witnesses to raise their right hand while I read
16 the oath, and then answer the oath. Do you swear or
17 affirm that the testimony you will provide in this
18 proceeding is the truth, the whole truth and nothing
19 but the truth?

20 WITNESSES: I do.

21 CHAIRMAN BURNS: If anyone had a problem
22 with taking the oath, I want you to identify yourself.

23 (No response.)

24 CHAIRMAN BURNS: All right, there being
25 none, are there any objections to the witness list as

1 being made part of the record counsel?

2 MS. WRIGHT: Mr. Chairman, if I may, we
3 have some environmental witnesses as well.

4 CHAIRMAN BURNS: Oh we have? Okay. Well
5 let's -- the safety witnesses can sit down. That way
6 I can also, I think we can also see, distinguish who
7 they are. So we have no objection to the introduction
8 of the safety witnesses. I apologize counsel. Go
9 ahead and read the list of environmental witnesses.

10 MS. WRIGHT: Sure. It's much shorter, so
11 Jennifer David, Peyton Doub, Allen Fetter, Stacey
12 Imboden, Andrew Kugler, Michael Masnik, Donald
13 Pomrose, Lancy Vail and Patricia Vokoun.

14 CHAIRMAN BURNS: Okay. I'll ask you, as
15 with the others, to raise your right hand and answer
16 the question posed to you in the oath. Do you swear
17 or affirm that the testimony you will provide in this
18 proceeding is the truth, the whole truth and nothing
19 but the truth?

20 WITNESSES: I do.

21 CHAIRMAN BURNS: I do, thank you. You may
22 be seated. Are there any objections to the list or
23 the witnesses?

24 MR. LEWIS: No objection.

25 CHAIRMAN BURNS: Hearing none, they are so

1 admitted. We'll go then to the staff in terms of
2 admission of evidence. Counsel for the staff, are
3 there any changes to your exhibit list?

4 MS. WRIGHT: No, there are not.

5 CHAIRMAN BURNS: Would you read the range
6 of numbers in the exhibits to be admitted?

7 MS. WRIGHT: Certainly. It's NRC 001
8 through NRC 014R.

9 (Whereupon, the above-referred to
10 documents were marked as NRC Exhibit Nos. 1 through
11 14R for identification.)

12 CHAIRMAN BURNS: Okay. Is there a motion
13 to admit --

14 MS. WRIGHT: So moved.

15 CHAIRMAN BURNS: So moved. Are there any
16 objections to the list or the evidence?

17 MR. LEWIS: No objections.

18 CHAIRMAN BURNS: No. Hearing no
19 objection, the exhibits and the exhibit list are
20 admitted into the record. Thank you. I think that
21 deals with -- and it does the preliminaries. We'll
22 proceed to the panels, as counsel can take their seats
23 on the side of wherever it got you, and then we'll
24 start with our first panel.

25 (Whereupon, the above-referred to

1 documents were received into evidence as NRC Exhibit
2 Nos. 1 through 14R.)

3 For our first presentation, Duke will
4 provide an overview of its application. After each
5 overview panel, we will have a round of questions from
6 the Commission, and then for subsequent sessions, the
7 safety panel and the environmental panel, both Duke
8 and the staff will testify and at that point we'll
9 follow with an opportunity for Commission questions.

10 Just so you are aware, the Commissioners
11 have an opportunity to bank their time as they see fit
12 to focus on particular questions or areas of interest,
13 and we'll rotate the order of questioning during the
14 day.

15 So with that, I think we'll proceed with
16 the first panel which is Duke. Again, I'd advise the
17 witnesses that they are under oath, and that they
18 should assume that the Commission is familiar with
19 their prehearing filings.

20 One comment I will make is that while we
21 have the panels set, sometimes you may draw on another
22 witness for your side that may have been sworn in, or
23 may or may not have been sworn in, but may come to the
24 podium. If someone comes to the podium, I would ask
25 them to do this.

1 Please pause and wait until I recognize
2 you and I will probably ask whether you've been
3 previously sworn and I will ask you to introduce
4 yourselves and your position and then let you proceed.
5 Just and that will hold true throughout the morning.
6 With that, I think we'll proceed to our overview panel
7 and for Duke and whoever. I'm not going to start
8 first, Mr. Fallon or -- okay.

9 MR. FALLON: I'll start.

10 CHAIRMAN BURNS: Okay. Please proceed.
11 Thank you.

12 MR. FALLON: Good morning, Commissioners.
13 As I said, I'm Chris Fallon, Vice President of Nuclear
14 Development for Duke Energy. We are here today to
15 discuss the COL application for the William States Lee
16 III Nuclear Station in Cherokee County, South
17 Carolina. As was mentioned in the opening comments,
18 we were just here two months ago for the Levy COL
19 application, and so as such some of my opening remarks
20 may be familiar.

21 However, we believe it is important to get
22 this information into the record. Let me start by
23 thanking the NRC, especially the NRC staff for its
24 diligence in conducting a thorough review of our
25 application. Likewise, I want to recognize the

1 members of our Duke Energy team who have worked
2 tirelessly over the past several years to reach this
3 point.

4 The work required to get to this mandatory
5 hearing is very challenging, and we are very pleased
6 to have the opportunity to discuss the Lee COL
7 application with you.

8 Our presentation today will focus on the
9 safety and environmental aspects that are unique to
10 Lee, or those that have required evaluation beyond
11 what you've reviewed in previous mandatory hearings.
12 Let me tell you a little bit about Duke Energy. Duke
13 Energy is one of the largest electric power holding
14 companies in the United States.

15 Its six regulated utility operations serve
16 approximately 7.4 million customers located on six
17 states in the Southeast and Midwest, representing a
18 population of approximately 24 million people. We
19 have \$121 billion in assets and a market
20 capitalization of approximately \$60 billion. The Lee
21 plant, named after Bill Lee, a former Duke CEO and a
22 pioneer in commercial nuclear power, is to be located
23 in the Duke Energy Carolinas utility.

24 Duke Energy Carolinas serves over
25 approximately 2.5 million customers in its 24,000

1 square mile service territory serving western and
2 central North Carolina and western South Carolina.
3 Duke Energy has the experience and skilled
4 professionals and safely and efficiently operate
5 nuclear plants.

6 Duke is one of the largest nuclear
7 operators in the country, with 11 units at six sites
8 located in the Carolinas. Duke Energy has successful
9 experience in the construction of nuclear plants, and
10 has been safely operating nuclear plants for over 45
11 years.

12 All told, Duke Energy has over 445 reactor
13 years of operating experience. Our nuclear
14 organization has over 6,600 highly trained nuclear
15 professionals. Duke has achieved consistently high
16 nuclear fleet performance. We have achieved 17
17 straight years with an average capacity -- an average
18 fleet capacity factor greater than 90 percent and an
19 excellent track record in the areas of personnel,
20 nuclear plant and radiation safety.

21 Duke Energy Carolinas and its customers in
22 the communities we serve have benefitted greatly from
23 the Duke Energy Carolinas nuclear fleet. Duke
24 Electric rates are 20 to 30 percent below regional and
25 national averages. Much of this is attributed to

1 investment in nuclear in the 70's and 80's, and our
2 excellent track record with respect to performance.

3 As such, the Lee COL is an important asset
4 to Duke Energy Carolinas and our customers. We chose
5 nuclear over other energy alternatives based on
6 several considerations. First is cost. Duke Energy
7 Carolinas has historically received approximately 50
8 percent of its energy from his nuclear plants.

9 Rates that are 20 to 30 percent below
10 regional and national averages demonstrate the cost
11 competitive of nuclear over its 40 design life.
12 Second is need. Duke Energy Carolinas has a need for
13 over 3,900 megawatts of new generation in the planning
14 -- in our planning window.

15 Third, we also face increasing
16 requirements to reduce greenhouse gases. Carbon-free
17 nuclear generation is a critical component of plans to
18 achieve further reductions in CO2 emissions.

19 So now to the AP1000. We selected the
20 AP1000 as our design for a variety of reasons, chief
21 among them being the passive safety features and our
22 familiarity with the PWR technology. Duke Energy has
23 over 365 reactor years of operating experience with
24 the PWR technology.

25 Additionally, we found the AP1000's

1 passive safety features to be very attractive. The
2 opportunity to collaborate with other utilities in the
3 Southeast who also chose and/or constructing the same
4 AP1000 design offers significant advantages, and we
5 have benefitted from this collaboration.

6 We selected the Lee site after a
7 comprehensive evaluation of alternative sites,
8 followed by an extensive site characterization. The
9 site has excellent margin to withstand external
10 hazards, has been approved by the state and has been
11 found to be the least environmentally damaging
12 practical alternative by the Army Corps of Engineers.

13 Our final safety analysis report and the
14 NRC's safety evaluation report document the thorough
15 safety review that has been conducted and the plant's
16 compliance with the Atomic Energy Act and NRC
17 regulations. Likewise, our environmental report and
18 the staff's final environmental impact statement
19 document the thorough environmental review that has
20 been conducted in compliance with NEPA.

21 Although we have not made a final decision
22 to build, the ability to add emission-free nuclear
23 generation in the Carolinas is an important element in
24 our Integrated Resource Planning. Our Integrated
25 Resource Plan, which is annually updated and filed

1 with the North Carolina Utilities Commission and the
2 Public Service Commission of South Carolina, fully
3 supports the need for baseload power.

4 The Duke Energy Carolinas Integrated
5 Resource Plan shows a need for over 3,900 megawatts of
6 generation in the 2017 to 2030 time frame, and the
7 need for the Lee units in the 2025 to 2030 time frame
8 depending upon the scenario. In addition to ongoing
9 demand in energy growth, Duke Energy Carolinas
10 recognizes the potential for unit retirements over the
11 next 10 to 20 years.

12 These requirements will be driven by a
13 combination of unit age and future regulation,
14 particularly with implementation of future carbon
15 constraints. This will create further need for new
16 baseload generation that could be met by the Lee
17 units.

18 In summary, Duke Energy believes it is
19 well-positioned to construct, own and operate an
20 additional nuclear plant. We have the financial
21 strength and the operational experience to make the
22 Lee project a success. Our staff of proven nuclear
23 professionals will ensure safe, reliable, economic and
24 environmentally sound operation of the Lee plant.

25 At this point, I'd like to introduce our

1 presenters for today's hearing. Bob Kitchen has been
2 with Duke Energy for 35 years, with experience in
3 plant operations, maintenance, engineering and major
4 projects. He is responsible for Lee licensing.

5 John Thrasher has worked for Duke Energy
6 for 38 years, with experience in design and plant
7 engineering. He is responsible for engineering
8 support for the Lee project. Paul Snead has worked
9 for Duke for 36 years, with experience in radiation
10 protection and the environmental support of plant
11 operations. He is responsible for environmental
12 support required for Lee licensing and permitting.

13 Larry Taylor has worked for Duke Energy
14 for 31 years, and has significant experience as a PWR
15 senior reactor operator and a shift technical advisor.
16 Thank you very much for your time and attention. At
17 this point I'd like to turn it over to Bob Kitchen to
18 provide an overview of the Lee site and the licensing
19 activities.

20 MR. KITCHEN: Good morning, Commissioners.
21 I'd like to start with a description of Duke Energy
22 Carolinas and a little bit about our energy profile.
23 Also, just a brief description of the site, some of
24 the characteristics there, some of the unique
25 features, and we'll talk a bit about the activities

1 that we've done to prepare the site and some of the
2 work we've done on site-specific design, a little bit
3 about the organizational license itself and the
4 exemptions that we've taken, and then Paul and I will
5 highlight the safety and environmental issues of
6 interest that we'll discuss later, in later panels.

7 Slides, please. The first slide shows the
8 Duke Energy Carolinas service territory. Of course as
9 Chris mentioned, Duke Energy Carolinas is a subsidiary
10 of Duke Energy. The service territory that you see
11 here covers western South Carolina and North Carolina.
12 We currently have the three sites in the area that
13 require Catawba and Oconee stations that are currently
14 in service. We serve about two and a half million
15 customers in the Carolina regions.

16 The Lee site that you can see there in red
17 is pretty centrally located. It's actually in South
18 Carolina as you mentioned, Cherokee County. It's
19 about 40 miles southwest of Charlotte, and about 25
20 miles northeast of Spartanburg.

21 Next slide, please. Thank you. There you
22 go. This shows our Duke Energy Carolinas capacity
23 breakdown. You can see the various types of energy,
24 renewables, hydro, coal, nuclear and natural gas.
25 This shows the profile as projected in 2038, so this

1 is 2038. 2038 encompasses the period of time in which
2 Oconee, which is a very large generating station, the
3 license expires.

4 We are pursuing the second license renewal
5 for Oconee. But you can see the impact here. This
6 shows the profile with Lee and without Oconee being
7 relicensed. If Oconee is relicensed, and we expect
8 that it will be and certainly can be, that would
9 change this profile to show nuclear at about 24
10 percent of our capacity.

11 So the need for Lee, as Chris outlined,
12 there's a 3,900 megawatt generation need to fill, and
13 also as you can see the profile with nuclear. With or
14 without Oconee, Lee is a valuable asset to add here.
15 We've got significant factors that affect the timing
16 of Lee. No surprise. The historically low gas prices
17 have affected our industry profoundly.

18 There's also, there's a lot of ambiguity
19 in terms of the impact and timing of environmental
20 regulations which would affect, you know, depending on
21 what requirements are with regard to carbon release,
22 and as I mentioned, the uncertainty around second
23 license renewal.

24 We think it will be successful, but it's
25 the first time so we've got some uncertainty there.

1 In our Integrated Resource Plan, if you've looked that
2 it was recently issued for the Carolinas, it shows
3 commercial operation in the first unit at Lee in 2026,
4 followed by the second in 2028.

5 Given the uncertainties that I just
6 described, that could drive the need for Lee earlier,
7 and that's why in our application we show the '24 and
8 '26 for Lee.

9 Next slide, please. The Lee site itself
10 is actually formally selected as Cherokee nuclear
11 site, which was a System 890 design plant that was
12 started in the 70's and then ultimately cancelled in
13 the early 1980's. The significance of that is we had
14 -- for this site, we had a construction permit issued.
15 We also had a Corps of Engineers 404 permit. We also
16 had the MPDS permit issued, and an environmental
17 impact statement, of course, to support those
18 construction activities.

19 So as you can see, a lot of work was
20 actually started. There was considerable grading that
21 was done on the site. Roads were installed. We had
22 reservoirs constructed on site and filled. We also
23 had the area excavated for the powerhouse itself, for
24 the System 80 design. So the site is a Brownfield
25 site that is significantly disturbed because of the

1 previous construction activities.

2 We also have an advantage of this site in
3 that we have an abundance of information off the site
4 itself because of the explorations that we did to
5 support Cherokee.

6 Next slide, please. Just to give you a
7 little bit of insight on what the site itself looks
8 like, this is actually -- I'll show you just a
9 sequence here, you might say, before or after. The
10 upper left is the actual Cherokee shield building,
11 which this was taken before the site preparation
12 activities, and you can see that -- I believe this is
13 the turbine building framework on the right.

14 So we had go in and do quite a bit of work
15 just to remove those structures above ground level of
16 the site, and prepare the site for further
17 investigation.

18 Next slide, please. We did do quite a bit
19 of reclamation, reclaimed recycling. You can see that
20 shield building, containment building coming down.
21 That ultimately ended up being used for fill, about
22 80,000 cubic yards, and also we used it for bank
23 stabilization around some of the reservoirs. So it
24 shows a little bit what the site looks more like
25 today. There was about more than 6,000 tons of steel

1 that we removed as well for recycling.

2 So next picture, next slide. This shows
3 the site preparations for the Lee investigation
4 itself. You can just see that the type of top soil
5 that we have there and the preparations for the core
6 borings, etcetera, that we did for Lee investigations.

7 Next slide. This shows the power plant
8 area itself as drawn. You can see they're in very
9 faint gray, the outline of the Cherokee footprint.
10 The Unit 1 Lee nuclear island, the Lee units are shown
11 in blue obviously. The Unit 1, which is on the left,
12 is shown that it is entirely on top of the Cherokee
13 foundation for Cherokee Unit 1.

14 You can see that Unit 2, these units are
15 800 feet apart. You can see Unit 2 right there and
16 it's located on a hard rock surface area. That would
17 have been the location for Cherokee Unit 3, but we
18 didn't get that far.

19 We had quite a bit of mapping and geologic
20 investigation that had been done for Cherokee, and we
21 went through an effort to make sure that those records
22 were correct and useful for Lee support, and that they
23 were verified using ASME NQA-1 guidance on
24 qualification of existing data.

25 The Lee mapping also confirmed that the

1 Cherokee final foundation as correct documented,
2 correctly documented for Cherokee, and we also
3 confirmed that the Cherokee foundation concrete meets
4 the strength requirements specified for the AP1000 in
5 the certified design.

6 Next slide, please. We're doing quite a
7 bit of work to -- for the site itself, also for the
8 design activities that supported site-specific work.
9 We're about overall you'd say about 70 percent through
10 that. A number of systems have been designed site-
11 specific. You can see the list there of about seven
12 systems or so that were designed, and we've taken the
13 design really as far as we can, until we have actual
14 equipment selection to proceed further with that
15 design process.

16 Also, a lot of -- we worked with
17 Westinghouse over the years in terms of site
18 construction plans, to put together the approach and
19 plans for the types of things you see on the right
20 column there, schedule and infrastructure support at
21 the site. We've also done quite a bit work, actually
22 more in this area for I'd say commercial buildings,
23 infrastructure, things like maintenance buildings,
24 office buildings, etcetera, to plan for that.

25 So quite a bit of progress is made in

1 parallel with the licensing activities to be prepared
2 to move forward with Lee.

3 Next slide, please. This is just a sketch
4 of the Lee site itself, so you can kind of see the
5 layout before I go to a map view. The site area is
6 really most of this pictorial, the actual generating
7 stations and immediate support systems like switchyard
8 and cooling towers are shown in the brown, light brown
9 area in the middle.

10 So you can see where we have the cooling
11 towers located in the switchyard. We had two make-up
12 ponds, Alpha and Bravo that were there, are there to
13 support cooling of Lee, and the real source for the
14 water source is the Broad River, and you can see it
15 running across the top of that figure. It is a
16 -- there is a reservoir created on the Broad River
17 from the Ninety Nine Islands Dam, which is shown on
18 the right side there.

19 Next slide, please. This is a map of a
20 little bit larger area. The area we just looked at
21 was the right center here, those two make-up ponds,
22 Alpha and Bravo. That's the site itself, the tan
23 area. About a 2,000 acre site for Lee and as we moved
24 along, Paul will talk about this more extensively.

25 But we realized that with the severe

1 droughts that could occur, that we needed to add
2 reservoir capability. So we've expanded, in fact did
3 a supplemental submittal to expand, add another
4 reservoir. Make-Up Pond Charlie you can see to the
5 left there. That's about another 2,000 acre property
6 that Duke has to the left there.

7 Next slide, please. The COLA itself,
8 excuse me, the COLA itself is structured just as
9 you've seen the others. DCD Revision 19 is
10 incorporated by reference. Also, (inaudible) that
11 you're seeing or was used that we jointly developed.
12 It was used in Vogtle and V.C. Summer as reflected in
13 the Lee application.

