

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of

NUCLEAR INNOVATION NORTH AMERICA LLC

(South Texas Project Units 3 and 4)

Docket Nos. 52-012-COL
52-013-COL

ORDER
(Setting Deadline for Proposed Transcript Corrections)

The Commission held an evidentiary hearing on November 19, 2015, 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 December 3, 2015. 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 23rd day of November, 2015.

Official Transcript of Proceedings
NUCLEAR REGULATORY COMMISSION

Title: Hearing on Combined Licenses for South Texas Project, Units 3 and 4: Section 189a of the Atomic Energy Act Proceeding

Docket Number: (n/a)

Location: Rockville, Maryland

Date: Thursday, November 19, 2015

Work Order No.: NRC-2041

Pages 1-227

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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HEARING ON COMBINED LICENSES FOR SOUTH TEXAS

PROJECT, UNITS 3 AND 4:

SECTION 189A OF THE ATOMIC ENERGY ACT PROCEEDING

+ + + + +

PUBLIC MEETING

+ + + + +

THURSDAY, NOVEMBER 19, 2015

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Commission met in the Commissioners' Conference Room at the Nuclear Regulatory Commission, One White Flint North, 11555 Rockville Pike, at 9:00 a.m., Stephen G. Burns, Chairman, presiding.

COMMISSION MEMBERS:

STEPHEN G. BURNS

JEFF BARAN

WILLIAM C. OSTENDORFF

KRISTIN L. SVINICKI

ALSO PRESENT:

ANNETTE L. VIETTI-COOK, Secretary of the Commission

1 NRC STAFF PRESENT:

2 FRANK AKSTULEWICZ, Director, Division of New Reactor
3 Licensing, NRO

4 CLINTON ASHLEY, Office of New Reactors

5 MARK DELLIGATTI, Deputy Director, Division of New
6 Reactor Licensing, NRO

7 ANTONIO DIAS, Office of New Reactors

8 MARGARET M. DOANE, Director, Office of International
9 Programs

10 SCOTT FLANDERS, Office of New Reactors

11 MOHAMMAD HAQUE, Office of New Reactors

12 BRAD HARVEY, Office of New Reactors

13 GARY HOLAHAN, Deputy Director, NRO

14 STACY IMBODEN, Office of New Reactors

15 HENRY JONES, Senior Hydrologist, NRO/DSEA/RHM1

16 RICHARD McINTYRE, Senior Reactor Operations Engineer,
17 NRO/DCIP/QVIB

18 RYAN NOLAN, Reactor System Engineer, NRO/DSRA/SPSB

19 MARIE POHIDA, Office of New Reactors

20 SHEILA RAY, Senior Electrical Engineer, NRR/DE/EEEEB

21 MICHAEL SPENCER, Office of General Counsel

22 TOM TAI, Senior Project Manager, NRO/DNRL/LB2

23 RAO TAMMARA, Office of New Reactors

24 DINESH TANEJA, Senior Electronics Engineer, NRO/DE/ICE

25

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1 RICHARD TURTIL, Senior Financial Analyst,
2 NRR/DIRS/IFAIB
3 JENNIFER UHLE, Director, Office of New Reactors
4 JACOB ZIMMERMAN, Office of New Reactors

5

6 ALSO PRESENT:

7 STEVEN FRANTZ, NINA

8 SCOTT HEAD, NINA

9 DENNIS KOEHL, NINA

10 MARK McBURNETT, NINA

11 WILLEM MOOKHOEK, NINA

12 STEVEN THOMAS, NINA

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P R O C E E D I N G S

9:03 a.m.

CHAIRMAN BURNS: I call the hearing to order, but before we begin the proceedings that are before us today, I want to begin to take an opportunity to mark the passing of Vice Admiral Kenneth Monroe Carr, who served the NRC as a Commissioner from 1986 to 1989 and then Chairman from 1989 to 1991, and I had the honor of serving on this staff during those five years.

Admiral Carr had a distinguished career in the united States Navy, beginning in service in the Pacific during World War II. He graduated from the Naval Academy in 1949, and was a member of the original commissioning crew of the U.S. Nautilus, the first nuclear powered submarine, and was on I think actually the only one who was on the commissioning crew and also went under the North Pole in its historic journey.

Before retiring from the Navy in 1985, he served in a number of important capacities, as commander of the USS Flasher and the USS John Adams, and also was the commander of the Atlantic submarine fleet. As a Commissioner, he was focused on improving operational performance in the industry, operational

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1 professionalism, and one of his legacies is his
2 advocacy of the maintenance rule.

3 He also worked on the initial license
4 renewal rule, and the maintenance rule, as we were
5 noting actually on Monday, is one of the first risk-
6 informed rules. To draw a connection to today's
7 hearing, he was a member of the Commission that
8 adopted the licensing reforms that are reflected in 10
9 C.F.R. Part 52, and we'll be exercising those today as
10 we consider this application from South Texas for a
11 combined license.

12 So we're grateful for Admiral Carr's
13 service to this country, and particularly his service
14 to this agency.

15 COMMISSIONER OSTENDORFF: Yes. I
16 appreciate Chairman Burns taking the time to
17 acknowledge a great individual. I did not know him in
18 his capacity as a Commissioner. I did know him when
19 he was in uniform in the Navy, and I still have a
20 plaque, an engrave plaque that he signed when I
21 received my submarine dolphins, having qualified in
22 submarines in 1978, and I still have that in my house.