14 And then the exemptions that we have are
15 shown here. The first two are really pretty routine.
16 They're the standard the organization want to align
17 the requirements for special nuclear material with the
18 same requirements in Part 50. Then the AP1000 issues
19 that we dealt with first on Levy. We discussed those
20 at the hearing July 28th.

21 But you can see the same five issues are
22 covered here in the Lee license, and in the same way
23 the approach is identical for the issues that emerged
24 that we dealt with on Levy and reflect in Lee.

25 Next slide, please. We're going to talk

1 about two things and just to highlight here the
2 seismic, which we'll cover in the Safety Panel next,
3 and the make-up. The evaluation for the Lee site, we
4 had to go to a method that's addressed, described in
5 the DCD, a little more detailed method rather than
6 just a comparison of the envelope that's shown in the
7 certified design.

8 We did that, and we'll talk through it in
9 the next panel in detail how we did that and how we
10 assessed that. But we looked at structures, major
11 equipment, the piping systems and equipment
12 qualification, and then going through the methodology,
13 we confirm that the site does meet the requirements
14 for the AP1000 certified design.

15 Next slide, please. Again, back to the
16 map of our area but for a different purpose here. We
17 have a request included in our application for a
18 common Emergency Operations Facility or EOF. We use
19 a common EOF for the Duke fleet today, the Duke
20 Carolinas nuclear fleet.

21 So the EOF that's -- it's actually located
22 in our corporate office in Charlotte, supports,
23 Maguire, Catawba and Oconee stations today, and we've
24 added Lee to that common EOF. To us, it makes sense.
25 It's really we think a good approach. This EOF is

1 located more than 25 miles from the Lee site. So we
2 will need Commission approval for that, for that
3 location.

4 Because it's outside the 25 mile area, we
5 also have an assembly area that's shown there. We'll
6 talk a little bit more about that. But this is a
7 specific request that's included in our application.

8 Next slide, please. The other thing we
9 want to do, just in terms of full disclosure for the
10 Commission, we have a fleet license amendment in
11 process right now, it was submitted it a couple of
12 months ago, that establishes the common EOF that I
13 just described, the Emergency Operating Facility in
14 Charlotte to support not only the Duke Energy
15 Carolinas nuclear fleet but also the Duke Energy
16 Progress nuclear fleet.

17 So we would be adding three sites with
18 that license amendment, the Brunswick nuclear plant,
19 the Harris nuclear plant outside of Raleigh and the
20 H.B. Robinson plant. So I really just wanted to make
21 sure the Commission's aware, we have that pending, and
22 of course that's a separate license review. But you
23 know, there is a tie there. Paul, next slide.

24 MR. SNEAD: For the environmental
25 overview, I just wanted to point out that the

1 environmental report and the final environmental
2 impact statement both concluded that there were small
3 to moderate impacts for both construction and
4 operation activities planned for this project, except
5 for a large beneficial tax impact for Cherokee County.

6 The South Carolina Department of Health
7 and Environmental Control issued the National
8 Pollutant Discharge Elimination System operating
9 permit in July of 2013.

10 The permit was important because it
11 memorialized our water management plan for the site,
12 which includes drought contingency, and we were, as
13 part of that permit, received an alternate water
14 withdrawal requirement that the Environmental
15 Protection Agency concurred with.

16 South Carolina DHEC has also issued the
17 401 water quality certification in January of 2014,
18 and the Army Corps of Engineers has issued the 404
19 permit for the site in September of 2015, and we'll
20 discuss these more during the environmental panel.
21 Bob.

22 MR. KITCHEN: Yeah. I guess just in
23 summary, we've got we believe a good site selected for
24 Lee. It's certainly centrally located and serves,
25 will very well serve the area. Duke Energy Carolinas

1 has an advantage, in our opinion, of previously being
2 selected as a site for nuclear generation, which not
3 only from the standpoint of its acceptable, but also
4 from the standpoint of maybe reducing environmental
5 impacts a little bit.

6 Also, we've confirmed that the site is
7 fully bounded by the AP1000 site parameter
8 requirements. The emergent design issues that, as I
9 said, have been discussed previously have been
10 thoroughly reviewed and we feel those are resolved.

11 The environmental considerations, as Paul
12 has just outlined, have been addressed and major
13 permits have been issued. So that concludes our
14 summary. We'll be glad to address questions.

15 CHAIRMAN BURNS: Okay, thank you. Thank
16 you very much for the presentations and your
17 testimony. I believe I'll start off with questioning
18 on this panel. I have just I think two questions, and
19 it goes to really in a context of the review in the
20 light of that you are coming up, and I may have my
21 numbers wrong.

22 So this is the fifth or sixth or the sixth
23 and seventh or something like that AP1000s go into the
24 system. I think it all depends on how you, whether
25 you count sites or count actual units and all. But in

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1 any event. You're further down. We have Vogtle and
2 Summer; we have the Levy site.

3 So my question really is sort of any
4 perspective you have on the design-centered review
5 approach, whether it's working as originally
6 envisioned and whether we're realizing efficiencies or
7 do you have any perspectives you would want to share
8 on how that's going in terms of -- in the context of
9 this review.

10 MR. KITCHEN: Well, the design-centered
11 review approach, I think, is an excellent approach.
12 I mean it's -- we work together quite a bit with the
13 other utilities in terms of we have the same problems.
14 We're at different points in our projects, so
15 obviously we have different focus and priorities.

16 But we certainly benefit, I think, from
17 being able to work with the other utilities that are
18 facing a similar challenge, and where we can to come
19 up with a common approach I think benefits everybody,
20 the applicant license as well as the staff in terms of
21 review.

22 We've had, I think the biggest challenge
23 area is and it's somewhat of a unique situation for
24 us, in that we're closely following construction
25 plans. There's a lot of detailed design work as you

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1 would expect to support construction activities. How
2 that -- how that is captured reflected in the
3 application and the impact it could have on an
4 applicant is a challenge.

5 I don't know how you avoid that, but
6 that's been the biggest area. I think in terms of
7 lessons learned for us, we have -- I think we're in a
8 position where we certainly benefit by having the lead
9 plants in front, being able to learn lessons from
10 their experience and I would say right off it
11 certainly reflects the importance of having, you know,
12 design completion on roof construction. So that's a
13 big benefit for us.

14 CHAIRMAN BURNS: Okay, and I guess a
15 related thing. You may have touched -- I think you
16 may have touched on it in some of your testimony.
17 Again, you're following closely on the heels where you
18 had I think this -- the closest we've had to these, to
19 the mandatory hearings on the units.

20 But you know, let's say a little over two
21 months ago on the Levy, on the Levy units, and I know
22 there were -- and in that context, there were emergent
23 design issues that were resolved during that. Are you
24 able to translate those issues into the application
25 here, or were there any need for plant-specific

1 modifications to those proposed Levy design changes
2 for the Lee units?

3 MR. KITCHEN: No sir, and that's a clear
4 example of the benefit of the approach you were just
5 asking. The Levy had the lead, the opportunity to be
6 first out and worked through those as the lead plant.
7 We duplicated those results identically for the issues
8 that we talked about, the five emergent issues in the
9 Lee license application without change.

10 I can't speak for Florida Power and Light,
11 but I believe Turkey Point will do the same.

12 CHAIRMAN BURNS: Yeah, okay. Thanks very
13 much. That's all from me in this round. Commissioner
14 Svinicki?

15 COMMISSIONER SVINICKI: Thank you all for
16 your presentations. I'll just begin by noting one
17 thing. I've heard a couple of references in your
18 presentation to the Levy mandatory hearing that we
19 conducted recently. I know we have a number of the
20 same witnesses. I'm sure the same is true on the
21 staff side.

22 I would just note as well we're -- this is
23 a separate hearing record. So I know it's human
24 nature to feel like you're repeating yourself, but I
25 think, you know, it is best if this record, once it's

1 complete, stands alone. So please don't be shy about
2 -- I guess this is an excuse to begin with, that I'm
3 probably going to repeat myself today and ask about
4 some of the same things.

5 So I'm doing it, thinking it's a good way
6 to build a very strong record regarding this Lee
7 mandatory hearing, so I wanted to begin with that.
8 Then I did have a question to be certain that I
9 understood your presentation. So the Integrated
10 Resource Planning, it sounds like that's integrated
11 also somewhat in your entire service territory in the
12 Carolinas, because North and South Carolina have
13 processes that are at least similar for that.

14 You do one integrated plan that's
15 presented both state commissions; is that correct?

16 MR. KITCHEN: Well, the plan is Duke
17 Energy Carolinas' plan for the South Carolina and
18 separately there's a plan issued for North Carolina.
19 So it's all separate.

20 MR. FALLON: Well, it's one plan and we
21 issue it to both states. But we have a combined
22 system that serves both customers in North Carolina
23 and South Carolina and for Duke Energy Carolinas, and
24 we plan that as one integrated system.

25 COMMISSIONER SVINICKI: Okay. So in that

1 integrated look, I thought that your presentation
2 stated that there is at least one scenario under the
3 integrated plan that would recommend that these Lee
4 units, the first be in 2026 and the second in 2028.
5 My question for clarification was is that being in
6 operation in 2026 and 2028? That's not initiating
7 construction.

8 MR. KITCHEN: That's correct. Those are
9 the in-service dates.

10 COMMISSIONER SVINICKI: Okay. So would --
11 and I realize this is just one scenario in the
12 Integrated Resource Plan, but I would remark that
13 given the duration of construction that's actually not
14 a terribly long time horizon if these licenses are
15 issued between then and at least a scenario that would
16 call for initiation of construction maybe within the
17 next five to seven years or something like that; is
18 that correct?

19 MR. KITCHEN: Yes, that's correct, and it
20 is called for in what's call the base scenario. So
21 that is the primary planning scenario that we are
22 operating under in the Carolinas.

23 COMMISSIONER SVINICKI: Okay. So I would
24 just reflect on the Chairman's statement, where I
25 think for NRC perspective we're thinking of these in

1 the order in which licenses were considered in your
2 case or issued already for some of the units. But it
3 may well be that the integrated resource planning
4 across the country would call for the units to either
5 be constructed or not in entirely different time
6 frames.

7 So I think that's interesting, and then I
8 wasn't sure I understood your response to the
9 Chairman's question about the fact that there is
10 construction of AP1000s underway now. You indicated
11 that you're following that closely, and I believe Mr.
12 Kitchen you were referencing the fact that that
13 construction necessitates very detailed design to
14 support that construction.

15 So I was thinking that that would be a
16 benefit to units that begin construction later. But
17 then you went on to say that detailed design that's
18 coming forward to support construction can really pose
19 a challenge to applicants such as yourself. Is that
20 because you have to go back and true up to that
21 learning?

22 MR. KITCHEN: Yeah. It's really -- it
23 certainly is a benefit for moving forward in
24 construction, to the captured and learned lessons that
25 the lead plants have, the impact it has as an

1 applicant.

2 Again, that's why I said that we're in a
3 bit of a unique situation here, to need in some cases
4 to go back and, as you mentioned, true up, to say
5 here's an item that we need to address in our
6 application that was identified in the construction
7 plan. It has an impact primarily on schedule, to get
8 through the license review process.

9 COMMISSIONER SVINICKI: Okay. Thank you
10 for that clarification. My other question would be
11 you referenced, and certainly in the record there's a
12 very detailed discussion of the staff's analysis of
13 any departures, which was not a terribly long list but
14 you did take some departures from the AP1000 certified
15 design Rev 19.

16 As you prepared your application and
17 considered, I'm certain that there were other
18 departures that you probably could have taken. But as
19 an applicant, you wanted to approach that somewhat
20 strategically. Can you give a sense? Did you have an
21 overall philosophy of really minimizing departures or
22 how did you evaluate whether or not to enshrine those
23 departures in your application?

24 MR. KITCHEN: Well, we absolutely wanted
25 to minimize departures to get through the license

1 review. We have -- first of all, we don't want to do
2 a departure that's not needed. On the other hand, we
3 want to -- we're going to obviously maintain the
4 standardization. So the balance between that in the
5 application space is what we're challenged with. But
6 our objective was to minimize departures.

7 COMMISSIONER SVINICKI: Okay, thank you.
8 Thank you, Mr. Chairman.

9 CHAIRMAN BURNS: Thank you. Commissioner
10 Baran.

11 COMMISSIONER BARAN: Thanks for your
12 presentations. Going back to timing for a minute, if
13 NRC issues combined licenses for Lee, do you have a
14 sense of when Duke would make a decision about whether
15 or not to construct the units?

16 MR. FALLON: So our current plan calls for
17 '26 and '28 if you assume a six year construction
18 cycle. Now once you have the license, you're looking
19 in the 2020 time frame potentially, if we stay on the,
20 you know, the current assumptions. But I believe what
21 Duke would like to do is learn lessons from V.C.
22 Summer and Vogtle. So we are closely monitoring that
23 construction and as we continue to learn those
24 lessons, we'll refine when we would decide to move
25 forward.

1 COMMISSIONER BARAN: Okay, and that was
2 where -- I understood from Commissioner Svinicki's
3 questions and the answers there about what the
4 planning called for in terms of, you know, when they'd
5 enter operation and then kind of working backward, to
6 when you'd actually start construction.

7 I was trying to get at when you thought
8 there would be a decision one way or the other to
9 proceed, and I guess maybe to back into it a little
10 bit, or to get at really where the issue, I'm curious
11 about how long after you've made a decision would it
12 be before construction began?

13 What's the kind of lag time between saying
14 okay, we've decided we are actually going to construct
15 eight of these units and construction actually begins
16 occurring?

17 MR. FALLON: That would be on the order of
18 a year to a year and a half because of the regulatory,
19 the state regulatory filings that you would have to
20 make and some of the other work that we were doing.
21 And also we do not have an EPC contract to construct,
22 so you'd have to build into that time to negotiate a
23 contract and then go through your regulatory
24 proceedings at the state level to get approval.

25 COMMISSIONER BARAN: Okay, and so

1 depending on how everything unfolds and you end up
2 with the combined licenses, it may be -- you know,
3 there may be a significant period of time there where
4 you're a COL holder but you haven't begun construction
5 yet. Of course until the ITAAC finding's made,
6 there's no -- there's no time limit on the COL. So it
7 could theoretically be a while.

8 During that period, you know, before
9 you've decided to begin construction, begun
10 construction, do you anticipate remaining active in
11 the AP1000 Design Center? For example, you know, as
12 issues arise at Vogtle and Summer, do you think you'd
13 be submitting license amendment requests or are you
14 going to hold off on that kind of activity until a
15 decision's been made later on whether to construct?

16 MR. KITCHEN: Well, first of all
17 absolutely we intend to remain involved in the AP1000
18 community. We want to move forward and begin
19 incorporating the changes, and we'll use Vogtle as the
20 model. We can pick V.C. Summer, but we used Vogtle as
21 the model to incorporate the changes that they've
22 done. We track those very closely. We have -- we are
23 engaged with them in the review of those design
24 changes and the impacts to the license in our plants,
25 to start implementing those in the same sequence that

1 they did at Vogtle.

2 We're working right now actually
3 internally and a bit with the staff to say what makes
4 the most sense in terms of timing for submittal of
5 those, in terms of resource availability and that sort
6 of thing. But we absolutely do plan to move forward
7 and update our license.

8 COMMISSIONER BARAN: And I know we'll
9 discuss during the environmental panel more detail,
10 site selection and those issues. But I wanted to ask
11 at a high level about site selection. My
12 understanding from the materials and the presentation
13 so far is that the site selection process occurred
14 prior to the severe drought in the 2007-2008 time
15 frame; is that right?

16 MR. FALLON: Yes.

17 COMMISSIONER BARAN: But that really was
18 -- better that really revealed the need for this Make-
19 up Pond C, which I take is a pretty significant
20 development. Did that cause you to go back and take
21 another look at the site selection process?

22 MR. SNEAD: Yes Commissioner. We went
23 back and considering the severe droughts looked at all
24 of the alternative sites that we had considered, and
25 placed the same criteria on them that we would on Lee.

1 We actually went so far as to evaluate if we need --
2 did we need an additional make-up water capacity
3 drought contingency reservoir at those sites, and we
4 determined we did.

5 We had to do high level design to
6 understand what the impacts would be at those sites
7 from the creation of those, and that was all part of
8 our supplement to the ER in terms of the impacts at
9 the alternative sites. The conclusion was still the
10 same. The Lee site was the least environmentally
11 impactful of all the alternative sites when you
12 considered the need for additional drought contingency
13 ponds.

14 COMMISSIONER BARAN: Okay, thank you.

15 CHAIRMAN BURNS: Thank you, Commissioners,
16 and we'll ask now that the staff panel or first staff
17 panel to come up for the overview. And as they get
18 settled, again in this panel the staff will provide an
19 overview, including their use of the design-centered
20 review approach for the AP1000 combined license
21 applications, and a summary of their regulatory
22 findings.

23 Again, the panels, the witnesses have been
24 put under oath and I remind them they remain so, and
25 again I would advise that you can assume that the

1 Commission is familiar with the prehearing filings and
2 again would ask the panels to introduce themselves.
3 I'll start with you Frank.

4 MR. AKSTULEWICZ: Frank Akstulewicz. I'm
5 the Director in the Division of New Reactor Licensing,
6 the Office of New Reactors.

7 MS. ORDAZ: Vonna Ordaz. I'm the Deputy
8 Director for the Office of New Reactors.

9 MR. LEE: Sam Lee, Acting Deputy Division
10 Director for the Division of New Reactor Licensing in
11 the Office of New Reactors.

12 CHAIRMAN BURNS: Okay. I'll -- the staff
13 may proceed with its testimony and you Vonna?

14 MS. ORDAZ: Yes.

15 CHAIRMAN BURNS: Okay. Thanks, Vonna. Go
16 ahead.

17 MS. ORDAZ: Good morning Chairman Burns
18 and Commissioners. On behalf of the Lee review team,
19 we are pleased to address the Commission at this
20 mandatory hearing. With me on this panel, as we've
21 already introduced, are Frank Akstulewicz, the
22 Director of the Division of New Reactor Licensing, and
23 Sam Lee, the Acting Deputy Director of the Division of
24 New Reactor Licensing.

25 The team here today will present the

1 results of the staff's review of the application for
2 the combined licenses or COLs for William States Lee
3 III Nuclear Station Units 1 and 2, proposed to be
4 located in Cherokee County, South Carolina. The
5 staff's final environmental impact statement or EIS on
6 this application was completed in 2013. The staff's
7 final safety evaluation report or FSER was completed
8 in early August of this year.

9 These documents are the culmination of an
10 eight year review effort by the staff and represent
11 the results of a coordinated effort of scientists,
12 engineers, attorneys and administrative professionals
13 from multiple offices within the agency, as well as
14 the efforts of other agencies and those of our
15 consultants.

16 Slide 2, please. On this panel, Mr.
17 Akstulewicz and Mr. Lee will briefly describe the
18 staff evaluation for the Lee COL application. This
19 will consist of an overview of the safety and
20 environmental reviews, as well as a summary of the
21 staff's regulatory findings.

22 The staff completed its review of the COL
23 application in August 2016. In February 2008, the
24 staff docketed the initial version of the application.
25 Since then, the staff has expended approximately

1 67,000 hours on the safety and environmental reviews.
2 This effort has involved well over 100 engineers,
3 scientists and technical specialists.