23 CHAIRMAN BURNS: Thanks . Well then I will
24 call his hearing to order, and I want to welcome those
25 of you in the room here today and those who may be

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1 listening in. Particularly, we'll be hearing today
2 from the applicant and the staff.

3 And to provide a context for our
4 proceedings, the Commission is here to conduct an
5 evidentiary hearing on Nuclear Innovation North
6 America, LLC, which I think a lot of us will refer to
7 as NINA during today's hearing.

8 On its application filed September 20th,
9 2007 for combined licenses to construct and operate
10 two additional units, Units 3 and 4 at the existing
11 South Texas Project electric generating station site
12 in Matagorda County near Bay City, Texas.

13 This hearing is required under Section
14 189(a) of the Atomic Energy Act of 1954, as amended.
15 The Commission also will be reviewing the adequacy of
16 the staff's environmental impact analysis under the
17 National Environmental Policy Act of 1969.

18 The general order of hearing -- for the
19 general order of hearing, the staff and NINA will
20 provide testimony in witness panels that provide an
21 overview of the application, as well as address safety
22 and environmental issues associated with the review,
23 and there will be Commission questions following each
24 panel. We will be rotating the questioning among
25 Commissioners.

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1 The other thing I would note is that
2 Commissioners will have the opportunity to allocate
3 the total time that would be available. So there may
4 be -- in some panels, there may be more questioning
5 from a particular Commissioner on a matter of interest
6 to him or her as they see fit.

7 We're going to also have an overview
8 presentation on the certified design for the U.S.
9 Advanced Boiling Water Reactor or ABWR, and the
10 purpose of that discussion is to provide context for
11 the hearing, but not to reopen issues previously
12 resolved in the design certification rulemaking.

13 The Commission will not delve extensively
14 into the ABWR design issues, although there are areas
15 of interface between the certified design and the
16 specific characteristics of the South Texas Project
17 site that will be considered.

18 At the conclusion of our hearing, we'll
19 take the matter into -- under advisement. There will
20 be additional filings from the parties, and we
21 ultimately will issue a decision promptly with due
22 regard to the complexity of the issues before us.

23 On the safety side, the Commission will
24 determine whether (1) the applicable standards and
25 requirements of the Atomic Energy Act and the

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1 Commission's regulations, particularly those in 10
2 C.F.R. Section 52.97 have been met; any required
3 notifications to other agencies or bodies have been
4 duly made; that there is reasonable assurance that the
5 facility will be constructed and will operate in
6 conformity with the license, the provisions of the
7 Atomic Energy Act and the Commission's regulations;
8 that the applicant is technically and financially
9 qualified to engage in the activities to be
10 authorized, and that issuance of the license will not
11 be inimical to the common defense and security, or to
12 the health and safety of the public.

13 On the environmental side, the Commission
14 will determine whether the requirements of the
15 National Environmental Policy Act, Section 102,
16 paragraphs 2(a), 2(c) and 2(e) and the applicable
17 regulations and NRC's regulations in 10 C.F.R. Part 51
18 have been met.

19 We'll independently consider the final
20 balance among conflicting factors contained in the
21 record proceeding, with a few to determining the
22 appropriate action to be taken. Determined after
23 weighing the environmental, economic, technical and
24 other benefits against environmental and other costs,
25 considering reasonable alternatives; whether the

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1 license should be issued, denied or appropriately
2 conditioned to protect environmental values.

3 Finally, we will determine whether the
4 NEPA review conducted by the staff has been adequate.
5 I'll stop there and ask whether my colleagues have any
6 comments before we begin and go further.

7 CHAIRMAN BURNS: So first, we'll begin
8 with the swearing of witnesses. I understand there's
9 a large volume of them in this room, and I'll ask
10 counsel for the applicant to begin by reading the
11 names of the witnesses.

12 MR. FRANTZ: Thank you, Chairman Burns.
13 Our witnesses in alphabetical order Scott Head,
14 Russell Kiesling, Dennis Cole --

15 CHAIRMAN BURNS: Excuse me, counsel. What
16 I might do is ask the witnesses to stand when their
17 name is called please. Go ahead, I'm sorry.

18 MR. FRANTZ: Mark McBurnett, Willem
19 Mookhoek, Marion Smith, Steven Thomas and Peggy
20 Travis.

21 CHAIRMAN BURNS: I'm going to ask the
22 witnesses to raise their right hands and take the
23 oath.

24 [WITNESSES SWORN.]

25 CHAIRMAN BURNS: Are there any objections

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1 to including these witnesses for this record? You may
2 sit down, thank you.

3 MR. SPENCER: No objections.

4 CHAIRMAN BURNS: Okay, and then also -- I
5 would also ask counsel for the applicant to read for
6 the respective -- with respect to the admission of
7 evidence, to provide whether there are any edits to
8 your exhibit list?

9 MR. FRANTZ: No, there are not.

10 CHAIRMAN BURNS: Okay. Would you let me
11 -- provide the Commission the range of numbers of the
12 exhibits you plan to have admitted.

13 MR. FRANTZ: Yes. Our exhibits numbers
14 are STP-001 through STP-015.

15 (Whereupon, the above-referred to document
16 was marked as STP Exhibit Nos. 001 through 015 for
17 identification.)

18 CHAIRMAN BURNS: Okay, and at this point,
19 I'll ask if there's any objection to the admission of
20 the exhibits?

21 MR. SPENCER: No objection.

22 CHAIRMAN BURNS: No objection. Then so
23 we'll duly admit that list.

24 (Whereupon, the above-referred to document
25 was received into evidence as STP Exhibit Nos. 001

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1 through 015.)