4 During this time, the staff had conducted
5 approximately 60 public meetings and conference calls
6 in support of the Lee application review. The
7 applicant responded to approximately 950 staff
8 questions, of which approximately 700 were associated
9 with the safety review and 250 with the environmental
10 review.

11 In addition, the staff considered over
12 1,300 comments on the draft environmental impact
13 statement. Contractors working in collaboration with
14 the staff devoted over 26,000 hours to support the
15 environmental and safety reviews. The review of the
16 application was a very thorough effort and focused on
17 safety and protecting the environment.

18 Within the NRC, the offices that
19 contributed to the review the Office of Nuclear
20 Security and Incident Response, which looked at the
21 emergency preparedness and security areas, the Office
22 of Nuclear Reactor Regulation, which evaluated
23 financial qualification aspects of the application,
24 and the Office of Nuclear Material Safety and
25 Safeguards, which supported the reviews for licenses

1 necessary under Part 30 for byproduct material, Part
2 40 for source material and Part 70 for special nuclear
3 material.

4 The Office of the General Counsel reviewed
5 the SER and EIS. Finally, the Advisory Committee on
6 Reactor Safeguards reviewed and reported on the safety
7 aspects of the Lee application in accordance with the
8 regulatory requirements of 10 C.F.R. 52.87. In
9 addition, the NRC Region II Office supported
10 environmental meetings in the community near the Lee
11 site.

12 The U.S. Army Corps of Engineers,
13 Charleston District and the Department of Homeland
14 Security also contributed to the NRC review.

15 Slide 3, please. On December 12th, 2007,
16 representatives of Duke Energy Carolinas LLC delivered
17 an application for COLs to construct and operate two
18 AP1000 units in Cherokee County, South Carolina. Duke
19 Energy Carolinas would be licensed to construct and
20 operate the units if approved.

21 Slide 4, please. The Lee Units 1 and 2
22 COL application incorporates by reference the AP1000
23 design certification document, Revision 19, and
24 Appendix D to 10 C.F.R. Part 52. The AP1000 design
25 was certified by rule in 2011, and documented in NUREG

1 1793 and its supplements.

2 Based on the finality that NRC regulations
3 afford to a certified design, the scope of the staff's
4 COL technical review did not include items that were
5 resolved within the scope of the certified design.
6 Instead, the COL review focused on plant-specific
7 aspects of the application that are the responsibility
8 of the applicant, such as operational programs, site-
9 specific design, COL information items and departures
10 from the certified design.

11 As of now, the Lee COL application is one
12 of only two remaining applications referencing the
13 AP1000 design, currently under staff review. In
14 addition, the Commission has previously issued
15 licenses for two AP1000 COL applications covering four
16 units currently under construction. That's Vogtle
17 Units 3 and 4 and V.C. Summer Units 2 and 3.

18 The staff presented its review of the Levy
19 Nuclear Plant Units 1 and 2 COL application to the
20 Commission at a mandatory hearing on July 28th of this
21 year.

22 Slide 5, please. In accordance with 10
23 C.F.R. 52.87, the Advisory Committee on Reactor
24 Safeguards examined the staff's safety review of the
25 Lee Units 1 and 2 COL application. The applicant and

1 staff supported one AP1000 Subcommittee meeting
2 specifically related to the Lee COL application and
3 its safety evaluation.

4 The staff presented the results of its
5 review of the Lee COL application to the ACRS full
6 committee in December 2015. Following the full
7 committee meeting, the ACRS issued a report on
8 December 14th, 2015, concluding that there is
9 reasonable assurance that Lee Nuclear Station Units 1
10 and 2 can be built and operated without undue risk to
11 the public health and safety.

12 The ACRS report recommended approval of
13 the Lee COL application, following the approval of the
14 five generic design changes, which affects standard
15 content material for the AP1000. These design changes
16 were reviewed by the ACRS full committee in April of
17 2016 under the docket for the Levy Nuclear Plant Units
18 1 and 2.

19 There were no Lee application specific
20 recommendations for which the Committee sought
21 specific staff action or response. The staff issued
22 their final safety evaluation report on August 1st,
23 2016. This SER, the EIS and our statement in support
24 of the hearing provide what the staff considers
25 adequate basis for making the necessary regulatory

1 findings.

2 We look forward to responding to your
3 questions at this hearing, and I would now like to
4 turn the presentation over to Mr. Akstulewicz.

5 MR. AKSTULEWICZ: Thanks Vonna. Good
6 morning Chairman and Commissioners. As you heard
7 earlier, I am the Director of the Division of New
8 Reactor Licensing in the Office of New Reactors. The
9 staff prepared SECY 16-0094 dated August 8th, 2016 to
10 support his mandatory hearing.

11 In that paper, the staff summarized the
12 bases that would support the Commission's
13 determination that the staff's review is adequate to
14 support the findings set forth in both 10 C.F.R. 52.97
15 and 10 C.F.R. 51.107. That SECY paper provided an
16 overview of the findings that support the issuance of
17 COLs for Lee Units 1 and 2.

18 In order to issue a COL, the Commission
19 must be able to conclude that each of the following
20 findings in 10 C.F.R. 52.97 is met, that will
21 summarize the staff's bases supporting each finding.
22 First, the applicable standards and requirements of
23 the Atomic Energy Act and the Commission's regulations
24 have been met.

25 The staff reviewed and evaluated the

1 application against the applicable criteria in 10
2 C.F.R. Based on the staff's review, as documented in
3 the final safety evaluation report and the final
4 environmental impact statement, the staff concludes
5 that the applicable standards and requirements of the
6 Atomic Energy Act of 1954, as amended and the
7 Commission's regulations have been met.

8 Second, any required notifications to
9 other agencies or bodies have been duly made. As
10 documented in the SECY paper, all required
11 notifications such as to the Public Service Commission
12 of South Carolina and the North Carolina Utilities
13 Commission, as well as the required *Federal Register*
14 notifications have been made.

15 Slide 7, please. Third, there is
16 reasonable assurance that the facility will be
17 constructed and will operate in conformity with the
18 license, the provisions of the Atomic Energy Act and
19 the Commission's regulations. As the SECY paper
20 states, the staff believes that its review, as
21 documented in the FSER and the final EIS, the
22 inspections, tests and analyses and acceptable
23 criteria or ITAAC and the license conditions provide
24 the necessary assurance that the unit will be
25 constructed and operated as required.

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1 Fourth, the applicant is technically and
2 financially qualified to engage in the activities
3 authorized. The technical and financial
4 qualifications of the applicant are summarized in the
5 SECY paper and documented in detail in Chapters 1, 13,
6 17 of the final safety evaluation report.

7 Slide 8, please. Fifth, the issuance of
8 the COL will not be inimical to the common defense and
9 the security or the public health and safety. The
10 specific bases for these findings have been provided
11 in the staff's SECY paper. Sixth, the findings
12 required by Subpart A of 10 C.F.R. Part 51 have been
13 duly made.

14 The staff's conclusions supporting the
15 findings required by Subpart A that will be presented
16 by Sam Lee, who will now provide an overview of the
17 staff's environmental review.

18 MR. LEE: Thank you and good morning,
19 Chairman Burns and Commissioners. As Vonna indicated
20 earlier, I am the Acting Deputy Director of the
21 Division of New Reactor Licensing in the Office of New
22 Reactors.

23 I will be discussing the environmental
24 review and will provide an overview of the process we
25 used in conducting this review, the draft summary

1 record of decision and the staff's recommendation as
2 a result of the review.

3 I will also discuss the regulatory
4 findings that need to be made before licenses can be
5 granted.

6 Slide 9, please. The staff prepared an
7 Environmental Impact Statement or EIS for Lee Units 1
8 and 2 COL application in accordance with National
9 Environmental Policy Act of 1969 and the requirements
10 of 10 C.F.R. Part 51. The staff prepared the EIS
11 based on its independent assessment of the information
12 provided by the applicant, and information developed
13 independently by the staff, including information
14 gathered through consultations with other agencies.

15 The U.S. Army Corps of Engineers fully
16 participated with these staff as a cooperating agency
17 in preparing the Lee EIS under the terms of an updated
18 Memorandum of Understanding between the NRC and the
19 Corps for the review of nuclear power plant
20 applications.

21 As a member of the environmental review
22 team, the Corps staff participated in site visits,
23 consultations with other agencies and development of
24 the draft EIS and final EIS.

25 Slide 10, please. The NRC began the

1 environmental review process for the Lee COL
2 application by publishing a Notice of Intent to
3 Prepare an EIS and Conduct Scoping in the *Federal*
4 *Register* on March 14, 2008. Two scoping meetings were
5 held to obtain public input on the scope of the
6 environmental review in Gaffney, South Carolina on May
7 1, 2008.

8 The staff reviewed the comments received
9 during the scoping process and responses were
10 developed for each comment. These responses are
11 documented in a scoping summary report and are also
12 provided in Appendix D of the final EIS.

13 The staff contacted federal, state,
14 regional and local agency and federally recognized
15 Indian tribes during the scoping period to solicit
16 comments, and these comments were considered in
17 preparing the draft EIS.

18 Specifically, the staff consulted with the
19 U.S. Fish and Wildlife Service, National Marine
20 Fisheries Services, federally recognized Indian
21 tribes, the South Carolina State Historic Preservation
22 Office and other agencies as required by the
23 Endangered Species Act, National Historic Preservation
24 Act and other statutes.

25 Slide 11, please. The draft EIS was

1 issued in December 2011. A 75-day comment period for
2 the draft EIS began on December 12th, 2011, the date
3 of the publication of the U.S. Environmental
4 Protection Agency Notice of Availability. The staff
5 held two public meetings on January 19, 2012 in
6 Gaffney, South Carolina to describe the results of the
7 staff's environmental review, to provide members of
8 the public with information to assist them in
9 formulating comments on the draft EIS, and to respond
10 to questions and accept comments.

11 The staff developed responses to comments
12 received on the draft EIS and provided these responses
13 in Appendix E of the final EIS.

14 Slide 12, please. On December 20, 2013,
15 the staff published the final EIS as NUREG-2111. As
16 stated in the final EIS, the staff's recommendation
17 related to the environmental aspects of the proposed
18 action, is that the COL should be issued.

19 The staff based its recommendation on (1)
20 the Lee COL application environmental report; (2)
21 consultation with federal, state, tribal and local
22 agencies; (3) the staff's own independent review; (4)
23 the staff's consideration of comments that were
24 received during the public scoping process; (5) the
25 staff's considerations of comments on the draft EIS;

1 and (6) the assessment summarized in the EIS,
2 including the potential mitigation measures identified
3 in an environmental report and in the EIS.

4 Slide 13, please. The staff concluded a
5 draft summary record of decision as a reference in the
6 SECY paper. This document states the decision being
7 made and identifies all alternatives considered in
8 reaching the decision.

9 The draft summary record of decision also
10 discusses preferences among the alternatives and
11 states whether the Commission has taken all
12 practicable measures within its jurisdiction to avoid
13 or minimize environmental harm from the alternatives
14 selected, from the alternatives selected.

15 Slide 14, please. This slide lists the
16 environmental findings pursuant to 10 C.F.R.
17 51.103(a), that the Commission must make to support
18 the issuance of the Lee Units 1 and 2 COLs. The staff
19 believes that the scope of the environmental review,
20 the methods used to conduct the review, and the
21 conclusion reached in the EIS are sufficient to
22 support a positive determination regarding these
23 findings.

24 For the first finding, in accordance with
25 NEPA Section 102(2), 2(a), the staff's environmental

1 review used a systematic interdisciplinary approach to
2 integrate information from many fields including the
3 natural and social sciences, as well as the
4 environmental sciences. The staff's review also
5 comports with the NRC's requirements in Subpart A of
6 10 C.F.R. Part 51.

7 The staff concludes that the environmental
8 findings in the EIS constitutes the hard look required
9 by NEPA and have reasonable support in logic and fact.
10 In accordance with NEPA Section 102(2)(c), the EIS for
11 the Lee COL addresses (1) the environmental impact of
12 the proposed action; (2) any unavoidable adverse
13 environmental effects; (3) alternatives to the
14 proposed action; (4) the relationship between local,
15 short-term uses of the environment and the maintenance
16 and enhancement of long-term productivity; and (5) any
17 irreversible or irretrievable commitments of resources
18 that would be involved in the proposed action should
19 it be implemented.

20 As supported by the correspondence
21 presented in Appendix F to the EIS, the staff
22 concludes that the requirement of NEPA Section
23 102(2)(c) was fulfilled by consulting with and
24 obtaining comments from other federal agencies with
25 jurisdiction by law or a special expertise. As noted

1 earlier, the U.S. Army Corps of Engineers fully
2 participated with the NRC as a cooperating agency in
3 preparing the EIS. The staff did not identify any
4 other federal agencies as cooperating agencies in
5 preparing this EIS.

6 In accordance with NEPA Section 102(2)(e),
7 the staff concludes that the EIS demonstrates that the
8 staff adequately considered alternatives to the
9 proposed action. The alternatives considered in the
10 EIS include the no action alternative, site
11 alternatives, energy alternatives, system design
12 alternatives and mitigation alternatives for severe
13 accidents.

14 Slide 15, please. For the second and
15 third findings which appear on this slide and the
16 next, Chapter 10 of the EIS provides the staff's cost-
17 benefit assessment, which considered conflicting
18 factors such as the need for power, as well as
19 reasonable alternatives to the proposed action.

20 Slide 16, please. Based on that analysis,
21 the staff concluded that the construction and
22 operation of the proposed Lee Units 1 and 2 would have
23 accrued benefits that would be expected to outweigh
24 the economic, environmental and social costs. As a
25 result, the staff recommends that the COLs be issued.

1 Slide 17, please. For the fourth finding,
2 the staff believes that the Commission will be able to
3 find after this hearing that the NEPA review performed
4 by the staff has been adequate. The staff performed
5 a thorough and complete environmental review
6 sufficient to meet the requirements of NEPA and
7 adequate to inform the Commission's action on the
8 request for COLs. I will now turn over the
9 presentation back to Vonna.

10 MS. ORDAZ: Okay. Thank you, Sam. Slide
11 18, please. During this hearing, the staff will be
12 presenting information on the issues listed on this
13 slide. The safety and environmental panels will
14 discuss unique facility features and novel issues that
15 arose as part of the review process.

16 Specifically, the safety panel will cover
17 two topics. The first is site foundation response
18 spectra and the second is the Emergency Operations
19 Facility. The environmental panel will discuss the
20 proposed creation of Make-Up Pond C. This concludes
21 the staff's opening remarks. We are prepared to
22 respond to any questions that you may have. Thank
23 you.

24 CHAIRMAN BURNS: All right, thank you.
25 Commissioner Svinicki.

1 COMMISSIONER SVINICKI: Thank you for your
2 presentations and Vonna, I want to begin by thanking
3 you for the high level summary you gave of the staff's
4 -- the entirety of the staff's efforts in terms of
5 reviewing the application and leading up to where we
6 are today. It's always impressive to me when I'm
7 reminded of the number of staff hours, some technical
8 contract support that we utilize principally on the
9 environmental side.

10 In September, our Commission always holds
11 an all employee meeting and this year, as
12 Commissioners, we responded to a question about, you
13 know, couldn't the Commission figure out specifically
14 which staff witnesses might have to respond to
15 questions, so that they wouldn't have to be present
16 for this hearing.

17 But I think if for no other purpose,
18 whether or not they get called to the microphone, I
19 want to say to all of them that are here today, it is
20 a moment to hear this engagement between the
21 applicant, the staff witnesses and the Commission, and
22 really reflect on what for many of you has been a
23 multi-year effort, a good part of your days and nights
24 and hours of your lives and I think it's an impressive
25 effort.

1 So I hope that whether or not they get the
2 excitement of coming to the microphone, I hope that
3 they can just have some time to reflect upon this,
4 maybe take in areas of the review that they themselves
5 didn't work on, or just kind of soak in the moment
6 because I think that the levels of professionalism and
7 expertise that have been brought to this is something
8 that we all should be very proud of.

9 So I just wanted to offer that comment.
10 It makes me feel like I should call a lot of people to
11 the microphone, because I know that they're feeling a
12 little bit bored. With this overview panel, I do want
13 to explore one issue. I've picked the overview panel,
14 because Vonna and Frank I think it may be something of
15 a higher level that you guys need to respond to.

16 I'm going to refer to your pre-filed
17 testimony, which is the SECY paper that Frank referred
18 to. Because this is not a de novo review, the staff
19 is asked to identify in its pre-filed testimony areas
20 of Commission interest and you've done that in this
21 paper.

22 One of those areas that you've identified
23 is severe accident management guidelines, and I'm
24 going to in a tedious way quote to you a little bit
25 from your own pre-filed testimony, that it says "The

1 staff identified an area of interest related to a
2 recent Commission decision about the draft rule on
3 mitigation of beyond design basis events. In the
4 draft rule, the staff proposed to require
5 implementation of severe accident management
6 guidelines, also known as SAMGs.

7 "In the associated staff requirements
8 memorandum, the Commission approved publication of the
9 draft rule for public comment, subject to the removal
10 of the proposed requirement for SAMGs."

11 The staff goes on to write "SAMGs are an
12 industry initiative and remain voluntary for most
13 licensees. However, the AP1000 design certification
14 rule incorporates the AP1000 DCD, which specifies
15 implementing the AP1000 severe accident management
16 guidance on a site-specific basis.

17 "This is a condition of license for
18 current AP1000 COLs, which is Vogtle and Summer. For
19 consistency within the AP1000 Design Center, one of
20 the proposed license conditions for Lee units would be
21 the implementation of site-specific SAMGs."

22 Now we recently conducted the Levy
23 mandatory hearing and I did a brief comparison between
24 the staff's pre-filed testimony in Levy and there was
25 nearly identical identification and discussion of this

1 issue. However, in Levy the staff went on to say "The
2 staff is monitoring the development of the mitigation
3 of beyond design basis events rule, and will be
4 prepared to make conforming licensing adjustments as
5 appropriate."

6 My question is does the difference in the
7 text of these two somewhat contemporary pre-filed
8 hearing statements indicate that the staff does not or
9 would not monitor the development of that final rule
10 and be prepared to make conforming licensing
11 adjustments in Lee?

12 MR. AKSTULEWICZ: No. I think
13 Commissioner the staff is clearly monitoring what's
14 going on with respect to the final rule, and whatever
15 the adjustments are that we need to make will be made
16 across the Design Center as a whole. The fact that we
17 didn't include that language in the SECY paper is
18 merely an oversight.

19 COMMISSIONER SVINICKI: Okay. So it may
20 have been for brevity and did not indicate that the
21 staff would have a differing approach?

22 MR. AKSTULEWICZ: That's correct.

23 COMMISSIONER SVINICKI: Okay, thank you.
24 It raises the question in my mind a little bit, and
25 this is why I think I have a higher level area of

1 interest I'll call it, that is very informative for
2 me, because I just developed it when I was preparing
3 for this mandatory hearing today. But it has to do
4 with the somewhat static nature of the design
5 certification rules, and it's much broader than SAMGs.

6 Actually, I think we've touched on an
7 analogous issue with the applicant that we just had.
8 But it has to do with the fact that even though Part
9 52 is not young in the strictest sense, as an agency
10 and for the nuclear industry, we really are still just
11 engaging our first kind of operating experience with
12 certain elements of Part 52.