2 CHAIRMAN BURNS: All right. For the NRC
3 staff, we'll repeat this, and again I would ask the
4 witnesses to stand when their name is called. Counsel
5 for the staff, would you read the names of the staff
6 witnesses.

7 MR. SPENCER: Yes. Mary Adams, Frank
8 Akstulewicz, Brian Anderson, James Anderson, Dennis
9 Andrukat, Clinton Ashley, Dan Barss, Laurel Bauer,
10 Luis Betancourt, Tony Bowers, John Budzynski, Andrew
11 Campbell, Manas Chakravorty, Michael Cheok, Theresa
12 Clark, Ian Cozens, Gordon Curran, Mark Delligatti,
13 Antonio Dias, James Down, Steven Downey, Scott
14 Flanders, John Frost, Joseph Giacinto, James Gilmer,
15 Anne-Marie Grady, Syed Haider, Craig Harbuck, Michelle
16 Hart, Brad Harvey, Raul Hernandez, Gary Holahan, John
17 Honcharik, Ronaldo Jenkins, Robert Johnson, Henry
18 Jones, Michael Junge, Kerri Kavanagh, Jim Kellum,
19 Andrea Kock, Sam Lee, Young Li, Chang Li, Greg Makar,
20 Yanely Malave, Michael McCoppin, Richard McIntyre,
21 John McKirgan, Matthew Mitchell, John Monninger, Lynn
22 Mrowca, Adrian Muniz, Cliff Munson, Charles Murray,
23 Bruce Musico, Tony Nakanishi, Ryan Nolan, Eric Olvera,
24 Tom Pham, Paul Pieringer, Marie Phida, Sheila Ray,
25 Mary Jane Ross-Lee, John Rycyna, Eduardo Sastre,

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1 Thomas Scarbrough, Jason Schaperow, John Segala, James
2 Strnisha, Angelo Stubbs, Edward Stutzcage, Sarah
3 Tabatabai, Tom Tai, Dinesh Taneja, John Tappert, Al
4 Tariff, Boyce Travis, Richard Turttil, Jennifer Uhle,
5 Frankie Vega, Hanry Wagage, Duncan White, Steve
6 Williams -- is Steve?

7 MALE SPEAKER: Yeah, he'll be right back.
8 I'll go get him.

9 MR. SPENCER: Okay. He had a coughing fit
10 so he --

11 CHAIRMAN BURNS: Okay.

12 MR. SPENCER: Yuken Wong, George Wunder,
13 Jim Xu, Andrew Yeshnik, Jacob Zimmerman. These are
14 all the safety witnesses. Then I'll go to the
15 environmental witness. Not as many.

16 CHAIRMAN BURNS: Actually, in the interest
17 of -- why don't some of these folks maybe sit down.
18 Why don't we take -- administer the oath. So I ask
19 the staff witnesses here to raise their right hand.

20 [WITNESSES SWORN.]

21 CHAIRMAN BURNS: Did anyone, and you only
22 have to say no, did anyone decline to take the oath?

23 (No response.)

24 CHAIRMAN BURNS: All right. You may be
25 seated, and we'll get the other two at the -- did

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1 they come back in? Okay. We'll get them after your
2 environmental witnesses.

3 MR. SPENCER: The environmental witnesses
4 are Daniel Barnhurst, Andrew Campbell, Jack Cushing,
5 Mark Delligatti, he's already been sworn in, Jennifer
6 Dixon-Herrity, Peyton Doub, Scott Flanders, who I
7 believe has already been sworn in, Mohammad Haque,
8 Stacy Imboden, Andrew Kugler, Nancy Kuntzleman,
9 Michael Masnik, Daniel Mussatti, Donald Palmrose and
10 Patricia Vokoun.

11 And we have Steve Williams and -- oh,
12 Michael McCoffin, okay.

13 CHAIRMAN BURNS: What is Mr. McCoffin?

14 MR. SPENCER: Mr. Williams, come over.
15 Steve, come over.

16 CHAIRMAN BURNS: We need to see you.

17 MR. SPENCER: Come up Steve. Come on
18 over.

19 CHAIRMAN BURNS: Okay. I ask these
20 witnesses to raise their right hand and to take the
21 oath.

22 [WITNESSES SWORN.]

23 CHAIRMAN BURNS: Did anyone -- and you
24 only say no if you refused to take that oath -- did
25 anyone decline to take the oath?

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1 (No response.)

2 CHAIRMAN BURNS: All right. You may be
3 seated. And for both counsel, if there is some other
4 witnesses who has not been sworn in at this time but
5 who may provide testimony during the course of the
6 proceeding, what I would ask you to do is identify
7 that and we can administer the oath at a future point
8 in the proceeding, as necessary.

9 And finally with respect to the staff's
10 evidence, are there any additions, counsel, to the
11 exhibit list for the staff?

12 MR. SPENCER: No Chairman. There are no
13 additions or changes to the revised exhibit list we
14 filed.

15 CHAIRMAN BURNS: Okay, and would you
16 provide us the range of numbers of the exhibits to be
17 admitted?

18 MR. SPENCER: The exhibits run from NRC-
19 001 to NRC-015.

20 (Whereupon, the above-referred to document
21 was marked as STP Exhibit Nos. 001 through 015 for
22 identification.)