13 I think these durations between perhaps
14 initiation of construction, approval of design
15 certification rules, issuance of licenses that
16 reference those design certification rules, I used the
17 term "truing up" with the applicant. But in my mind,
18 there is a need for regulatory coherency when we, as
19 we will always do, look at things like the mitigation
20 rule that is underway right now for operating
21 reactors.

22 Right now, the staff I think does some
23 sort of high level assessment if we're looking at
24 something in Part 50, and we might make a change on
25 something. Does that require any conforming changes

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1 over in Part 52? What I'm not aware of us doing
2 systematically is looking at any shadows that are cast
3 over into the design certification rules themselves,
4 and then as those have manifested in these license
5 conditions, either for reactors that are being
6 constructed, for some that are contemplating licenses
7 have been issued but the reactors might not be
8 constructed for a long time.

9 I think there will be a forward-going
10 obligation on the technical staff to be certain that
11 all of those things are kept in true or coherency with
12 each other. So I appreciate that, as is evident here
13 that you highlighted the SAMG issue, I actually think
14 it's emblematic of something that's going to be kind
15 of complex for us going forward.

16 I would offer Vonna or Frank just a chance
17 to kind of react to that and say yeah, it's a thing,
18 you know, that we know that the agency and even our
19 successors years from now are going to have to be
20 keeping their eye on.

21 MR. AKSTULEWICZ: Okay. So I'll try to
22 jump in there. You raise a very interesting point,
23 and I think, from a process standpoint, we don't have
24 procedures that say that is exactly what we should do.
25 All right. I think from a practical standpoint, it is

1 exactly what we do. We have in the process a
2 regulatory issue summary that is outlining those
3 matters that are sensitive with respect to the design
4 certification and are preparing a record for what will
5 be necessary for renewal, as the AP1000 considers
6 coming in in the 2019 time frame, in terms of those
7 matters that would have to be addressed as part of the
8 renewal application.

9 And so we do keep in mind the impacts on
10 the certification roles that are playing out across
11 the Commission, whether it be in the Office of
12 Reactors or whether it be NSIR or NMSS, as the
13 governing regulations are evolving. So there is that
14 ad hoc process, but it's not a formalized one.

15 COMMISSIONER SVINICKI: It may be. I
16 appreciate that answer, Frank, and I think it may be
17 something that when perhaps we're not as busy with
18 some of the work that's going on right now, leading up
19 maybe to some additional mandatory hearings next year,
20 it may be a really interesting endeavor to get some
21 sort of NRC working group together and maybe engage
22 with the design centers for the various things.

23 And I don't mean to indicate that I'm not
24 mindful of the whole structure of having design
25 certification approval take the form of a rule. The

1 finality and reliance that that brings is a real
2 strength of the structure. But, again, I think, in
3 terms of the overall defensibility of the coherency of
4 the regulatory framework over the coming years, as we
5 have new learnings on the operating reactor side, we
6 continually look at whether or not changes to our
7 regulatory framework are called for.

8 We're going to have these, I'll call them
9 pieces hanging out. Even if there's somewhat of a
10 pause in new reactor construction in the United
11 States, there's going to be a need to continue to keep
12 all of these things having fidelity with each other,
13 I think, at some level. And, Frank, I acknowledge
14 that it's more philosophical. It's something that we
15 would need to do to have defensibility to our
16 regulatory framework, as the Chairman refers to it as
17 the regulatory craft. It has a little bit more to do
18 with that than any particular directive or instruction
19 we have right now. But I do think it will be a
20 challenge for us going forward, so I appreciate your
21 acknowledgment of that.

22 And, Mr. Chairman, I'll yield back.

23 MS. ORDAZ: Informally, we also have day-
24 to-day interactions between the operating reactors and
25 the new reactor business line with all of our

1 partners, NRR, research, Region II, NSIR, and a lot of
2 great dialogue back and forth with all the centers of
3 expertise. So there is a continuous daily interaction
4 to learn on both sides.

5 COMMISSIONER SVINICKI: And, again, you
6 know, I guess I'll just respond to that by saying
7 SAMGs were a great way to kind of lubricate thinking
8 on this because of the fact that, as the staff
9 highlighted so earnestly here, the Commission looked
10 at, you know, proposed language regarding this and
11 made an affirmative decision. When I was deliberating
12 that proposed rule, I wasn't thinking a whole lot
13 about these kinds of issues, but I think it's
14 something that is going to become increasingly
15 important. When we're all thinking this is a
16 requirement of today, we're going to have to think
17 about the implications for these reactors either under
18 construction or perhaps having decisions made to
19 initiate construction in just the next few years.
20 Thank you.

21 CHAIRMAN BURNS: Thank you, Commissioner.
22 Commissioner Baran?

23 COMMISSIONER BARAN: Thanks for, thanks
24 for the overview presentations. As has already been
25 noted, this is the fourth combined license review of

1 an AP1000 site, and, Frank, I think you've been
2 involved in all of them.

3 MR. AKSTULEWICZ: Yes, I have.

4 COMMISSIONER BARAN: When I look at the
5 uncontested hearings at least, I see them getting more
6 and more efficient and focused each time we consider
7 another combined license of the same certified design.
8 What are you seeing in the NRC staff reviews more
9 generally? Are you finding that your review process
10 for subsequent combined license applications is more
11 efficient and streamlined than for earlier
12 applications of the same design?

13 MR. AKSTULEWICZ: The answer -- well,
14 first of all, thank you for the fact the, your
15 observation that they're becoming more efficient. The
16 answer to your question is, yes, they are. We're
17 seeing a much more refined approach in terms of the
18 issues that are truly involved in the review to be
19 very site specific, more related to the
20 characteristics and interaction between the design and
21 the site itself.

22 I think you're seeing that in terms of the
23 progression we had recently, the hearing for Levy. We
24 have this hearing now. Turkey Point will be right
25 behind it requesting the hearing in mid November. So

1 you can see the pace at which these issues are
2 resolving because of the common nature, the ability to
3 incorporate by reference the use of standard language,
4 the closure of one issue leading to the closure of
5 issues on all those particular applications. So we
6 are seeing efficiencies in that respect.

7 COMMISSIONER BARAN: If the combined
8 licenses are issued for Lee, NRC will need some time
9 to get construction resident inspectors in place and
10 to prepare other construction inspectors prior to the
11 commencement of construction. If Duke receives the
12 COLs for Lee and decides to build the Lee units, and
13 maybe this is a question for Vonna, how much notice
14 would the staff need to prepare for the start of
15 construction?

16 MS. ORDAZ: Well, I would just offer that
17 preparation, planning ahead is a big part of what we
18 do, and you'll hear further later this month at our
19 business line briefing, Region II will be speaking and
20 there's preparation underway now to think toward
21 what's coming down the pike. But, Frank, may add.

22 MR. AKSTULEWICZ: So it's a great
23 question, Commissioner. Our budget cycle is two years
24 out, so you would think that we would need about two
25 years to have the resources in place and budgeted for

1 those activities to manifest themselves at the site
2 specifically. But what I want to also mention is we
3 have in place annual communications with the utility,
4 and we're just in the process of completing what we
5 call our business plan discussions where we talk to
6 the utility specifically about that to ask the very
7 questions that you were asking of the applicant
8 earlier in the overview with them about when are your
9 decisions going to be made, what are the factors that
10 are going to play into that, you know, the time lines
11 for those things, so that we are already looking out
12 well into the future to try to anticipate for
13 budgeting purposes when that might occur and then have
14 it confirmed as part of our regular interaction
15 process.

16 COMMISSIONER BARAN: Thank you.

17 CHAIRMAN BURNS: Oh, thanks, Commissioner.
18 There are a couple of things I have. I'm going to
19 pose to you the question I posed to the applicant,
20 which is with respect to how you think the design-
21 centered review approach is working, is it working as
22 we envisioned it, or do you think we're realizing
23 efficiencies that we expected when the approach was
24 considered, was conceived and begun implementation?

25 MS. ORDAZ: And the answer is yes. The

1 design-centered review approach has been working,
2 Frank will elaborate on that, with the five generic
3 issues identified previously on the Levy docket, as
4 well, that's helped with the efficiencies. The whole
5 concept of one issue, one review, one solution, that
6 mind set has helped with the staff's review. Frank,
7 would you like to add?

8 MR. AKSTULEWICZ: I agree with Vonna. I
9 think the challenge that Mr. Kitchen referred to in
10 his discussion was when issues are identified that
11 challenge the underlying findings for the design
12 certification, which inhibits the staff from moving
13 forward with saying that all the necessary regulations
14 have been satisfied or that there's reasonable
15 assurance, those are the challenges where construction
16 leads to potentially additional design changes that
17 lead to questions about certification and the findings
18 made there.

19 But, overall, the design center approach
20 is reaping the benefits of what was intended when it
21 was originally started. The only unfortunate part is
22 we've seen that delayed in terms of its application or
23 implementation because of these issues that are
24 associated with the certification itself.

25 CHAIRMAN BURNS: Okay, all right. Well,

1 let me turn it to a subject that Commissioner Baran
2 touched on, and that's, I think, the question of
3 whether the reviews, there's a certain efficiency in
4 the reviews and all that, but let me focus on, you
5 know, Vonna gave some statistics. For example, there
6 are 950 questions put to the applicant, about a
7 quarter of which dealt with environmental issues, so
8 about 700 on the safety issues. Can you give me an
9 idea, and I'm not saying give me an exact count, but
10 what were the particular areas of focus, like from a
11 larger perspective or overall perspective, that those
12 questions focus on?

13 MR. AKSTULEWICZ: Okay. So going back to
14 what I said originally that a lot of the reviews are
15 now shaped by the site characteristics, so many of the
16 questions, and you'll hear it come out in the safety
17 panel later, about the seismic nature of this
18 particular site. It's unique. There were exceedances
19 to the DCD criteria. So a lot of the questions were
20 associated with the development of the site-specific
21 acceptance criteria, the analyses that were done to
22 support the conclusions that the site was or the
23 equipment for the facility that was bounded to
24 buildings was going to be okay, those types of things
25 are where a lot of the questions are shaped.

1 You also get questions associated with
2 maybe some of the specific implementation of the
3 systems themselves that are discussed in some limited
4 detail in the certification, but the staff is probing
5 whether additional detail is available with respect to
6 the evolution of the application.

7 CHAIRMAN BURNS: Okay. And the
8 environmental area, what would you say those 250
9 questions, what were the primary focal points?

10 MR. LEE: I'm going to have to defer that
11 to the staff on the primary focus. But, you know,
12 when we did the initial scoping and when we received
13 feedback on the draft Environmental Impact Statement,
14 obviously the concerns from the public were in the
15 area of water consumption, water usage, and so forth.
16 And so in response to that, we took additional
17 measures to look into that concern or address those
18 concerns. But the questions that we asked is wide-
19 ranging across the board and all of the resources
20 aspects that we consider in the impact.

21 CHAIRMAN BURNS: And you mentioned the
22 1300 comments from the public. Again, are some of
23 these, they're either what I'll call repeat, not
24 repeat questions -- I've been in the position as a
25 staff counsel where I basically have 500 cards that

1 are essentially signed, you know, postcards that are
2 signed that raise a particular issue, which is, you
3 know, perfectly legitimate. What I'm trying to
4 understand is is that a phenomenon you had here in
5 terms of the comments that are placed on it, or is it,
6 again, from the public comments, particular themes or,
7 you know, differentiated from one another?

8 MR. AKSTULEWICZ: I think the answer is we
9 did not see the phenomenon where we had the
10 traditional or a systematic use of a postcard type of
11 assessment supporting one position on this particular
12 application. So the questions that we got were broad-
13 reaching and they focused on, you know, the new pond.
14 They focused on alternative sites. They focused on
15 the water usage with respect to how you're going to
16 provide cooling to the facility, some of the permits
17 that the Army Corps had the issue. The incorporating
18 agency were also part of the discussion.

19 CHAIRMAN BURNS: Okay. And the final
20 question again, we may touch on this more during the
21 environmental presentation, in the record of decision
22 the staff notes that the document contains a statement
23 that the NRC has taken all practicable measures within
24 its jurisdiction to avoid or minimize environmental
25 harm from the alternative selected. Can you describe

1 for me in terms of what does the term practicable mean
2 and how do you apply it in this context?

3 MR. AKSTULEWICZ: I'll try. Okay. So
4 practicable means, includes, I shouldn't say means but
5 includes such things as potential mitigation. It
6 includes conditions that would be placed on permits by
7 other agencies, like the Corps, the Forest Service, or
8 incorporating best practices with respect to resource,
9 management, those particular activities. That's what
10 the staff is inferring by the term as, you know,
11 practicable.

12 CHAIRMAN BURNS: Okay. And I presume then
13 you'll highlight later in terms of what some of those
14 were in --

15 MR. AKSTULEWICZ: I think the
16 environmental panel would be more than happy to
17 elaborate on that.

18 CHAIRMAN BURNS: Okay, all right. Thanks
19 very much. Okay. We've come to the end of our first
20 panel, and, at this point, we're going to take a
21 break, I think about, well, let's say why don't we
22 take about a ten-minute break? And then we'll
23 reconvene close to a quarter of 11. Thanks.

24 (Whereupon, the foregoing matter went off
25 the record at 10:30 a.m. and went back on the record

1 at 10:44 a.m.)

2 CHAIRMAN BURNS: All right. We'll call
3 the hearing back to order. We're going to focus in
4 this next section, session on the safety aspects of
5 the application. The parties will address relevant
6 sections of the application in two chapters in
7 particular from the final safety evaluation report,
8 Chapter 3, referring to design of structures,
9 components, equipment, and systems, and Chapter 13,
10 conduct of operations.

11 I'm going to remind the witnesses you all
12 remain under oath, and I also advise you that you
13 should assume that the Commission is familiar with the
14 pre-hearing filings. And, again, as I announced at
15 the beginning of the hearing, we'll have both this
16 applicant's panel and then the staff panel testify and
17 then proceed to Commission questions.

18 So we'll begin with the applicant panel,
19 and, again, I want to ask you to introduce yourselves
20 and then you may proceed.

21 MR. TAYLOR: Larry Taylor. I'm with Duke
22 Energy, nuclear development.

23 MR. KITCHEN: Bob Kitchen, Duke Energy,
24 nuclear development.

25 MR. THRASHER: John Thrasher, Duke Energy,

1 nuclear development.

2 CHAIRMAN BURNS: Okay. You may proceed.

3 MR. THRASHER: Good morning, Mr. Chairman
4 and Commissioners. I'm John Thrasher, Director of
5 Engineering and Nuclear Development at Duke Energy.
6 I'm going to provide an overview of the seismic
7 evaluation performed for the Lee site that concludes
8 the site is suitable for deployment of the AP1000
9 standard plant. I'll also cover Duke Energy's request
10 for an exception regarding the location of the
11 Emergency Operations Facility, or EOF.

12 Next slide, please. First, the seismic
13 design basis for the AP1000 standard plant is a
14 Certified Seismic Design Response Spectra, or CSDRS.
15 The AP1000 standard plant design for the CSDRS has
16 also been qualified for the Hard Rock High Frequency
17 Spectra, or HRHF Spectra, which was developed to
18 address high-frequency spectra exceedances for hard
19 rock sites in the Southeastern United States.

20 The AP1000 design control document allows
21 qualification of a site where the site spectra exceeds
22 the CSDRS by either of two approaches: first,
23 comparison of the site spectra to the HRHF spectra or,
24 secondly, use of the same evaluation methodology used
25 to qualify the AP1000 standard plant for the Hard Rock

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1 High Frequency Spectra. Lee Nuclear Station is a
2 uniform hard rock site and utilizes the evaluation
3 methodology to qualify the site.

4 The Lee site horizontal spectrum is shown
5 by the blue line on this figure. Lee site spectra
6 were developed using the updated Central Eastern
7 United States Seismic Source Characterization issued
8 in 2012 as NUREG-2115. It also used the updated EPRI
9 2013 Ground-Motion Model. The AP1000 CSDRS is shown
10 by the red line on this figure. The CSDRS is a robust
11 design spectra that is rich in energy in the frequency
12 ranges of 1 to 10 hertz where structures, piping, and
13 major equipment naturally respond. This frequency
14 range is shaded in red in the figure.

15 High displacements in this low-frequency
16 range lead to high building and equipment forces and
17 moments. The AP1000 standard plant is designed for
18 the CSDRS which ensures a rugged, robust plant design
19 configuration.

20 The Lee site spectra are similar in shape
21 to the AP1000 Hard Rock High Frequency Spectra but
22 exceed that spectra. As shown by the blue line on
23 this figure, the Lee site horizontal spectrum is
24 significantly lower than the CSDRS spectra in the
25 frequency ranges of 1 to 10 hertz where structures,

1 piping, and major equipment respond. The Lee site
2 spectra exceed the CSDRS only in the high-frequency
3 range where low displacements lead to small non-
4 damaging building and equipment forces and moments.
5 The high-frequency range is shaded in blue in this
6 figure.

7 Next slide, please. The AP1000 design
8 control document allows use of the same evaluation
9 methodology used to qualify the AP1000 standard plant
10 for the HRHF spectra for qualifying a site where the
11 spectra exceeds the CSDRS. The Lee combined license
12 application is a site-specific implementation of this
13 evaluation methodology. Analysis confirmed that the
14 CSDRS controls design forces and moments for
15 structures and major equipment, typically bounding
16 site-specific spectra results with significant margin.
17 CSDRS and HRHF piping stresses envelope the Lee site-
18 specific spectra piping stresses. Test Response
19 Spectra used to qualify AP1000 high-frequency
20 sensitive equipment bound the required response
21 spectra for the Lee site-specific equipment
22 qualification.

23 In conclusion, the high-frequency seismic
24 input for the Lee site is non-damaging and the Lee
25 site is qualified for deployment of the AP1000

1 standard plant.

2 Duke Energy is requesting an exception for
3 the location of the EOF to use the common EOF in
4 Charlotte, North Carolina, which currently supports
5 Catawba, McGuire, and Oconee Nuclear Stations. The
6 common EOF is approximately 40 miles from the Lee
7 site. The near site assembly area is provided
8 approximately 15 miles from the Lee site at a Duke
9 Energy training facility in Kings Mountain, North
10 Carolina if needed by NRC or other emergency
11 responders.

12 The common EOF has supported multi-site
13 drill and exercises. The Lee combined license
14 application includes a proposed license condition to
15 perform a similar multi-site drill and exercise that
16 would include the Lee site and one additional nuclear
17 site prior to fuel load.

18 Next slide. This map of the Duke Energy
19 Carolina service territory was shown in the overview
20 presentation earlier today. Again, the common EOF in
21 Charlotte is approximately 40 miles from the Lee site,
22 and the near site assembly area in Kings Mountain is
23 approximately 15 miles from the Lee site.

24 Next slide, please. This concludes our
25 safety panel presentation. Thank you.

1 CHAIRMAN BURNS: Thank you. And I'll ask
2 the staff to move up. Again, I'll ask you to identify
3 yourselves for the record, and I'll start with Mr.
4 Thomas.

5 MR. THOMAS: Hi, I'm Kenneth Thomas, an
6 Emergency Preparedness Specialist in the Division of
7 Preparedness Response in the Office of Nuclear
8 Security and Incident Response.