23 CHAIRMAN BURNS: Okay, and I presume again
24 you would like to have us admit those.

25 MR. SPENCER: Yes. I move to have those

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1 exhibits admitted into the record.

2 CHAIRMAN BURNS: Thank you, and are there
3 any objections from counsel?

4 MR. FRANTZ: We have no objections.

5 CHAIRMAN BURNS: Okay, and with no
6 objection, they are admitted.

7 (Whereupon, the above-referred to document
8 was received into evidence as STP Exhibit Nos. 001
9 through 015.)

10 CHAIRMAN BURNS: We'll go -- we've gotten
11 some of those preliminaries out of the way, and I
12 think we'll be able to go to our first panel.

13 Right on time. We're doing well, and our
14 first panel will be an overview panel from -- and
15 we'll have the presentation from the applicant.
16 Actually for the staff, I believe because the -- I
17 will ask you to move aside so we can see our applicant
18 witnesses here.

19 Again, I will remind you all that you are
20 under the oath that you took just a few minutes ago.
21 You may assume that the Commission is familiar with
22 the prehearing filings that have been made in the
23 proceeding, and I would ask the panelists to introduce
24 themselves, beginning with Mr. Koehl.

25 MR. KOEHL: Yes. Good morning, everyone.

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1 I'm Dennis Koehl. I'm the president and chief
2 executive officer for South Texas Project Nuclear
3 Operating Company.

4 MR. McBURNETT: Martin McBurnett, the
5 chief executive officer for Nuclear Innovation North
6 America or NINA.

7 MR. HEAD: I'm Scott Head, Manager of
8 Regulatory Affairs for Nuclear Innovation North
9 America.

10 CHAIRMAN BURNS: Okay, very good, and you
11 may proceed with the first -- with your presentation.

12 MR. McBURNETT: Thank you. If we can
13 start our first slide.

14 CHAIRMAN BURNS: Yeah. Make sure the
15 mic's close to you and push the on button.

16 MR. McBURNETT: Okay. Is that coming
17 through?

18 CHAIRMAN BURNS: That's great, thanks.

19 MR. McBURNETT: Thank you. The next
20 slide, please. I guess I'd like to say good morning.
21 We're pleased to be here this morning following
22 completion of the review of our application for
23 combined license, and having satisfied the NRC
24 requirements for obtaining a license.

25 I would like to start with introducing a

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1 few of the guests I have here today that are not on
2 our witness list. Behind me is the Matagorda County
3 Judge Nate McDonald. He's the elected chief executive
4 for Matagorda County. In that role, he also serves as
5 the county emergency management director. The South
6 Texas Project is in Matagorda County, as well as his
7 entire ten mile emergency planning zone.

8 Also here, Larry Blalock, representing the
9 City Public Service Board of San Antonio. Larry is
10 also on the CPS representative on the member of the
11 STP Nuclear Operating Company board. John Reagan is
12 here. He's the NRG member of the NINA Board of
13 Directors, as well as the NINA Board Chairman. He's
14 also the chairman of the STP Nuclear Operating Company
15 Board of Directors.

16 I have Artoro Konecko (phonetic), who's
17 Toshiba's alternate member of the NINA Board of
18 Directors. The NINA staff that's with me today has
19 all been with the project essentially in some capacity
20 since the beginning. I worked at South Texas project
21 for 30 years before the taking the role of NINA chief
22 executive.

23 Scott Head with me is NINA's Regulatory
24 Affairs manager. Scott and I worked on the original
25 feasibility study for these units. He is a current

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1 employee of STP Nuclear Operating Company. He has
2 more than 35 years' experience with the South Texas
3 Project.

4 Steve Thomas is NINA's engineering
5 manager. He started his career in the nuclear Navy as
6 a current STP Nuclear Operating Company employee with
7 more than 40 years in the nuclear industry.

8 Bill Mookhoek is our licensing supervisor.
9 He started his career in the nuclear Navy, and spent
10 29 years at the South Texas Project, where his many
11 roles included being a licensed senior reactor
12 operator and a shift supervisor.

13 Our quality assurance manager, Marion
14 Smith, also began his career in the nuclear Navy. He
15 spent over 27 years at South Texas Project, and as
16 responsible for drafting the original initial quality
17 program for STP Units 3 and 4 in 2006, and has
18 continued in a lead role in our Quality organization
19 throughout the project.

20 Additionally here is our environmental
21 team. It includes Russ Kiesling, who worked for us in
22 the drafting on the original environmental report and
23 Peggy Travis, who is the current STP Nuclear Operating
24 Company environmental supervisor. Peggy has over 30
25 years' experience at STP, and Dennis already

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1 introduced himself.

2 The South Texas Project is located about
3 80 miles southwest of Houston. STP Units 1 and 2 are
4 owned by NRG, City Public Service of San Antonio and
5 the City of Austin. NINA is owned by -- I mean South
6 Texas Units 3 and 4 are owned by NINA and the City
7 Public Service Board of San Antonio.

8 The STP Nuclear Operating Company is the
9 operating licensee for STP Units 1 and 2, and has
10 operated the units since 1997, and will be the
11 operating licensee for STP Units 3 and 4. In 2006 and
12 based on favorable market conditions in Texas for new
13 baseload generation, and considering the incentives of
14 the Energy Policy Act of 2005, NRG requested the STP
15 Nuclear Operating Company to initiate activities to
16 construct new units.