9 MR. HUGHES: I am Brian Hughes, Senior
10 Project Manager, Division of New Reactor Licensing in
11 the Office of New Reactors.

12 MR. ROCHE-RIVERA: I am Robert Roche-
13 Rivera. I'm a Structural Engineer in the Division of
14 Engineering, Infrastructure and Advanced Reactors, in
15 the Office of New Reactors.

16 CHAIRMAN BURNS: Okay. You may proceed.
17 I'm not sure. Are you going to start, Mr. Hughes?
18 Okay, thanks.

19 MR. HUGHES: Good morning, Chairman Burns
20 and Commissioners. My name is Brian Hughes, and I am
21 the lead Project Manager for the staff review of the
22 William States Lee III Nuclear Station, Units 1 and 2,
23 combined license application.

24 Slide two, please. Joining me on this
25 panel are Mr. Robert Roche-Rivera and Mr. Kenneth

1 Thomas.

2 Slide three, please. The staff's
3 presentation for this panel will discuss two unique
4 site-specific topics of the safety review. The two
5 topics in order are: first, the Lee Site Foundation
6 Response Spectra and, second, the Emergency Operations
7 Facility.

8 I will now turn over our presentation to
9 Robert Roche-Rivera, who will address the topic of the
10 Site Foundation Response Spectra at the Lee site.

11 MR. ROCHE-RIVERA: Thank you, Brian. As
12 indicated moments ago, my name is Robert Roche-Rivera.
13 I am a Structural Engineer in the Office of New
14 Reactors. I was the lead reviewer for the structural
15 engineering aspects of the Lee COL application. On
16 the following slides, I'll present to you the staff's
17 review of the seismic design and analysis issues and
18 respective resolution for the Lee application.

19 In addition to structures, the
20 presentation addresses primary components, piping
21 systems, and electronic and electrical equipment. We
22 have staff in the audience for responding to questions
23 related to such system and components, as necessary.

24 Slide five, please. In accordance with
25 the AP1000 DCD, to assess the adequacy of the AP1000

1 standard design for a particular site, a COL applicant
2 compares the site-specific response spectra, which,
3 for Lee, is representing the figure on the slide by
4 the green curve to the AP1000 Certified Seismic Design
5 Response Spectra, or CSDRS, shown in the figure by the
6 dashed blue line.

7 The seismic design of the AP1000 standard
8 plan is based on the CSDRS. In addition to the CSDRS,
9 the AP1000 DCD includes a Hard Rock High Frequency
10 Spectra, or HRHF, shown in the figure by the dashed
11 orange line. The HRHF spectra are included in the
12 AP1000 DCD as an alternative set of spectra to assess
13 the adequacy of the AP1000 standard design for sites
14 with site-specific response spectra exceeding Hard
15 Rock High Frequency characteristics.

16 Additionally, the AP1000 included an HRHF
17 seismic evaluation which demonstrated that the HRHF
18 input is non-damaging to the AP1000 design. However,
19 as shown in the figure, the Lee Site Foundation
20 Response Spectra exceeds both the CSDRS and the HRHF
21 spectra in the high-frequency range.

22 Slide six, please. Due to the exceedance,
23 the applicant needed to request a departure from
24 AP1000 certified design, namely the Lee Departure 2.0-
25 1. Furthermore, in accordance with the AP1000 DCD,

1 the high-frequency spectra exceedances required site-
2 specific seismic evaluations.

3 Slide seven, please. Consistent with the
4 AP1000 DCD, Lee performed a site-specific seismic
5 evaluation to demonstrate that a high-frequency
6 exceedance is non-damaging. As a first step of this
7 site evaluation, the site In-Structure Response
8 Spectra, or ISRS, were compared with the corresponding
9 CSDRS and HRHF ISRS at locations defined in the AP1000
10 DCD. This comparison showed small ISRS exceedances in
11 the high-frequency range.

12 Slide eight, please. In accordance with
13 the AP1000 DCD, the ISRS exceedances required
14 additional more detailed evaluation of nuclear island
15 seismic category one and adjacent seismic category two
16 structures' primary components by consistence and
17 electromechanical equipment. This evaluation included
18 dynamic analysis of structures, primary components,
19 and piping systems, and the review of equipment test
20 information for representative high-frequency
21 sensitive equipment.

22 Slide nine, please. From the site-
23 specific dynamic analysis, the applicant obtained
24 forces, stresses, and relative displacements induced
25 by the Site Foundation Response Spectra and compared

1 them with the corresponding AP1000 forces and stresses
2 and relative displacement requirements for nuclear
3 island and adjacent structures' interaction.

4 Staff reviewed these comparisons and found
5 them to demonstrate that the site-specific forces on
6 nuclear island seismic category one structures are
7 bounded by AP1000 forces, and the relative
8 displacements between nuclear island and adjacent
9 structures are much smaller than the minimum required
10 separation between them. And, therefore, there's no
11 physical interaction between these structures.

12 Slide ten, please. Also, the comparisons
13 demonstrated that site-specific forces and stresses on
14 primary components and piping systems are bounded by
15 AP1000 forces and stresses respectively.

16 Slide 11, please. In addition to the
17 site-specific dynamic analysis for structures' primary
18 components and piping systems, the applicant performed
19 a review of test information for electromechanical
20 equipment. The applicant provided comparisons between
21 site-specific Required Response Spectra, or RRS, for
22 high-frequency sensitive equipment and corresponding
23 Test Response Spectra, or TRS, based on AP1000
24 requirements. Staff reviewed these comparisons and
25 found them to demonstrate that the site-specific

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1 Required Response Spectra for representative high-
2 frequency sensitive equipment are bounded by the Test
3 Response Spectra based on AP1000 requirements.
4 Further, the applicant committed in the FSER to ensure
5 that all future Test Response Spectra for high-
6 frequency sensitive equipment will envelope the site-
7 specific Required Response Spectra.

8 In conclusion, based on a review of the
9 multiple aspects of the applicant's site-specific
10 evaluation, including request for additional
11 information and audit of the applicant's structural
12 analysis, the staff found that Lee Departure 2.0-1 is
13 acceptable because the applicant's site-specific
14 evaluations demonstrated in each of the three specs
15 that the AP1000 DCD design is adequate for use at the
16 Lee site and that these evaluations are consistent
17 with the AP1000 DCD criteria, the guidance in the
18 standard review plan, and Interim Staff Guidance.

19 This concludes my portion of the
20 presentation. Thank you for your attention, and I
21 will now turn over my presentation to Mr. Kenneth
22 Thomas.

23 MR. THOMAS: Thank you, Robert. My name
24 is Kenneth Thomas, and I'm an Emergency Preparedness
25 Specialist in the Policy and Oversight Branch,

1 Division of Preparedness and Response, Office of
2 Nuclear Security and Incident Response.

3 Slide 13, please. I will be addressing
4 the Duke Energy Carolina, or DEC, request to use the
5 existing corporate Emergency Operations Facility, or
6 EOF, located in the Duke Energy Center in Charlotte,
7 North Carolina for the proposed Lee site. Since the
8 location of the EOF is greater than 25 miles from the
9 Lee site, Commission approval is required in
10 accordance with Appendix E, Section IV, of 10 CFR Part
11 50 prior to implementation of the EOF for the Lee
12 site.

13 Slide 14, please. As part of the Lee COL
14 application, DEC requested to locate the EOF for the
15 Lee site in existing corporate EOF located in
16 Charlotte, North Carolina. The Commission previously
17 approved the corporate EOF for the McGuire, Catawba,
18 and Oconee Nuclear Stations in a staff requirements
19 memorandum for SECY-05-0172. The staff's review of
20 the request focused on meeting the requirements for an
21 EOF in 10 CFR 50.47(b)(8) and in Appendix E, Section
22 IV. The staff reviewed the description of the EOF in
23 the emergency plan, which is contained in Part 5 of
24 the application. The NRC staff reviewed the
25 justification for the use of the existing EOF for the

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1 proposed Lee site, which is provided in Appendix 9 to
2 the emergency plan.

3 Slide 15, please. As a result of its
4 review, the staff found that the EOF will have the
5 capability to obtain and display plan data and
6 radiological information and the ability to analyze
7 plant technical information.

8 Slide 16, please. Additionally, the staff
9 found that the EOF will have the capability to provide
10 technical briefings on event conditions and prognoses,
11 as well as determine recommended public protective
12 actions to federal and state response organizations
13 for each unit at a reactor site and for each site that
14 the EOF serves.

15 Slide 17, please. The staff documented
16 its findings and conclusions in Chapter 13, Conduct of
17 Operations, of the final safety evaluation report that
18 the corporate EOF will meet the regulations contained
19 in 10 CFR 50.47(b) (8) and in Appendix E to Part 50 and
20 conforms to applicable staff guidance, subject to the
21 completion of the inspection, test, analysis, and
22 acceptance criteria and License Condition 13-7, which
23 will require DEC to perform an integrated full-scale
24 NRC and Federal Emergency Management Agency evaluated
25 exercise to test the activation, the operation, and

1 the capability of the EOF for the Lee site and one
2 additional nuclear site that is supported by the EOF
3 prior to fuel loading.

4 Slide 18, please. Per the staff
5 requirements memorandum for SECY-10-78, the staff
6 requests the Commission to make a determination of the
7 acceptability for the EOF for the Lee site as part of
8 this hearing. In their December 14, 2015 letter, the
9 ACRS recommended that this request for an EOF should
10 be approved.

11 This concludes the staff presentation for
12 this safety panel.

13 CHAIRMAN BURNS: All right. Thank you.
14 Thank you all. Actually, I think you're seated just
15 fine. I can see everybody pretty well. It looks okay
16 for you all? Okay, good.

17 And I believe we start with Commissioner
18 Baran.

19 COMMISSIONER BARAN: Great, thanks. Well,
20 thank you for all your work on this review and for
21 your presentations. I want to pick up right where we
22 left off on the EOF request to use the existing
23 corporate EOF in Charlotte, rather than something
24 closer to the Lee site.

25 The AP1000 would be a new technology for

1 the EOF in Charlotte, and responses to pre-hearing
2 questions explained that it will be staffed from the
3 general office in Charlotte, as well as the Catawba
4 and McGuire sites. And the responses to the questions
5 also noted that the EOF director, assistant director,
6 and accident assessment manager are required to take
7 training to cover multiple reactor technologies.

8 Let me start by asking Duke will other EOF
9 staff be receiving AP1000-specific training, and how
10 did Duke determine which EOF personnel would need
11 AP1000-specific training?

12 MR. KITCHEN: I think, procedurally, the
13 only requirements for this training are the ones we
14 specified, the EOF director, accident assessment
15 leader, and the third. But the reason for those
16 positions requiring training is those are key
17 positions in the Emergency Operating Facility that are
18 coordinating response to an issue.

19 There's a statement that we have folks
20 from the corporate office, as well as the plants, and
21 there's going to be some variation in which folks are
22 from which plants, just from staffing and flexibility.
23 So by default, some folks would be trained by virtue
24 of being from their plant, but that's not specified in
25 the procedure. So the only ones that would be, you

1 know, right now I can tell you would be trained are
2 the director positions and accident team leaders.

3 COMMISSIONER BARAN: And those key
4 positions would receive AP1000-specific training?

5 MR. KITCHEN: Correct. And it's also
6 focused, as you can imagine because of the purpose of
7 the facility, on how to deal with mitigating beyond
8 design basis type events or significant accidents.

9 COMMISSIONER BARAN: Kenneth, did the NRC
10 staff have any concerns during your review that the
11 Lee EOF would be staffed with personnel who wouldn't
12 be gaining first-hand operational experience with this
13 design at the Lee site?

14 MR. THOMAS: The staff reviewed the
15 application materials and the content against the
16 applicable guidance that we have and the regulations.
17 It did not cause me particular concerns about Duke not
18 identifying the specific training since the training
19 aspects is something that would be one determined
20 during a job task analysis and so forth for the key
21 positions. It didn't raise any more concerns. I knew
22 that that would be addressed since they would be
23 taking care of that during the operator training and
24 any additional training that they would have to
25 identify by using a systems approach to training.

1 COMMISSIONER BARAN: Okay. Well, this
2 could be a follow-up question for you or for Mr.
3 Kitchen if you want to jump in. I mean, so if the EOF
4 were on-site at Lee, presumably it will be staffed by
5 operators from Lee who are, you know, very familiar
6 with the site, they're working there at the site day-
7 in and day-out. You know, a potential disadvantage of
8 having it in Charlotte is you wouldn't have that.
9 You'd have folks who were, you know, from the
10 corporate office or from other sites and weren't
11 having daily operational experience at the Lee site.

12 How did you evaluate the pros and cons of
13 that? Does it cause you any concerns? Are there ways
14 you're going to address that to make that, you know,
15 you have folks there, if it ever came to pass that you
16 used the EOF, that were really familiar with the Lee
17 site?

18 MR. KITCHEN: I guess I'll start, and if
19 John wants to add anything or Kenneth. But the way we
20 look at this, I mean, thinking about the nature of the
21 facilities, on-site you have your operational support
22 center, Technical Support Center, and of course the
23 control room. Those folks are AP1000, you know, site
24 trained individuals, and, obviously, they're
25 directing, you might say, the technical response to

1 the unit issue.

2 The EOF has moved back, essentially, a
3 level. It has a large function in terms of
4 coordinating communication and bigger-picture aspects
5 of a max of mitigation. So the need for a lot of
6 detailed-trained folks, whether it's an AP1000 or a
7 boiler water reactor, would be less so in an EOF than
8 certainly the site facilities.

9 The other thing I would say, and it's not
10 necessarily true across the board for EOF locations,
11 but in this case we're 40 miles from the plant.

12 COMMISSIONER BARAN: Okay. And let me
13 ask, so that's a very good point about the Technical
14 Support Center, and Duke's requested a departure to
15 provide for a common Technical Support Center for both
16 units, and that departure would modestly increase the
17 travel time from the control room to the TSC during
18 emergency.

19 What was the thinking behind requesting
20 this departure? Did you see advantages or
21 efficiencies in emergency preparedness or having a
22 combined TSC?

23 MR. KITCHEN: Yes. Well, I would, I mean,
24 the AP1000 standard design has the technical support
25 center located in the unit. So what we're doing is

1 creating a common location for the Technical Support
2 Center. That's a similar change to what was done on
3 the Lee plants, as well. And I would just say from my
4 own personal experience, as a dual-unit boiling water
5 reactor, we had a common TSC.

6 The travel time, you know, it's really not
7 a significant difference from the travel time into
8 that location where it was designed --

9 COMMISSIONER BARAN: A couple of minutes
10 versus, on top of the couple of minutes that it would
11 otherwise take.

12 MR. KITCHEN: Yes, sir.

13 COMMISSIONER BARAN: Okay. And, Kenneth,
14 was there any additional analysis the staff did to
15 evaluate that departure, that requested departure?

16 MR. THOMAS: We reviewed the departure and
17 the application materials there, and we found out that
18 the advances from the 1980s, when the guidance from
19 NUREG-0737, Supplement 1, recommends the TSC be
20 located within two minutes of control room. The
21 advances in communications has pretty much compensated
22 for a lot of the necessity of having a face to face.
23 The data sources, all of the data parameters that are
24 available in the control room are, by far and large,
25 available in the TSCs. So the actual need for a face-

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1 to-face communication is mitigated, to a large extent,
2 by the various communication networks, as well as the
3 data networks, that have come in line during the last
4 35 years.

5 So we analyzed that and we looked at the
6 information that Duke had put into the application,
7 and we documented our review in the FSER, and we took
8 into consideration what we have done with other
9 facilities, as well. We feel very confident that
10 they're meeting the intent of the underlying guidance
11 of being able to have data communications available to
12 communicate between the leader in the control room and
13 in the TSC.

14 COMMISSIONER BARAN: Okay. Thank you.
15 Let me ask one additional issue. I think it would be
16 a question for the staff. Pre-hearing question 13
17 asked about the license condition for removal of the
18 Cherokee project storm water drain line, and the staff
19 noted in its response to that pre-hearing question
20 that no other legacy structures affected the staff's
21 hydrologic review.

22 The FSER also contains commitments for the
23 removal of other legacy structures, groundwater
24 drainage system, other legacy structures. While the
25 removal of these other structures may not affect the

1 hydrologic review, were the staff's safety conclusions
2 on structural or seismic issues predicated on the
3 removal of these additional legacy structures?

4 MR. HUGHES: My name is Brian Hughes.
5 What the staff reviewed was the accidental release of
6 a waste, radioactive waste storage tank and the path
7 that tank would take to get to the target or whatever
8 the target, wherever the target area is. Their
9 review, it assumed that that legacy drain would be
10 backfilled and it would be backfilled, removed and
11 backfilled with similar material that was used during
12 their evaluation. They also found that there was no
13 other legacy issues for that analysis, and that was
14 the reason that we -- we went back and forth on
15 whether that should be a license condition or not, but
16 we decided in the end, since that was part of our
17 basis, for saying that it was acceptable that we would
18 make it a license condition.

19 COMMISSIONER BARAN: What I'm trying to
20 figure out is whether or not for outside the
21 hydrologic space, you know, if we're talking seismic
22 or structural, did the staff similarly reach
23 conclusions on those that were predicated on these
24 other legacy structures being removed? And I guess
25 the question that that leads to is, what I'm trying to

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1 figure out is does it make sense for these to be FSER
2 commitments or are these, should these be license
3 conditions because the staff's non-hydrologic analysis
4 depended on the removal of those structures?

5 MR. HUGHES: I understand your question a
6 little better now. The staff did look at the legacy
7 components that were there, and none of the legacy
8 components had any influence on the actual analysis in
9 any way.

10 COMMISSIONER BARAN: Okay. Well, that
11 answered my question. Okay, thank you. Did you want
12 to add anything on seismic?

13 MR. HUGHES: No, I think we're fine with
14 the answer.

15 COMMISSIONER BARAN: Thank you.

16 CHAIRMAN BURNS: Thanks, Commissioner.
17 Let me ask a couple of questions. Actually, it's
18 somewhat follow-up to Commissioner Baran's question.
19 The Unit 2 COL has a license condition which is not
20 found in Unit 1. This is License Condition
21 2(d)(12)(e), which requires to perform geologic
22 mapping of excavations for safety-related structures,
23 examine and evaluate geological features discovered in
24 the excavations, and inform the director of NRO in
25 writing once excavations for these safety-related

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1 structures are open for examination.

2 So it appears only in the Unit 2 COL. Is
3 this because of the prior, that the Unit 1 is on the
4 prior siting, or can you explain for me the rationale
5 for it being in 2 and not in 1? Staff, go ahead.

6 MR. HUGHES: Yes. Again, this is Brian
7 Hughes. Unit 1 had pre-Cherokee concrete poured over
8 the site. What we did was we looked at the inspection
9 report in the documents in the library public document
10 room which existed that Unit 1's Cherokee site was
11 inspected by Region II prior to the application of the
12 concrete above it. They also had the --

13 CHAIRMAN BURNS: And this is, just to make
14 sure I'm clear, this is in the time frame within the
15 late 70s - early 80s time frame?

16 MR. HUGHES: I'm not sure if it was in the
17 70s or --

18 CHAIRMAN BURNS: But we're talking -- yes,
19 yes, okay. Sorry, go ahead.

20 MR. HUGHES: It might have been '74. But
21 so -- and what they did was they took those documents,
22 they recreated a geological mapping from the original
23 documents. The original geographical map was not
24 completed because they abandoned the site, but they
25 still had the original surveys and the charts, and

1 that was reviewed by us very well. Is Gerry Stirewalt
2 available? Yes, perhaps Gerry could describe that to
3 you.