17 We focused our attention on options that
18 had the most overall predictability with licensing and
19 construction. These criteria led us to the selection
20 of the Advanced Boiling Water Reactor or ABWR
21 technology, as it had a design certified by NRC.
22 ABWRs were in operation and under construction in
23 Japan.

24 The operating ABWRs have good records.
25 The supply chain was well-established, and the need

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1 for first of a kind engineering would be limited. STP
2 Nuclear Operating Company filed the application in
3 2007 for combined licenses to construct and operate
4 two ABWRs, with a combined capacity of approximately
5 2,700 megawatts at the South Texas Project site, and
6 it was accepted for NRC review.

7 Long lead materials were ordered and City
8 Public Service Board of San Antonio joined the
9 project. In 2008, NINA was formed by NRG and Toshiba
10 to develop STP Units 3 and 4. Also the decision was
11 made to use an alternate vendor to supply the ABWR.

12 The decision was driven by Toshiba's
13 willingness to invest in the project and the fact that
14 a Japanese participant would facilitate our ability to
15 obtain part of the financing from Japan. This
16 decision was not taken lightly. Extensive due
17 diligence and qualification assessments were performed
18 by STP Nuclear Operating Company, with support from a
19 number of highly experienced industry consultants.

20 NRC closely followed our activities and
21 performed their own independent inspection. A revised
22 combined license application was filed in September
23 2008, to account for the hiring of Toshiba as a
24 vendor.

25 In 2009, an engineering, procurement and

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1 construction contract, commonly called an EPC
2 contract, was signed with Toshiba America Nuclear
3 Energy. In early 2010, NINA and City Public Service
4 reached an agreement on future participation that set
5 City Public Services ownership at 7-5/8ths percent and
6 NINA's ownership at 92 and 3/8ths percent.

7 In 2010, Tokyo Electric Power or TEPCO
8 committed to invest in the project, and to share their
9 experience operating boiling water reactors and
10 specifically Advanced Boiling Water Reactors. Also,
11 a decision was made to restructure the project, such
12 that STP Nuclear Operating Company would remain
13 focused on their core business of operating nuclear
14 units, and NINA would staff and focus on managing the
15 EPC contract and construction of the new units.

16 Thus, NINA took the project lead for the
17 construction period, and STP Nuclear Operating Company
18 will take the lead starting with the authorization to
19 load fuel. The project team, which had been assembled
20 by STP Nuclear Operating Company in 2006 remained
21 essentially intact and did not change appreciably with
22 this transition.

23 In this concept, all operational programs
24 development and implementation prior to fuel load,
25 including initial operator training and initial

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1 operating staff development will be handled by STP
2 Nuclear Operating Company for NINA.

3 As a consequence of the events at
4 Fukushima, TEPCO was no longer able to participate in
5 the project, and the NINA Board of Directors decided
6 to suspend engineering procurement and construction
7 activities, to focus on obtaining the combined license
8 and supporting DOE loan guarantee.

9 Since 2011, we have proceeded to complete
10 the licensing review, arriving at the point of
11 mandatory hearings today. Texas continues to have a
12 significant need for new generation resources, and we
13 believe these units are essential to address those
14 needs.

15 We have an active business development
16 effort in progress, which will be substantially aided
17 by the issuance of combined licenses. Dennis, would
18 you like to make some remarks?

19 MR. KOEHL: Yeah sure. Thank you, Mark.
20 Good morning again everyone. South Texas Project
21 Nuclear Operating Company has been supporting NINA as
22 part of this licensing process, and it is looking
23 forward to the opportunity to apply our experience and
24 capability to operate the new units.

25 The programs, processes, procedures and

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1 staff that will be necessary to operate these plants
2 will be put in place by South Texas Nuclear Operating
3 Company, including all the training of those
4 individuals. This company was formed, like Mark said,
5 by the owners to operate the units that were at the
6 South Texas Project in 1997, and you know, since that
7 time, the company has demonstrated a sound and
8 successful track record of safely operating STP Units
9 1 and 2.

10 Some of you have been to the South Texas
11 Project, and seen for yourself the pride and
12 dedication of the workforce in carrying out their
13 duties and ensuring health and safety to the public in
14 the Matagorda County and neighboring counties.

15 With that, you also saw what an excellent
16 location the site is for nuclear units. We pride
17 ourselves on being good corporate citizens in
18 Matagorda County. Our employees are significant
19 contributors to their communities, serving in
20 leadership roles for the city, school districts,
21 navigational districts, Chamber of Commerce and
22 working with many of the local charities.

23 I personally serve on the Matagorda County
24 United Ways Board, and also serve on Texas A&M's
25 Advisory Board for Engineering Experiment Station.

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1 The company has an outstanding local and state
2 support, and is well-recognized in Matagorda County as
3 a good neighbor. I look forward to answering
4 questions today and with that, I'll turn the
5 presentation over to Scott.

6 MR. HEAD: Thank you, Dennis. This
7 morning I would like to go over the history of the
8 development of the Advanced Boiling Water Reactor and
9 cover some interesting aspects of the STP 3 and 4
10 application.

11 Next slide, please. This slide shows the
12 first ABWRs, Tokyo Electric Power's Kashiwazaki-Kariwa
13 Units 6 and 7. Sponsored by TEPCO, the ABWR design
14 was developed jointly by GE, Toshiba and Hitachi.
15 The evolutionary design incorporates a number of
16 changes and improvements to previous boiling water
17 reactor designs.

18 For example, the ABWR uses reactor
19 internal pumps instead of external recirculation
20 pumps, which addresses many of the challenges of
21 recirculation systems in previous designs. The change
22 results in a design that has no external recirculation
23 piping, and as a result there are no large piping
24 penetrations to the reactor vessel below the active
25 core.

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1 This significantly reduces the impact of
2 a loss of coolant accident scenario. The ABWR also
3 utilizes a digital control room, and the design is
4 based on the use of modular construction. K6 began
5 operating in 1996. There are currently four
6 operational ABWRs in Japan, with three others under
7 construction.

8 Parallel with much of the work going on in
9 Japan, GE submitted an application using the Part 52
10 process for the ABWR. It was reviewed by the NRC and
11 resulted in the ABWR certified design being approved
12 in May 1997. The design was amended in 2010 to comply
13 with the aircraft impact rule.

14 The certified design includes several
15 enhancements to incorporate PRA insights and provide
16 additional mitigation capabilities. I'd like to
17 discuss a couple of these now.

18 The first one I would like to note is the
19 combustion turbine generator. This machine provides
20 a source of electric power independent and diverse
21 from the emergency diesel generators. It has a seven
22 day source of fuel. Its inclusion in the certified
23 design represents a significant perspective that the
24 industry and the NRC had gleaned in the 90's,
25 regarding the need to be able to mitigate station

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1 blackout events.

2 Another important aspect of the certified
3 design is the inclusion of the AC independent water
4 addition system. This is an installed diesel-powered
5 fire pump that is hard-piped to one of the residual
6 heat removal trains. This feature, together with the
7 containment overpressure protection system provides
8 the capability to ensure core cooling and containment
9 heat removal and an extended loss of AC power event.

10 In the safety evaluation report for this
11 certified design, the NRC stated that the staff
12 believes that the AC independent water addition system
13 is the most important system for helping to prevent
14 severe accidents.

15 The safety evaluation report also states
16 that the combustion turbine generator, in combination
17 with the AC independent water addition, virtually
18 eliminates station blackout as a consideration.

19 In addition, under the digital control
20 room, the certified design includes the use of a hard-
21 wire analog indication and controls for one safety
22 train, that provides diversity and protects against
23 common load failure.

24 Next slide, please. As Mark noted
25 earlier, the ABWR certified design was selected to be

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1 the basis for STP 3 and 4 application in 2006. Our
2 application was submitted in September of 2007
3 referencing the certified design, and revised in 2010
4 to include reference to the amendment addressing the
5 aircraft impact rule.

6 Our application is based on building two
7 new units at the site of existing STP Units 1 and 2.
8 This election offers a number of significant
9 advantages.

10 The site is large and includes ample space
11 for construction of the new units. The main cooling
12 reservoir was originally sized for four units, so the
13 source of cooling water is readily available.

14 The infrastructure is in place. This
15 includes road, rail and barge access. No new
16 transmission corridors will be required for the new
17 units. The surrounding area has a very low population
18 density, and there are already currently existing
19 state, county and site emergency plans. As noted
20 before, we have very strong community support not only
21 for the existing units, but for building the future
22 Units 3 and 4.

23 STP Nuclear Operating Company has many
24 years of successful operation of Units 1 and 2. We
25 strongly believe that this is an excellent site for

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1 construction of new nuclear power.

2 Next slide, please. Our goal from the
3 inception of the project has been to build the
4 certified design. However, it has been necessary and
5 appropriate to propose departures which focus on
6 improving safety and reliability, regulatory changes,
7 operating experience, site-specific issues and the
8 evolution of technology since 1997.

9 An example of one of the design changes
10 incorporated to enhance safety and reliability is the
11 use of an improved reactor core isolation cooling
12 pump, which requires no external services to operate.
13 The bearings are water lubricated by a pump fluid, and
14 the self-contained mechanical governor provides rapid
15 start-up with no overshoot.

16 A supply of steam and a source of water
17 are all that are necessary to run the machine. The
18 simple, robust design is less affected by
19 environmental conditions, and eliminates many of the
20 failure modes experienced with the other designs.

21 Here you see a picture of Steve Thomas,
22 our Engineering manager, examining one of these pumps
23 at the manufacturer's facility in Scotland. Another
24 departure involved updating the rad waste processing
25 systems to utilize modern, mobile technology and

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1 eliminate obsolete equipment and processes. This
2 change also provides ample storage capacity.

3 The emergency core system suction
4 strainers have been upgraded to provide a design
5 methodology and performance characteristics consistent
6 with current industry standards. Associated with this
7 departure, the project has committed to eliminate from
8 containment, to the extent possible, any materials
9 which could create a post-LOCA challenge to the
10 strainers or the fuel.

11 Several categories of changes to the
12 safety-related I&C architecture were made to be
13 consistent with current digital technology. However,
14 the fundamental function attributes have been
15 maintained.

16 Several departures were made from Tier 1
17 for site parameters. For example, the drybulb and
18 wetbulb temperatures were increased to reflect the
19 semi-tropical climate at the South Texas Project.

20 Most significantly, one of the features
21 unique to the South Texas Project is the 7,000 acre
22 above grade main cooling reservoir. The presumed
23 failure of the reservoir embankment defines the site
24 design basis flood, which changed from one foot below
25 grade in the ABWR certified design to six feet above

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1 grade in our application.

2 Next slide, please. We believe it will
3 aid in some of our later discussions to provide a
4 brief orientation regarding some of our external
5 events. In this picture, the dark round feature is
6 our main cooling reservoir. STP 1 and 2 are located
7 just to the north of the reservoir in that white area.