4 CHAIRMAN BURNS: Welcome back. We're not
5 going to talk about cars today, though, I don't think,
6 right? Go ahead. Identify yourself -- I know you
7 were put under oath -- and then proceed.

8 DR. STIREWALT: Thank you, Mr. Chairman.
9 I'm Gerry Stirewalt. I was the senior geologist on
10 Lee, and I am excited to get the question about
11 geology for sure.

12 What Brian said is absolutely correct. We
13 looked very carefully at the rejuvenation of the
14 original work that was actually done in the 70s for
15 Cherokee 1 and the individual that actually recompiled
16 stuff from his notes was the individual who led that
17 mapping effort. So we looked very carefully. I mean,
18 somebody who really knows his stuff, so we looked at
19 the features that were on those maps, checked things
20 like, well, okay, what about the orientation of the
21 structures that you measured beneath the concrete, do
22 they reflect what we see in Unit 2? Well, guess what?
23 Yes, they did.

24 And the other thing, the other thing that
25 we did, we didn't just look at the maps, we also

1 looked around the edges of the concrete where some of
2 those structures actually exited the concrete. One
3 particular fault that was the largest structure, still
4 very old because they had really good age date control
5 on it, but we actually looked at that particular
6 feature in the field where it was exposed on the
7 southern edge of Unit 1. So we actually looked at the
8 major structure that was really beneath that site. So
9 it really felt good.

10 CHAIRMAN BURNS: Okay, great. Well, I
11 think you've given a good explanation for the, you
12 know, in terms of the condition and the understanding
13 we have from the prior work that was done on the site.
14 So I appreciate that.

15 I'm going to pose a question to the
16 applicant. In pre-hearing question 12, which had been
17 asked related to the fact that the Lee site-specific
18 horizontal and vertical spectra exceeded the Certified
19 Seismic Design Spectra and the Hard Rock High
20 Frequency Spectra for the AP1000, the applicant's
21 response provided the FSER text contained a commitment
22 to ensure that future seismic qualification testing
23 for high-frequency sensitive safety-related equipment
24 were within the envelope for the Lee site-specific
25 requirements. And this FSER also describes equipment

1 qualification programs conducted as part of the
2 standardized effort in support of the entire fleet of
3 the AP1000s. It notes that the completed testing
4 showed that the Test Response Spectra show that for
5 Lee it was within it by a significant margin.

6 So my question to you after that long
7 introduction is can you tell me a little bit more
8 about the standardized, this standardized effort
9 across the AP1000, who's conducting the testing, and
10 how are the results shared among the AP1000 applicants
11 and licensees?

12 MR. THRASHER: Yes. A standard approach
13 to the testing is something that is developed and
14 performed by Westinghouse, so they develop a Test
15 Response Spectra that basically bounds the Certified
16 Seismic Design Response and also the HRHF Spectra, and
17 then we'll also look in the reports or the testing
18 that had been done to date on those high-frequency
19 sensitive components. Those test results or test
20 spectra that envelope those two spectra were also
21 reviewed to ensure that they envelope the Lee site
22 spectra.

23 And so in going forward, Westinghouse, as
24 they continue to procure that equipment, so
25 procurement requirements and also, at the Lee site,

1 our design control process will have to include steps
2 to ensure that any future equipment replacements. So
3 on initial construction of the plant, the procurement
4 should control and Westinghouse would control ensuring
5 the Test Response Spectra bound CSDRS, HRHF Spectra,
6 and the Lee site spectra. And then going forward, if
7 we had to do maintenance work and, say, replace one of
8 those components, our procurement design control
9 processes should ensure that that test spectra again
10 exceeds those three spectra.

11 CHAIRMAN BURNS: Okay, thanks. Thanks
12 very much. I'm going to ask one last question, go
13 back to some of the questions, the issues on the EOF.
14 One of the things when we go back in the historic
15 record with respect to the approval of the 2005
16 approval, basically, to consolidate the EOF for Oconee
17 into the Catawba and McGuire EOF, and in the staff
18 requirements memo in 2005, the Commission noted two
19 conditions for approval. One of the conditions
20 required Duke to provide a functional working space
21 for up to ten people, including NRC, state, and FEMA
22 representatives at the former Oconee or equivalent
23 near-site facilities. Is this type of condition in
24 the approval for the Lee application?

25 MR. THOMAS: As part of the License

1 Condition 13-7, we are requiring Duke DEC to perform
2 an NRC/FEMA evaluated drill that does take at least
3 one unit at Lee and one other unit or site from the
4 Lee network.

5 CHAIRMAN BURNS: Okay. At the same time.
6 But my question goes to this functional working space
7 issue. Okay. Mr. Hughes?

8 MR. HUGHES: This is Brian Hughes. Part
9 of the initial presentation by the applicant stated
10 that they have a training center, I believe it's about
11 15.5 miles from the facility. That training center is
12 also equipped with indication from the plant. They
13 have plant indications. They have room for the NRC
14 staff and supplemented staff. They have room for
15 briefing of the local responders.

16 So it's a fairly large facility. They
17 have integrated communication systems. They have,
18 similar to our emergency operations center, basically.
19 You have that type of indication that will be
20 available there. So there's reproduction stuff.

21 So there's everything that the staff would
22 need and, having been a previous inspector, I took a
23 hard look at that list and I'm very well convinced
24 that it is adequate.

25 CHAIRMAN BURNS: Okay, all right. Thanks

1 very much. Commissioner Svinicki?

2 COMMISSIONER SVINICKI: Well, thank you to
3 both the staff and applicant safety panels for their
4 presentations. Just to confirm my understanding of
5 testimony already given, I think this is for Duke, for
6 all of the removal of residual Cherokee structures
7 that will be necessary for the potential construction
8 of the two Lee units, have all of those residual
9 things that will be removed have been removed, or is
10 some of that work yet to be done?

11 MR. THRASHER: There's still some of that
12 work to be done. Basically, the demolition removal
13 work that we've done to date was focused on above-
14 ground structures.

15 COMMISSIONER SVINICKI: Okay.

16 MR. THRASHER: We still have some buried
17 piping and electrical items that require removal when
18 we move into construction, but we decided to minimize
19 ground disturbance and wait and do that at a later
20 time.

21 COMMISSIONER SVINICKI: Okay. Thank you
22 for that clarification. I was just uncertain because
23 some of what you had, you had presented the photos
24 that it looked like a number of things had already
25 been removed.

1 I guess to return to the common EOF topic,
2 I have had the opportunity to visit, in combination
3 with visiting some of Duke's operating reactor sites
4 in the area, to come to the common EOF facility. It
5 was not activated for an exercise or anything at the
6 time but just looking at it as it stood empty, it is
7 expansive, provides a lot of capability. There are a
8 lot of response assets there, and it looks like it
9 could house a significant number of responders and
10 other experts. It is also, as I think Commissioner
11 Baran mentioned, co-located with other corporate
12 offices of Duke. And it was my understanding that
13 there would be officials with technical knowledge that
14 would also, if they happened to be available right
15 there, would have knowledge of the various operations
16 of some of these facilities.

17 I think when we use the word corporate,
18 there's two ways of thinking of it, is that it's more
19 kind of administrative and financial functions, but my
20 understanding there are also executives with extensive
21 knowledge and others that, if it were during working
22 hours, might also be available. Am I correct in that
23 impression?

24 MR. THRASHER: Yes, that's correct. The
25 Nuclear Generation Department, there's several hundred

1 fleet employees with knowledge and manage major fleet
2 engineering programs that are housed in the --

3 COMMISSIONER SVINICKI: And I ask that
4 question or I asked you to confirm that just because
5 it was my understanding after visiting that, from Duke
6 Energy's perspectives, that's one of the advantages.
7 Anything is a weighing of advantages and disadvantages
8 to have something more remote, but it isn't remote
9 from everything, although I principally asked the
10 question because I had an enduring a couple days of
11 Charlotte traffic, which I had no idea was as horrible
12 as it is. And so my thought was during rush hour, you
13 know, can people really get here? But I think a very
14 valid response to that was, well, on the margins of
15 the workday, there are likely to be a lot of people
16 already present here because they work here at least
17 five days a week. So thanks for confirming that
18 understanding.

19 But it does bring to mind, and
20 particularly in light of the Chairman's quoting of the
21 2005 staff requirements memorandum calling for space
22 for ten, I think, state and other response officials,
23 there's tremendous capability in the EOF that I
24 toured, but there is also this separate proposal that,
25 as the applicant, you at least notified us of to add

1 progress, legacy progress operating reactors to the
2 common EOF.

3 Is there some kind of natural tipping
4 point where it's like so many units added to a common
5 EOF that, you know, it's no longer practical to be
6 managing a multi-unit event out of a common EOF? Or
7 if there is a tipping point, do you feel you've not
8 reached it with the proposals that you've already
9 sent? Obviously, you feel that way or you wouldn't
10 have requested approval of that.

11 MR. KITCHEN: I don't know how to draw the
12 line on what's the max. But, you know, we will
13 demonstrate a combined event two different stations as
14 part of our requirements for our license, and I
15 believe there's a similar requirement in the fleet
16 license amendment request, as well.

17 COMMISSIONER SVINICKI: Well, rather,
18 maybe -- and I agree with you that the question wasn't
19 very well structured on my part, but let me ask it
20 this way: with this request and the staff has
21 confirmed that they proposed that NRC add Lee to the
22 common EOF, you have another separate action before
23 the Agency about other progress energy legacy units
24 that potentially would be added.

25 Does any of that necessitate, if all those

1 things were approved, does that necessitate an
2 expansion of the capability that I toured in
3 Charlotte?

4 MR. KITCHEN: Well, certainly, the
5 displays have to replicate the plant, and I don't
6 think those data feeds are there, that sort of thing.
7 I don't think, you know, I can speak for the Lee
8 application. There's not an expansion in terms of
9 size of the facility plan for Lee. I don't believe
10 there is for the fleet LAR, but I'm not familiar
11 enough.

12 But I don't know that the ability to
13 display a lot of information with computer displays
14 and the ability to switch between displays and look at
15 various combinations of displays is significant with
16 computer capabilities. So I don't know that really
17 floor space is -- I think it's really more data
18 display.

19 COMMISSIONER SVINICKI: Okay, thank you.
20 Kenneth, would you like to add anything from the
21 staff's perspective on that line of questioning?

22 MR. THOMAS: I'm going to turn this over
23 to Mr. Barss. He's more in tune with what's going on
24 with the Lee or the Duke Energy LAR than I am.

25 COMMISSIONER SVINICKI: Okay, great.

1 MR. THOMAS: Mr. Dan Barss.

2 CHAIRMAN BARNES: Identify yourself and --

3 MR. BARSS: Dan Barss, I'm Team Leader in
4 the Office of Nuclear Security and Response
5 responsible for the emergency planning reviews.

6 And, it's a good question you asked, is
7 there a tipping point and when do you reach it? And,
8 I think that's a question -- it's a global question,
9 but I think the answer is more you have to look site-
10 specific or case-specific that we're looking at.

11 In this case, Duke, most of their
12 facilities are in two states. So, all of the
13 emergency responders, or most of the emergency
14 responders, for the state and local governments are
15 used to going to that facility for the existing units
16 that are there, and, you know, be added in if these
17 other three, which is a different licensing action, so
18 we're really not focusing on it here today, but if
19 those other three are joined with, they're still the
20 same state people.

21 So, it kind of, I don't want to say makes
22 sense, but it kind of fits together nicely.

23 Now, if you start talking on a bigger
24 geographic area, Florida or something like that, well,
25 now you're getting a little far out.

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1 So, I think we, as a staff, need to look
2 at it on a case by case basis and then would make our
3 recommendations to you the Commission.

4 COMMISSIONER SVINICKI: Well, and it
5 sounds like it you're saying that it -- some of the
6 capability cuts both ways, meaning that, even if you
7 were managing a response to a multi-unit event, as far
8 as Duke's perspective, if they're dispatching
9 corporate resources or individuals, the ability to
10 have that integrated, that's actually an advantage of
11 managing more of it out of one location.

12 Because, some of these are assets, and
13 maybe I shouldn't refer to people as assets, but
14 responders you're dispatching, that way, there won't
15 be claims on the same kind of resource and you would
16 have a real cohesion to it.

17 MR. BARSS: Yes, I agree with that.

18 COMMISSIONER SVINICKI: Okay, thank you.

19 And, Mr. Chairman, although I am desperate
20 to think about -- think of a geology question or a
21 CARs question, because we need that kind of energy
22 before lunch, I cannot -- the record was so clear on
23 many matters related to geology that I just simply
24 can't think of anything.

25 So, I yield back, thank you.

1 CHAIRMAN BURNS: We can think over lunch.

2 I think, unless there's anything else,
3 again, I appreciate the panelists for this safety
4 panel that we've had this morning.

5 Again, we will take a break. We're done
6 a little bit early, but we plan to reconvene at 1:15
7 with the environmental panel and the remainder of
8 today's proceeding.

9 We are adjourned.

10 (Whereupon, the above-entitled matter went
11 off the record at 11:33 a.m. and resumed at 1:16 p.m.)

12 CHAIRMAN BURNS: Okay, we'll bring the
13 hearing back to order.

14 And, this panel is the environmental
15 panel.

16 What I might ask our staff witnesses to do
17 is maybe move to the side, at least for the beginning
18 of the presentations here because I think the
19 Applicant's going to go first and then we'll bring you
20 back there. That way, it's sort of an unobstructed
21 view.

22 So, just -- or you can sit at the table,
23 I'm just saying, move the -- make it more like --
24 there we go, that's -- I think that's better.

25 So, again, this is the environmental

1 panel. The parties will address the final
2 Environmental Impact Statement, and particularly, one
3 novel issue that the staff has identified regarding
4 the proposed location of a new off-site reservoir,
5 Make-Up Pond C which we identified during some of the
6 testimony early this morning.

7 Again, I remind the witnesses on each
8 panel, you remain under oath and should assume that
9 the Commission is familiar with their pre-hearing
10 filings.

11 And, I'll ask then the Applicant's
12 witnesses, again, to introduce themselves and they
13 will proceed.

14 And, after that, we'll hear from the
15 staff.

16 So, Mr. Fallon, you want to start the
17 introductions again?

18 MR. FALLON: Chris Fallon, Duke Energy.

19 MR. KITCHEN: Bob Kitchen, Duke Energy.

20 MR. SNEAD: Paul Snead, Duke Energy.

21 MR. THRASHER: John Thrasher, Duke Energy.

22 CHAIRMAN BURNS: Okay, and you may
23 proceed.

24 MR. SNEAD: Thank you, Chairman.

25 Again, I'm Paul Snead. I'm the Siting and

1 Licensing Support Manager in Environmental Services
2 for Duke Energy.

3 And, slide two, please?

4 So, by way of quick summary, again, the
5 Environmental Report was submitted in December of 2007
6 and Duke Energy supplemented that in September of
7 2009.

8 There was thorough NRC staff audit of the
9 Environmental Report and the alternative site analyses
10 that have been performed by Duke Energy.

11 Note, that for the alternative site
12 analyses, the final Environmental Impact Statement
13 concluded there was no obviously preferable
14 alternative site and no obviously superior site.

15 And, the Army Corps of Engineers, in their
16 404 permit determination, also determined that Lee was
17 the least environmentally damaging practicable
18 alternative site.

19 There was extensive public outreach for
20 both the initial and the supplemental scoping
21 processes associated with the application.

22 And, of course, consultation with federal,
23 Tribal, state and local government entities.

24 The final Environmental Impact Statement
25 was published in December of 2013.

1 Since that time, new and significant
2 information reviews have been conducted approximately
3 on a semiannual basis. And, the process and specifics
4 for that were audited by the NRC staff in February and
5 March of this year.

6 Next slide, please?

7 You've seen this graphic before, but it
8 shows the Lee Nuclear site in the shaded area with
9 Make-Up Ponds A and B shown and the Broad River
10 crossing across the upper portion of the site.

11 You see the Ninety Nine Island Dam there.
12 That creates a reservoir on the Broad River that is
13 managed as a FERC project.

14 Pond A and B were previously constructed
15 for the NRC permitted Cherokee Site and Pond A will
16 serve as a sedimentation basin. Pond B will serve as
17 a supplemental cooling water supply in low river flow
18 instances.

19 Of course, you see, we made the
20 determination after the droughts in 2007/2008 that we
21 felt we needed more drought contingencies. So, we
22 sought to find additional drought contingency make-up
23 water ponds and that's what Pond Charlie is there that
24 you see off-site.

25 The red line surrounding that is the

1 property boundary around the proposed pond. And, that
2 pond is created on London Creek which flows into the
3 Broad River.

4 Next slide, please?

5 So, again, following that severe drought
6 in 2007/2008, we planned for an off-site reservoir for
7 supplemental cooling tower make-up water.

8 The supplement to the ER was submitted in
9 September of 2009 to add Make-Up Pond C as a drought
10 contingency and to minimize shutdowns of the plant
11 during low river flow conditions.

12 The NPDES operating permits was issued by
13 the South Carolina Department of Health and
14 Environmental Control in July of 2013.

15 That permit establishes an alternative
16 316(b) requirement that is demonstrated to be more
17 protective than the five percent proportional mean
18 annual flow requirements that are normally applied.

19 It basically allows for reduced withdrawal
20 in low flow conditions on the Broad River and greater
21 withdrawal during high flow conditions on the Broad
22 River to refill the make-up ponds.

23 So, it provides for an effective, on
24 average, 3.8-4.4 percent mean annual flow withdrawal
25 from the Broad River in the big picture of things.

1 And, it's also more protective with regard
2 to entrainment because we're restricted from
3 withdrawing water to refill Make-Up Ponds B and C
4 during the spawning season. And, this provides for
5 the refilling of Make-Up B and C when the Broad River
6 flows are high.

7 Next slide, please? The Army Corps of
8 Engineers permitting was critical for this project and
9 they were a cooperating Agency with the NRC in the
10 preparation of the final Environmental Impact
11 Statement.

12 Compensatory mitigation plan was developed
13 to support that permitting. And the mitigation plan
14 includes a significant stream restoration project with
15 the U.S. Forest Service in Sumter National Forest.

16 There's also a stream preservation and
17 enhancement conservation project on the Turkey Creek
18 site which is owned by Duke Energy.

19 So, the 404 permit issued by the Corps in
20 September of 2015 memorializes that mitigation plan.

21 And, next slide?

22 And, that concludes our environmental
23 presentation.

24 Thank you.

25 CHAIRMAN BURNS: Okay, thank you.

1 And, I'll ask the staff witnesses to come
2 there and, yes, you can -- or maybe sit -- okay, maybe
3 we're fine for now.