8 The Unit 3 and 4 reactor buildings will be
9 located almost a half mile north of the main cooling
10 reservoir, and the actual water elevation on the north
11 end of the reservoir is relatively shallow,
12 approximately 20 feet deep. To the right or the east
13 of the site that blue line there is the Colorado
14 River.

15 It is the makeup source for the reservoir,
16 which is filled from a pumping station located on the
17 river. Towards the bottom of the picture you see the
18 Gulf of Mexico. The site is approximately 15 miles
19 from the nearest of the Barrier Islands.

20 To determine design basis flood evaluation
21 for STP 3 and 4 we did a number of analyses. Our
22 tsunami analyses concluded that with a very
23 conservatively generated tsunami, that the water level
24 does not approach the site. Our storm surge analysis
25 shows that while the water level does approach the

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1 site, it does not reach site grade.

2 We analyzed upstream dam failures by
3 assuming a cascading set of failures of all the
4 relevant dams on the Colorado River Basin, all of
5 which are over 300 river miles away. The flood level
6 from this scenario would just reach the site grade if
7 wave and wind action are considered.

8 A probable maximum precipitation event
9 does flood the site to about 2-1/2 feet above site
10 grade, and the main cooling reservoir embankment
11 breach ends up defining the design basis flood
12 elevation at the site. Water levels for this scenario
13 will be about 4-1/2 feet above average grade for the
14 power block area, and we will discuss this scenario in
15 more detail in Safety Panel 3.

16 The next topic I'd like to discuss is our
17 selection of Toshiba as the ultimate vendor. Next
18 slide please. Toshiba has extensive nuclear experience
19 in the Japanese fleet, in conceptual design,
20 fundamental design and common engineering for the
21 first ABWRs were developed by a team composed of GE,
22 Toshiba and Hitachi.

23 This ABWR team completed the detail of the
24 implementation engineering for Kashiwazaki-Kariwa
25 Units 6 and 7. The majority of the detailed

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1 engineering was performed by Toshiba and Hitachi,
2 based on the common engineering developed jointly by
3 the three companies.

4 Subsequent to the Kashiwazaki-Kariwa Units
5 6 and 7 projects, Toshiba was also the prime
6 contractor for another ABWR, Hamaoka Unit 5. In order
7 to confirm that Toshiba was qualified to provide this
8 certified design, in early 2008 the EPC team performed
9 what was called the Toshiba Capabilities Assessment
10 Project, known as TCAP.

11 In parallel, our project team assembled a
12 group of senior employees and outside industry experts
13 to independently oversee and evaluate the TCAP effort.
14 Both teams went to Sogo, Japan to review Toshiba's
15 ability to independently perform the design
16 engineering and project management functions required
17 to license and build the certified ABWR in the United
18 States.

19 In the end, we were impressed with
20 Toshiba's first hand experience, extensive
21 documentation and working knowledge of the ABWR
22 technology. Based on the details evaluations
23 performed, we concluded that Toshiba engineering,
24 procurement and construction team, which included
25 their U.S. partners Westinghouse and Sargent & Lundy,

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1 had the technical qualifications and capability to
2 provide the certified ABWR design for STP 3 and 4.
3 Mark.

4 MR. McBURNETT: When we started this
5 project in 2006, we were impressed with the ABWR.
6 Since then, our detailed studies of the design and
7 visits to existing units in Japan have only reinforced
8 our initial assessment of the robustness of the
9 design.

10 Even before we studied the events at
11 Fukushima, we recognized that the ABWR certified
12 design had already included multiple and diverse
13 capabilities for mitigation of severe accidents,
14 including extended loss of AC power.

15 During the development of the STP
16 application, external events such as floods,
17 earthquakes and hurricanes were extensively evaluated
18 using the latest methodologies.

19 Even though the safety-related equipment
20 at STP 3 and 4 will be protected from such events, we
21 embrace the industry lessons learned, incorporated
22 enhancements and upgrades, and developed a sound FLEX
23 strategy.

24 The STP site is an excellent location for
25 new nuclear units. The addition of STP 3 and 4 has

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1 strong community support and will have low
2 environmental impact. Our EPC team, including
3 Toshiba, Westinghouse and Sargent & Lundy has
4 extensive nuclear design and construction experience,
5 and our operator, STP Nuclear Operating Company, has
6 many years experience safely operating STP 1 and 2.

7 We believe that new cogeneration is
8 important to the energy mix in a carbon-constrained
9 environment. While we are not sure when the market
10 will support starting these units, we are certain that
11 they need to be built.

12 The issuance of the combined licenses for
13 STP 3 and 4 will facilitate our ability to secure
14 financing for this critically important project. The
15 NRC staff has conducted a rigorous review of our
16 application. Additionally, our application has been
17 subject to independent review by the Advisory
18 Committee on Reactor Safeguards.

19 We believe that their reviews, combined
20 with our application, provide the support needed for
21 the Commission to make its findings for issuance of
22 combined licenses for STP 3 and 4. That concludes our
23 prepared remarks.

24 CHAIRMAN BURNS: Again, thank you for your
25 testimony and for this, the overview presentations,

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1 we'll have the questioning after each panel and in
2 terms of the order, I'll begin with the questioning
3 this morning.