4 Why don't you go ahead and identify
5 yourselves and then proceed?

6 MR. VOKOUN: Patricia Vokoun,
7 Environmental Project Manager for Lee.

8 MR. VAIL: Lance Vail, Senior Research
9 Engineer at Pacific Northwest National Lab who
10 assisted the NRC.

11 CHAIRMAN BURNS: Okay.

12 MS. VOKOUN: Good afternoon.

13 Slide two, please?

14 I am Patricia Vokoun, the Project Manager
15 for the Lee Units 1 and 2 Environmental Review.

16 With me today is Lance Vail, a Senior
17 Research Engineer at the Pacific Northwest National
18 Lab.

19 During this afternoon's presentation, I
20 will discuss the Make-Up Pond C review, including the
21 background evaluation process, the impacts we
22 identified and the compensatory mitigation plan.

23 Lance will discuss the water storage
24 options considered by the review team.

25 Slide three, please?

1 The Lee Units 1 and 2 COLA application
2 initially proposed a two-pond off-stream water storage
3 system using existing Make-Up Ponds A and B. Make-Up
4 Pond B was to be used in low water conditions as the
5 backup to Make-Up Pond A, which draws water from the
6 Ninety Nine Islands Reservoir.

7 The Ninety Nine Islands Reservoir is an
8 impoundment on the Broad River formed by the Ninety
9 Nine Islands Dam and adjacent to Lee.

10 It is also the water source for the Ninety
11 Nine Islands hydroelectric project.

12 Lee Units 1 and 2 would have to operate
13 within the minimum release constraints of FERBs Ninety
14 Nine Islands Hydroelectric Project license.

15 The Ninety Nine Islands Reservoir was
16 built for hydroelectric power, not flood control. So,
17 it has no substantial storage capacity.

18 According to Duke's original plan, Lee
19 would withdraw all of its operational water
20 requirements from the Ninety Nine Islands Reservoir
21 through the intake into the existing Make-Up Pond A
22 during normal flow periods on the Broad River.

23 Duke anticipated this withdrawal plan
24 would be used greater than 95 percent of the time.

25 Duke initially proposed that Lee would

1 proportionately withdraw its consumptive water from
2 Ninety Nine Islands Reservoir and Make-Up Pond B as
3 the Broad River flows drops below normal flow.

4 Slide four, please?

5 The EIS review team, which was comprised
6 of the NRC and the U.S. Army Corps of Engineers looked
7 at the Lee Units 1 and 2 COLA application water data
8 and found that the 2007 through 2008 drought years for
9 this region were not included in the Applicant's water
10 balance calculations.

11 The review team determined that low water
12 flows at certain times of the year would have resulted
13 in adverse impacts out aquatic biota and downstream
14 water users with the additional data included under
15 Duke's original plan.

16 If the water supply were interrupted
17 causing Lee Units 1 and 2 to cease operation
18 frequently, the Lee Plant could not meet its stated
19 need as a reliable source of based load power.

20 Slide five, please?

21 Duke subsequently revised its water
22 balance calculations to incorporate the 2007 through
23 2008 drought years. This revision led Duke to propose
24 an additional off-site reservoir known as Make-Up Pond
25 C, a supplemental storage to Make-Up Ponds A and B.

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1 Make-Up Pond C's sole purpose would be to
2 provide make-up water.

3 This image shows the originally planned
4 Lee site on the right with Make-Up Pond C on the left.
5 Please note the relative size, remembering that the
6 original site was previously disturbed for the
7 proposed Cherokee Plant whereas the Pond C was not.

8 The NRC staff conducted a supplemental
9 scoping process to obtain additional public insights
10 and informed the NRC's review of Duke's supplement to
11 the Environmental Report.

12 The primary change to the Environmental
13 Report was the evaluation of options to address the
14 possible water shortage and ultimate proposal of Make-
15 Up Pond C.

16 Lance will discuss the water storage
17 options review next.

18 Slide six, please?

19 MR. VAIL: The review team reviewed Duke's
20 Environmental Report Supplement. We developed our own
21 daily water budget model to evaluate a range of
22 scenarios and design options.

23 The review team confirmed Duke's finding
24 that without a preventative option, extended periods
25 of loss of make-up water would occur.

1 We evaluated water storage options, other
2 pond locations and other cooling system designs.

3 The staff made Requests for Additional
4 Information about opportunities to minimize the impact
5 of Make-Up Pond C by reducing water requirements using
6 hybrid cooling towers and increasing the storage
7 capacity of Pond B.

8 Today, we plan to discuss the hybrid
9 cooling review because that was the alternative with
10 the best potential to eliminate entirely or reduce the
11 size of Make-Up Pond C. As such, it merited further
12 investigation.

13 Hybrid cooling is a combination of dry
14 cooling towers and wet cooling towers used to reduce
15 overall water use. The design would conserve water.

16 However, hybrid designs are more sensitive
17 to air temperature than are wet only designs due to
18 the dry component.

19 This technology is used in the United
20 States and internationally, but not at the size that
21 would be required for Lee.

22 Therefore, we have limited experience with
23 existing deployed hybrid technology to rely on on
24 comparing potential impacts from that of the hybrid
25 alternative to the proposed cooling design.

1 Regardless, the staff understands the
2 physics of the design sufficiently to make a
3 definitive assessment in this case, even if we do not
4 know the full extent of engineering issues that may
5 exist with hybrid designs.

6 Slide seven, please?

7 Duke provided an analysis of a hybrid
8 cooling system design for proposed Lee Units 1 and 2.
9 The review team conducted a more detailed alternative
10 systems analysis to investigate other cooling
11 technologies because of the degree of the impacts of
12 constructing Make-Up Pond C.

13 As part of the analysis, the review team
14 considered whether Duke could eliminate the need for
15 Make-Up Pond C by using other heat dissipation
16 technologies for condenser cooling.

17 The focus was on the combination wet/dry
18 hybrid cooling tower system.

19 The review team conducted a supplemental
20 audit of cooling system and energy alternatives and
21 requested and reviewed information regarding the water
22 budget calculations.

23 The conclusion we reached after the audit
24 and review of the responses to information needs was
25 that hybrid cooling systems would not eliminate the

1 need for Make-Up Pond C or the impacts associated with
2 its construction.

3 Further, the hybrid cooling system still
4 poses several considerable technical challenges for
5 its installation and operation while it appears to be
6 feasible for the Lee site.

7 For these reasons, the staff's conclusion
8 was that the building and operation of a combined
9 wet/dry cooling tower system would not be an
10 environmentally preferable alternative for Lee.

11 That concludes my presentation. Pat will
12 now discuss the outcome of our mitigation analysis.

13 MR. VOKOUN: Slide eight, please?

14 The creation of Make-Up Pond C would
15 inundate most of the London Creek stream network and
16 forested valley, converting approximately 600 acres to
17 a supplemental water reservoir to be managed as a
18 cooling water supply.

19 Make-Up Pond C alone would impact
20 approximately 12 and a half miles of streams, three
21 and a half acres of wetlands and 17 and a half acres
22 of open water.

23 Impacts to streams from Make-Up Pond C
24 would account for most of the Lee projects aquatic
25 impacts.

1 Approximately 1,100 acres is needed to
2 build a reservoir and buffer around Make-Up Pond C.

3 Through careful consideration of the
4 potential impacts of the Make-Up Pond C plans, the
5 review team determined that the proposed disturbance
6 would alter the nature of the terrestrial and aquatic
7 habitats and wildlife resources in the London Creek
8 watershed.

9 The review team determined that the
10 related terrestrial impacts of habitat loss and
11 wildlife mortality disturbance and displacement would
12 be substantial and mostly permanent in nature.

13 Slide nine, please?

14 This image shows proposed Make-Up Pond C
15 in more detail. The proposed Make-Up Pond C is shown
16 by the stiping. The underlying London Creek that
17 would be flooded can be seen in blue.

18 Slide ten, please?

19 Creation of Make-Up Pond C also would
20 alter the functionality of the London Creek corridor
21 as a wildlife travel corridor, particularly for some
22 migrant songbirds, many of which are conservation
23 priority in South Carolina.

24 The review team also determined that
25 impounding the London Creek stream network and

1 building the Make-Up Pond C supplemental water
2 reservoir would replace and existing creek system with
3 a deep water lake habitat resulting in a clearly
4 noticeable and permanent change in aquatic resources
5 to London Creek and its tributaries.

6 Although the aquatic resources found in
7 London Creek are not unique to the region, the habitat
8 type is becoming increasingly rare as development in
9 the region increases.

10 In time, the aquatic habitat of the new
11 reservoir would be valuable for other reasons, but it
12 would not mitigate the loss of adjacent terrestrial
13 habitat within the region.

14 As a result of its review, the review team
15 determined that the construction of Make-Up Pond C
16 would have moderate aquatic and terrestrial impacts.
17 The impacts would noticeably alter these resources,
18 but the important aspects of these attributes would
19 not be destabilized as habitat and wildlife resources
20 found in the London Creek watershed are also found in
21 other areas of the surrounding upstate Piedmont
22 Region.

23 Slide 11, please?

24 The impacts to waters of the U.S.
25 resulting from the construction of Make-Up Pond C

1 necessitate a large-scale compensatory mitigation
2 project to comply with the Corps of Engineers
3 mitigation requirements intended to offset the
4 project's impacts.

5 To meet this need, Duke plans to
6 accomplish a stream restoration and preservation
7 effort at two separate locations, the privately owned
8 Turkey Creek Tract and the Woods Ferry Study Area in
9 the Sumter National Forest.

10 This image shows the proposed -- the
11 proximity of the mitigation sites to the Lee site.

12 The Turkey Creek Tract will have a
13 perpetual conservation easement. The Turkey Creek
14 Tract offers an opportunity for mitigation that is
15 substantial enough to provide regional benefits in the
16 form of preservation and buffer enhancement.

17 The goals of the Woods Ferry Study Area
18 restoration effort are to reconnect streams to their
19 respective flood planes, to reduce sedimentation and
20 stabilize stream banks, to improve in stream and
21 adjacent habitats and to improve water quality.

22 While these restoration efforts are
23 expected to mitigate the environmental impacts of
24 Make-Up Pond C, the review team determined that
25 impacts to the resources areas would remain moderate,

1 given that the steam ecosystem will be removed.

2 Slide 12, please?

3 As part of the permitting process, the
4 Corps of Engineers collaborated with the U.S. Forest
5 Service to develop details and implement mitigation
6 requirements.

7 The Forest Service prepared an EIS to
8 comply with NEPA regarding its own federal action to
9 issue a Special Use Permit to Duke to complete the
10 aforementioned compensatory mitigation work in the
11 National Forest.

12 The Corps of Engineers served as a
13 cooperating Agency.

14 The Forest Service final EIS contains an
15 environmental review of Duke's plan compensatory
16 mitigation work in the National Forest.

17 The Forest Service issued its record of
18 decision and is postured to issue the Special Use
19 Permit to Duke.

20 The Corps of Engineers issued its record
21 of decision and a Department of the Army Permit to
22 Duke for the Lee Units 1 and 2 in 2015.

23 The mitigation measures and requirements
24 ultimately imposed by the Forest Service and the Corps
25 of Engineering Permits are consistent with the

1 analysis and conclusions in the Lee final EIS.

2 Slide 13, please?

3 The NRC staff followed its processes to
4 ensure a hard look at the environmental impacts of the
5 construction and operation of Lee Units 1 and 2. In
6 particular, the novel nature of the Make-Up Pond C
7 development and the extensive compensatory mitigation
8 plan.

9 In so doing, the NRC conducted an
10 additional scoping process that further informed its
11 review and preparation of the final EIS.

12 In addition, NRC conducted an additional
13 audit and considered options to Make-Up Pond C.

14 NRC also worked effectively with the Corps
15 of Engineers as an EIS cooperating Agency to take
16 advantage of the Corps of Engineers' areas of
17 expertise and permitting and requirements.

18 The EIS developed served both the Agency's
19 regulatory needs and ultimately supported the Forest
20 Service's work as well.

21 In sum, the analysis and conclusion in the
22 final EIS reflected appropriate evaluation of the
23 water supply needs of the Lee project and the
24 associated impacts and mitigation measures.

25 The EIS collaboration also reflected

1 enhanced consistency and efficiency in the decision
2 making of the NRC and other agencies under NEPA and
3 related environmental requirements.

4 This concludes the presentation.

5 CHAIRMAN BURNS: Okay, thank you for that.

6 And, I believe I start off with the
7 questioning on this panel.

8 Could you elaborate on the assertion, the
9 conclusion that the -- how -- give me some better
10 granularity, how did our EIS enhance consistency and
11 efficiency in the decision making process?

12 MS. VOKOUN: Because the Corps of
13 Engineers was our cooperating Agency, they had no need
14 to issue a separate EIC, likewise, and their
15 collaboration with the Forest Service, we effectively,
16 as a federal group, we probably eliminated a couple of
17 EISs.

18 CHAIRMAN BURNS: Okay, all right.

19 I'm going to -- a question for the
20 Applicant.

21 In the answer to pre-hearing question 25
22 on the application to FERC to cover construction
23 intake and discharge structures, the staff say the
24 application of FERC is on hold in accordance with the
25 Federal Power Act, can you elaborate on that? Is this

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1 partly a timing thing until you make a decision on
2 whether to proceed?

3 MR. SNEAD: It's very much a timing thing.
4 Because typically, it needs to be applied for within
5 five years of when we intend to make --

6 CHAIRMAN BURNS: Okay.

7 MR. SNEAD: -- the actual construction
8 impact in the project. So that timing is not clear
9 yet. So, we --

10 CHAIRMAN BURNS: Right.

11 MR. SNEAD: -- made final discussions with
12 FERC to --

13 CHAIRMAN BURNS: Okay.

14 MR. SNEAD: -- approach that as of yet.

15 CHAIRMAN BURNS: Okay. So, that's
16 something that would be dealt with as you get closer
17 to a decision point and, you know, have to factor in
18 and --

19 MR. SNEAD: The FERC authorization is one
20 of the major permits we still need to obtain before we
21 can begin.

22 CHAIRMAN BURNS: Okay, all right, thank
23 you.

24 Let's see, let me turn to -- I'll turn to
25 the staff here and talk about the consultation. This

1 is not the first time we've heard of this species of
2 bat come up in these proceedings and I think it's come
3 up, but it may have been in all three of four of them
4 this year, the northern long-eared bat.

5 So, the Fish and Wildlife Services list it
6 as threatened under the Endangered Species Act which
7 occurred after the completion of the FEIS. As we all
8 do -- conducted acoustic monitoring, submitted results
9 to the NRC which identified nothing to indicate the
10 presence of this species, federally or state protected
11 bat species at the Lee or the potential Make-Up Pond
12 C site.

13 And, we sent -- staff, on behalf of the
14 NRC, sent a letter to Fish and Wildlife to which they
15 responded and concurred with the staff's findings, as
16 I understand it, that the proposed project may affect,
17 but is not likely to adversely affect any federally
18 endangered, threatened or proposed species.

19 And, but, in its letter, Fish and Wildlife
20 notes the obligations under the Endangered Species Act
21 must be reconsidered if a new species is listed.

22 My question is really to staff, how does
23 this process work in terms of our consultation or
24 information Fish and Wildlife? Are we required -- is
25 it up to the point that the COLA is issued or is there

1 a further point in time in which the notification,
2 obligation or consultation obligation persists?

3 MS. VOKOUN: In the environmental
4 protection plan, it references a notification
5 requirement on the Applicant and I believe its four
6 hours within a discovery of some impact to an
7 endangered or protected species.

8 CHAIRMAN BURNS: So, that's after the
9 license is issues?

10 MS. VOKOUN: After the license is -- up to
11 the license is issued, it's on NRC.

12 CHAIRMAN BURNS: Okay.

13 One of the things, I take it, in terms of
14 the mitigation strategies, identify the Corps of
15 Engineers, and this is for the alternative sites, this
16 is meant -- this is, again, is from looking at the
17 pictures, these are not -- this, I think this, I don't
18 mean Turkey Point, or I guess Turkey Run, is it,
19 there's some additional mitigation restoration of
20 stream habitat in those areas.

21 Is this -- again, this is not an area
22 that's otherwise currently would be affected by the
23 project itself, but is in a way a substitute for
24 mitigation for adverse impacts that would occur on the
25 areas where the construction or the installation of

1 the additional pond is intended, is that correct?

2 MS. VOKOUN: That's accurate.

3 CHAIRMAN BURNS: Okay. And, how -- it
4 would be interesting to understand, how is that
5 identified as a potential mitigation strategy or the
6 like?

7 MS. VOKOUN: I think I'm going to ask Mike
8 Masnik to come forward and explain that in more
9 detail.

10 CHAIRMAN BURNS: Oh, somebody else, that's
11 not Mike.

12 MS. VOKOUN: Peyton, great, Peyton Doub,
13 I'm sorry.

14 CHAIRMAN BURNS: Okay, identify yourself
15 for the record. And, I know I saw you take the oath
16 earlier.

17 MR. DOUB: My name is Peyton Doub. I'm a
18 Senior Terrestrial Ecologist Wetland Scientist with
19 the Office of New Reactors.

20 The compensatory mitigation plan which is
21 required by the U.S. Army Corps of Engineers under the
22 2008 Mitigation Rule 33 CFR 322 is discussed in detail
23 in Section 4.3.1.6 of the final Environmental Impact
24 Statement.

25 Even though the -- it is compensatory

1 mitigation that provides mitigation credits for the
2 impacts on the site, however, the sites that have been
3 selected both private property and Forest Service
4 lands, while they have experienced adverse degradation
5 from past historical activities, have not been
6 affected by the project.

7 CHAIRMAN BURNS: Okay. So, what the
8 intention here is, is I take it, is recognizing that
9 there will be an adverse impact from the project on
10 the particular land and which it be sited or its
11 supporting structures or ponds, this is a way of
12 compensation for that by taking other land that is
13 currently, I'll use the word subpar, and try and to
14 restore that to a more idea habitat, is that correct?

15 MR. DOUB: Exactly.

16 CHAIRMAN BURNS: Okay, all right, thank
17 you.

18 That's all for me, that's it.

19 Commissioner Svinicki?

20 COMMISSIONER SVINICKI: Well, thank you
21 again to the staff and Applicant witnesses for their
22 presentations.

23 A number of environmental topics were
24 addressed in responses to pre-hearing questions. I
25 found those very informative, so I don't have too much

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1 to inquire about further than that.

2 I do have two questions and I think
3 they're principally addressed to the staff, although,
4 certainly, if the Applicant would like to respond in
5 any way.

6 The first is, as of the hearing today, is
7 the staff aware of any changes to any of the
8 reasonably foreseeable future projects discussed in
9 your cumulative impacts analysis that might alter the
10 staff's conclusions?

11 I know it's been some time since you
12 prepared the new insignificant spreadsheet that you
13 prepare. So, is there anything that you've learned in
14 that intervening period that would affect the
15 cumulative impact analysis.

16 MS. VOKOUN: We are not aware of anything
17 that has changed. It's not an economically robust
18 area. And, so, it's probably a safe assumption that
19 nothing has gone since.

20 COMMISSIONER SVINICKI: Okay, thank you.

21 And, just, in terms of the public scoping
22 process and comments received on the draft EIS, could
23 you just at a very high level talk about any broad
24 themes that emerged there and, if so, just give us
25 kind of a summary description?

1 MS. VOKOUN: Sure. In the DIS comment
2 period, the main subject areas that came up were
3 alternative -- I'm sorry, alternatives, energy
4 alternatives. You know, comments along the lines of,
5 we have many other options such as clean, renewable
6 energy like wind, solar, thermal.

7 Uranium fuel cycle comments along the
8 lines of, you know, comments about potentially
9 contaminated soil and the groundwater and surface
10 water hydrology.

11 They expressed -- comments expressed
12 opposition to licensing at this proposed station
13 because of perceived impacts on water resources,
14 especially the Broad River.

15 COMMISSIONER SVINICKI: Okay, thank you.

16 Thank you very much, Mr. Chairman.

17 CHAIRMAN BURNS: Thank you.

18 Commissioner Baran?

19 COMMISSIONER BARAN: Thanks.

20 Lance, I want to start with Make-Up Pond
21 C. So, the need to build Make-Up Pond C was
22 discovered after the severe drought in the 2007/2008
23 time frame, we heard that earlier.

24 With climate change, there may be future
25 droughts that are even worse than the 2007/2008

1 drought. Has the staff looked at the most recent
2 National Climate Assessment or other research to see
3 if the frequency, duration or severity of droughts is
4 predicated to increase in the area around the Lee
5 site?

6 MR. VAIL: We have. That was sort of part
7 of our consideration and new and significant when we
8 did the audit.

9 And, the conclusions about the changes in
10 precipitation and temperature and stuff really haven't
11 changed from the prior National Assessment. And, so,
12 we're sort of in that same zone.

13 There is, however, information suggesting
14 that, even though precipitation may remain normal and
15 stuff, that may be a combination of more intense
16 precipitation events and persistent droughts.

17 And, clearly, persistent droughts is
18 something we were interested in. Because, if you look
19 at the historical record that they provided, there
20 were four periods that they would actually, in that
21 period or record.

22 One was 2002 and one was 2007 and stuff.
23 And, so, it's -- there's a bias in to more recent
24 events.

25 So, we were aware of that and we

1 considered it.

2 COMMISSIONER BARAN: If the site were to
3 experience droughts more severe than the one in
4 2007/2008, would Make-Up Pond C provide sufficient
5 water for plant operations with out harming the
6 environment?

7 MR. VAIL: Well, it's a matter of whether
8 it would be able to operate. So, basically --

9 COMMISSIONER BARAN: When the plant would
10 operate? Okay.

11 MR. VAIL: -- they would have to, you
12 know, the plant would cease operations and stuff in
13 our analysis. And, that was why we had originally
14 driven this question was we had periods where even
15 before the consideration, you know, when we considered
16 Pond C, there were periods where they would have to
17 cease operation for relatively long period of time.

18 And, that became a question of the sort of
19 purpose and need for the plant if you have a source
20 that is, even using historical records, is going to
21 cease operation during hot, dry summer periods.

22 COMMISSIONER BARAN: Well, how much margin
23 is built in here? How much more severe would a
24 drought have to be than 2007 for the plant to need to
25 shutdown because Make-Up Pond C wouldn't be adequate?

1 MR. VAIL: Well, I think, if you -- it's
2 not -- you have to be careful on how you define a
3 drought because it's also the persistence as well as
4 how much the stream flow has dropped. So, you could
5 have a more severe short drought and not have any
6 impact at all.

7 So, it's a little complicated to explain.
8 But, you know, they had estimated that they would have
9 to draw, in 2002, they would have to draw on Pond C
10 for 75 days, draw it down 19 feet.

11 And, if you look at the usable storage and
12 you realize that as you go further down, you have less
13 water and stuff, the first 19 feet is where most of
14 the water is.

15 In 2007, wasn't as severe as that. That
16 only required them 57 days and took them down 13 feet.

17 So, again, it's this question of the sort
18 of persistence of events and stuff. But, it's, you
19 know, I can't say, you know, I can't say that you
20 can't have an extended drought period where this plant
21 won't have enough water. I can't say that about any
22 site.

23 COMMISSIONER BARAN: Mr. Snead, I saw you
24 nodding throughout that. I mean, did you want to add
25 anything to this discussion?

1 MR. SNEAD: Well, I agree with what Lance
2 is saying.

3 I would point out that we evaluated the
4 85-year history of drought data that we have and, with
5 Make-Up Pond C, we confident that we'll be able to
6 operate during any of those past circumstances that we
7 had, with the 2002 being the most severe in terms of
8 the need for draw down because of the extended period
9 of that drought.

10 We have anticipated future needs for water
11 on the Broad River and built margin into our need for
12 Make-Up Pond C which also would help us with -- if
13 there were climate change issues that would come about
14 in the future.

15 So, Make-Up Pond C does give us greater
16 flexibility and margin. But, I would point out that
17 Make-Up Pond C's need is a commercial need for our
18 ability to operate and meet our purpose and need to
19 produce electricity has no safety significance
20 whatsoever.

21 COMMISSIONER BARAN: Okay.

22 And, Lance, you discussed in slide six,
23 hybrid wet and dry cooling. Did the staff evaluate an
24 alternative to Make-Up Pond C that would involve the
25 plant utilizing dry or hybrid cooling only in times of

1 severe drought?

2 My understanding is that other plants have
3 taken a similar approach. For example, the North Anna
4 Early Site Permit describes a hybrid system that uses
5 wet cooling towers the majority of the time, but
6 switches to dry cooling when the water level in Lake
7 Anna drops below a specific threshold.

8 MR. VAIL: Yes, and I'd clarify that a
9 little bit.

10 They actually go from a full on wet system
11 to a hybrid system when it drops below a certain
12 level.

13 COMMISSIONER BARAN: Okay.

14 MR. VAIL: They never operate in a full
15 dry mode.

16 COMMISSIONER BARAN: Okay.

17 MR. VAIL: So, and, that's the situation
18 with North Anna and stuff.

19 COMMISSIONER BARAN: Okay.

20 MR. VAIL: And, so, the catch is, is that
21 you're in a period of this persistent drought, where
22 are you going to, you use -- you're going to save the
23 water at periods -- you'd be saving water at periods
24 that when you're withdrawing it from the river when
25 you typically don't need it because that's -- by

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1 design, that's taking it out during periods of the
2 higher flows. So, it's not really having, you know,
3 an adverse impact.

4 We worry about droughts, but we also worry
5 about floods. So, nobody wants the high flows either.
6 So, they're, by design, taking out that higher flow
7 periods.

8 COMMISSIONER BARAN: Okay.

9 And, this is probably a question for you,
10 Pat. In some of the other -- in the Summer combined
11 license application and North Anna early site permit,
12 there, one of the alternate sites they considered was
13 Savannah River.

14 And, that site would, at least, I don't
15 know how outdated that is and whether it factored in
16 the 2007 drought, at least, for those documents, at
17 the time, the impacts were going to be small rather
18 than moderate as they are here. And, it's not clear
19 that you have needed a third make-up pond.

20 Do you -- when you look at alternate
21 sites, do you just look at the sites identified by the
22 Applicant in the Environmental Report or do you
23 consider other sites, for example, like Savannah River
24 that are present and identified in other COLA
25 applications as potential alternate sites?

1 MS. VOKOUN: I think the short answer is
2 that we start with the Applicant's sites and evaluate
3 those. If we don't necessarily find that they are as
4 stated, then we might go further.

5 I think Andy Kugler, who is our oncologist
6 specialist can share with more.

7 MR. KUGLER: Yes, Andy Kugler, and I have
8 been sworn in.

9 So, the process that we use as described
10 in the Environmental Standard Review Plan is to
11 evaluate the licensees process. How did they go about
12 identifying alternative sites? Was the process
13 logical? Was it not arbitrary in the sense that it
14 would exclude sites without a good reason?

15 And, so, we review their process and make
16 sure they had a good process. And, if we get to the
17 point where we can conclude they had a good process,
18 at that point then, we take the sites that they ended
19 up with and we perform an independent comparison of
20 just that last group of sites.

21 So, we don't go out and look separately
22 for other sites as long as we can determine that their
23 process was appropriate.

24 COMMISSIONER BARAN: Okay.

25 And, then, I'd just ask one follow up

1 question to Mr. Snead on that. So, Savannah River
2 isn't in your -- isn't in Duke's service area?

3 MR. SNEAD: It's not in our region of
4 interest defined for.

5 COMMISSIONER BARAN: Okay. Would you --
6 when you're looking at -- when Duke's looking at
7 alternate sites or potential alternate sites, do you
8 -- would you ever consider looking at something
9 outside of your service area or no?

10 MR. SNEAD: Yes, I believe we would if
11 there was a clear advantage to that -- to us.

12 COMMISSIONER BARAN: Okay.

13 MR. SNEAD: I will say, we looked at 23
14 sites for the Lee application. There were ten in
15 North Carolina and I think 13 in South Carolina before
16 deciding on the four that are described in detail in
17 the final Environmental Impact Statement with the Lee
18 being the preferable site of those four.

19 COMMISSIONER BARAN: Okay, thank you.

20 CHAIRMAN BURNS: Thank you, Commissioner.

21 That concludes our environmental panel.
22 We'll go then to closing statements from the Applicant
23 and the staff. I guess what it will do is maybe take
24 a moment to do the switch out for the staff. I think
25 the Applicant's fine.

1 And, I guess before we actually -- before
2 we go to the closing statement, I'd just ask my fellow
3 Commissioners, any -- were there any other final
4 questions or clarifications you wanted to make
5 beforehand?

6 COMMISSIONER SVINICKI: Mr. Chairman?

7 CHAIRMAN BURNS: Yes?

8 COMMISSIONER SVINICKI: I would just note
9 that, consistent with our procedure upon review of the
10 transcript, I may have some post-hearing questions --

11 CHAIRMAN BURNS: Absolutely.

12 COMMISSIONER SVINICKI: -- that I would
13 submit in writing. So, I just -- I reserve that
14 standard for our process.

15 CHAIRMAN BURNS: Absolutely.

16 Okay, we'll proceed then with the closing
17 statement, first by -- from the Applicant, I think Mr.
18 Fallon and Mr. Kitchen may speak. So, please proceed.

19 MR. FALLOW: Thank you, Mr. Chairman and
20 Commissioners for the time and effort that you put in
21 -- put forth in preparing for and conducting this
22 hearing. We appreciate your insights and questions
23 and we'll ensure that any follow up information you
24 may want is addressed.

25 I would also like to recognize the work

1 done by the NRC staff. I believe that this hearing
2 has fully demonstrated the exhaustive review done by
3 the staff and validates the staff's safety and
4 environmental findings.

5 We certainly agree with the conclusion
6 that the AP1000 is safe. The environmental
7 considerations have been addressed and that the
8 Commission has the information necessary to make the
9 required findings for the issuance of the Lee COL.

10 I also want to recognize the
11 professionalism and thoroughness of our Duke Energy
12 team in addressing the information needs and the
13 emergent issues required to complete the COLA review.

14 Our Duke and ENERCON teams have invested
15 over a decade and several hundred thousand man hours
16 to prepare this COL application and to complete the
17 COLA review.

18 Obtaining the lease COL is key to Duke
19 Energy Carolinas ability to meet generation resource
20 requirements. Our planning identifies the need for
21 over 3,900 megawatts of new generation during the next
22 15 years. And, we face significant uncertainty
23 regarding the impact of carbon limitations, the
24 generation need and the potential for carbon
25 legislation support the addition of the Lee plant in

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1 the next 10 to 15 years.

2 A COL minimizes the construction risk and
3 provides us the ability to implement 2,200 megawatts
4 of nuclear generation five to seven years faster than
5 otherwise possible.

6 These are significant strategic
7 considerations in making a final decision to move
8 forward on a multi-billion dollar mega project.

9 The company will make a final decision on
10 new nuclear generation in the Carolinas in the future
11 based upon, among other factors, energy needs, project
12 cost, carbon regulation, natural gas prices, existing
13 or future legislative provisions for cost recovery and
14 the requirements of the NRC's combined operating
15 license.

16 Mr. Chairman and Commissioners, thank you
17 again for your efforts. We welcome any further
18 questions you may have regarding the Lee Unit 1 and
19 Unit 2 combined license application.

20 CHAIRMAN BURNS: Okay, thank you. Thank
21 you.

22 Then, for the staff?

23 MS. ORDAZ: Thank you, Chairman Burn.

24 Again, my name is Vonna Ordaz. I'm the
25 Deputy Director for the Office of New Reactors.

1 With me on this panel are Frank
2 Akstulewicz, the Director of the Division of New
3 Reactor Licensing and Sam Lee, the Acting Deputy
4 Director for the Division of New Reactor Licensing.

5 Again, we thank you for the opportunity to
6 speak today. In the staff's paper to the Commission
7 pertaining to this mandatory hearing, the staff's
8 final Safety Evaluation Report and final Environment
9 Impact Statement and our presentations to you during
10 this hearing, we have provided an adequate basis for
11 making the necessary findings set forth in 10 CFR
12 52.97 and 10 CFR 51.107 to support the issuance of the
13 combined licenses for William States Lee, III Nuclear
14 Station Units 1 and 2.

15 In this hearing, we have described why the
16 staff's review of the Lee Units 1 and 2 combined
17 license application have been both thorough and
18 complete.

19 The review was appropriately focused by
20 the finality afforded to issues within the scope of
21 the AP1000 design certification.

22 The staff has demonstrated the
23 thoroughness of our review, in part, through its
24 reliance on staff guidance and interactions with the
25 ACRS.

1 The ACRS agrees with the staff's
2 conclusion that the combined licenses for Lee Units 1
3 and 2 should be issued.

4 Today, we highlighted certain aspects of
5 our safety and environmental reviews. We explained
6 the staff's evaluation of the site foundation response
7 spectra and the emergency operations facility.

8 During the staff's environmental panel, we
9 discussed the creation of Make-Up Pond C. We also
10 highlighted our process for compliance with the NRC's
11 National Environmental Policy Act regulations
12 specified in 10 CFR Part 51, and other applicable
13 environmental statutes and appropriate interactions
14 with other government agencies and the public.

15 We are similarly confident that, through
16 the ITAAC process, the construction reactor oversight
17 process, inspections of construction activities,
18 inspections of operational programs and oversight of
19 the transition from construction to operation, we will
20 be able to confirm that the plant has been constructed
21 and will operate in conformance with the licenses, the
22 Atomic Energy Act and the Commissions regulations.

23 The Applicant understands the necessity of
24 complying with the requirements and also understands
25 what needs to be done if any noncompliance is

1 discovered, including determining the safety
2 significance, determining operability, determining the
3 extent of condition and taking prompt corrective
4 action to restore compliance.

5 In those instances in which we relied on
6 commitments, we have done so in accordance with the
7 Commission's commitment policies and practices by
8 which the licensee -- oops -- we have verified that
9 there is an established process by which the licensee
10 maintains commitments and implements changes. And,
11 we, of course, oversee those changes if any are made.

12 The staff appreciates the opportunity to
13 present to the Commission today the results of our
14 thorough and complete review.

15 And, this concludes the staff's
16 presentation.

17 Thank you.

18 CHAIRMAN BURNS: Okay, thank you, Vonna,
19 thank you very much.

20 Now, I'll call on colleagues, if they have
21 any closing statements they would like to make
22 beginning with Commissioner Svinicki.

23 COMMISSIONER SVINICKI: Thank you, again.

24 I just want to express my thanks to all of
25 the witnesses who participated today, whether or not

1 they were called to the table or the microphone.

2 I think that the responsiveness has been
3 very professional and very thorough today. And,
4 again, it is a testament to the very diligent
5 preparation by the Applicant in terms of the
6 application and the thoroughness of the NRC staff's
7 review.

8 Of course, it's very visible the many NRC
9 experts, not only from the New Reactors Office, but
10 from other organizations who participate in getting us
11 to where we are today.

12 I just would like, in closing, to also
13 acknowledge the other offices that are essential to
14 the conduct of a hearing such as today's and that very
15 directly support the Commission. That would be the
16 Office of the Secretary, the Office of Commission
17 Appellate Adjudication and the Office of General
18 Counsel.

19 And, finally, just of note, I want to call
20 out, because I often fail to do so, the Agency's
21 administrative professionals without whom we would not
22 have the orderly conduct and flow of business
23 throughout this Agency. So, I just want to note that
24 they are absolutely essential to the completion of a
25 significant review such as this.

1 And, as I noted, I may have some post-
2 hearing questions after I've studied the transcript
3 and the responses. But, other than that, I just thank
4 everyone who was here today.

5 CHAIRMAN BURNS: Thank you.

6 Commissioner Baran?

7 COMMISSIONER BARAN: Well, I'll just add
8 my thanks to the NRC staff and all of today's
9 participants for your hard work throughout the review
10 of this application and for your thorough preparation
11 for today's hearing. I found it to be very
12 informative. Thank you.

13 CHAIRMAN BURNS: Thank you. And, I'll
14 just, I'll add my thanks as well. As my colleagues
15 have noted, there are a number of disciplines, both
16 administrative, technical and legal, that contribute
17 to these proceedings from both -- from the NRC staff
18 side, but also from the Applicant's side.

19 And, we appreciate the hard work and
20 thoughtfulness that has gone into their presentations
21 here today, but also into the more voluminous record
22 that is created for this hearing.

23 We've also heard today, too, the
24 intersection between our responsibilities and those of
25 other federal agencies, United States Army Corps of

1 Engineers, the Fish and Wildlife Service, the
2 Department of Homeland Security and their
3 contributions are also important to the decision
4 making record and the findings that we have to make
5 primarily under the Atomic Energy Act and the National
6 Environmental Policy Act, but other pieces of
7 legislation that have come over the years that give
8 those agencies some responsibility or consultative
9 obligations with our Agency.

10 So, I want to extend my appreciation to
11 them, though most of them are not here in the room,
12 but I think we'll -- they hear back. It'll be -- yes,
13 that's, Commissioner, it'll be in the record.

14 So, I'll leave with that and I will
15 proceed to where I began which is with some statements
16 about what the next steps are.

17 And, the instructions I will have that I
18 announce here today will be confirmed in subsequent
19 orders issued by the Secretary.

20 First, as Commissioner Svinicki noted, she
21 or Commissioner Baran or I might have some post-
22 hearing questions. The deadline we expect for
23 responses to any post-hearing questions will be
24 October 20th, 2016, unless we direct otherwise.

25 The Secretary plans to issue an order with

1 post-hearing questions, if any, by October 12th, 2016.

2 And, then, also, an important step is for
3 the parties to look at the transcript of today's
4 proceedings and provide any corrections. And, it's
5 really, it's in the nature of corrections, not
6 substantive -- so much substantive additions.

7 But, the deadline for transcript
8 corrections will be October 17th, 2016 and the
9 Secretary, I expect, will issue an order requesting
10 transcript corrections by October 11th, 2016.

11 As I mentioned this morning, the
12 Commission expects to issue a final decision promptly
13 on the record before us with due regard to the
14 complexity of the issues that we have faced today and
15 that are in the record before us.

16 Again, thanks for being here and thanks
17 for your presentations. We are adjourned.

18 (Whereupon, the above-entitled matter went
19 off the record at 2:09 p.m.)
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)	
)	
DUKE ENERGY CAROLINAS, LLC)	Docket Nos. 52-018-COL
)	52-019-COL
(William States Lee III Nuclear Station)	
Units 1 and 2))	
)	
(Mandatory Hearing))	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **ORDER (Setting Deadline for Proposed Transcript Corrections)** have been served upon the following persons by Electronic Information Exchange.

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[Original signed by Herald M. Speiser]
Office of the Secretary of the Commission

Dated at Rockville, Maryland,
this 11th day of October, 2016