4 One question I had, and you touched upon
5 this in your testimony, and anyone can answer it. As
6 you indicated, under the design-centered approach we
7 use here in the U.S., Units 3 and 4 are the reference
8 COLs for the U.S. ABWR certified design.

9 But as you note in your testimony, the
10 evolution of the design has begun really with the
11 units that were built in Japan, and there are areas in
12 which they needed to rely on the operating experience
13 of Japanese ABWR units.

14 Can you maybe give -- describe a little
15 more, in terms of the extent to which you were able to
16 leverage Japanese nuclear industry's experience with
17 the ABWR in the development of the combined license
18 application, and was that done primarily through
19 Toshiba or were there other ways that operating
20 experience was able to be integrated into your
21 application?

22 MR. HEAD: Yes, we had opportunities to
23 incorporate operating experiences, you know,
24 throughout the project. As we maybe not directly
25 operating experience, but certainly the use of modules

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1 was incredibly important in our decision process. For
2 all of us that constructed plants in the 80's, that
3 was very important for us with respect to future
4 construction.

5 As we mentioned, there was a digital
6 control room, and certainly one of the earlier digital
7 control rooms. A team from the United States went
8 over and interviewed a lot of the operators that had
9 been involved with the first operating plants, and got
10 their feedback on how things worked and any
11 improvements that are necessary.

12 We have the report on that. That's
13 something that we'll incorporate into our thinking as
14 we move forward with the design of the digital control
15 room.

16 A very important operating experience with
17 respect to the licensing process is the steam dryers.
18 We used the operating experience as a crucial point
19 with respect to the licensing process, because they
20 had been operated for many years, and were extensively
21 inspected.

22 So we could confirm that maybe some of the
23 operating experience issued that had happened in this
24 country were not -- those dryers were not subject to
25 those issues. So that was very important.

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1 Then maybe just, you know, the real-time
2 operating experience that we had was the ability to
3 send our operating staff over and work with them at
4 their simulators in their plants and begin to
5 understand the operational aspects and bring that
6 back.

7 We built our operating procedures. So
8 it's -- having been constructed and operating has
9 provided us a lot of leverage that we've embraced and
10 are looking forward to continue to use.

11 MR. KOEHL: And Mr. Chairman, if I can
12 just add, we are from the standpoint of the U.S.
13 industry, South Texas Project Nuclear Operating
14 Company is very much engaged with both Scana and
15 Southern of lessons learned that come out there, where
16 that will come up in our NSIAC meetings or different
17 meetings that happen in the industry.

18 But we also, after Fukushima, there was
19 roughly 11 CNOs that partnered with CNOs in Japan for
20 the associated utilities there. South Texas Project
21 is partnering with J-Powers, who is actually building
22 an ABWR at the Oma station. We've had several face to
23 face meetings and teleconferences. We do have a
24 meeting scheduled next March to physically be at the
25 site.

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1 Now their construction is on hold right
2 now, but we plan to leverage those lessons learned
3 from them, and they are incorporating some changes in
4 their design as they move forward.

5 CHAIRMAN BURNS: Okay, thanks.

6 MR. MCBURNETT: I would just to add to
7 clarify on Scott's comments, of the working with the
8 Japanese utilities, Tokyo Electric Power Company and
9 their operators, and from there we also had five
10 members of the Tokyo Electric Power Company staff were
11 co-located with us in Bay City, as we were working
12 through the development, prior to their unfortunately
13 having to leave it in 2011.

14 But prior to that, they were working side
15 by side with us and helping us to address and
16 incorporate lessons.

17 CHAIRMAN BURNS: Okay. Thanks for those
18 remarks. Commissioner Svinicki.

19 COMMISSIONER SVINICKI: Good morning. I
20 thank the applicant witnesses for the overview
21 presentation, and I would like to recognize and
22 acknowledge the public officials and community
23 representatives that you've brought here today. I
24 have had the opportunity to visit STP 1 and 2, also to
25 visit Kashiwazaki 6 and 7 years before the Fukushima

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1 event.

2 So I would say that engaging -- during my
3 visit, I also engaged with members of the Chamber of
4 Commerce, with some students who are undertaking
5 vocational training in the community, that would equip
6 them to perhaps be employed in the nuclear industry.

7 I did find that as a community, it seemed
8 to be an extremely educated and informed community, in
9 terms of being your neighbors and your hosts for
10 having a nuclear power plant. So I know that that is
11 an outgrowth of the extensive amount of outreach and
12 education that you do on STP 1 and 2.

13 So again, I acknowledge their presence
14 here today and their involvement in certain capacities
15 in public roles related to the site.

16 The site, as I understand it, was
17 originally planned for four units. So that is
18 relevant to the staff's review, in terms of certain
19 existing infrastructure that is functionally to be
20 connected to 3 and 4 if they're licensed.

21 I was interested if you could give some
22 sense of it's a very long planning horizon to
23 undertake the application and licensing, and then
24 potentially in the future the construction of these
25 new nuclear units. What has been the overall economic

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1 forecast in terms of the community's growth, and I
2 know that you've testified that although you don't
3 know at what time it will be necessary to start
4 construction of these units if they're licensed, you
5 predict that they will be needed.

6 Can you talk a little bit about the
7 longer-range kind of economic forecasts for the
8 region?

9 MR. HEAD: Well, it's interesting. When
10 we start looking at Matagorda County, it's actually
11 located further remotely. It's far enough away from
12 Houston that it's outside the growth. It's really far
13 enough away from all the other major population
14 centers in the state, that it really hasn't seen much
15 change in population numbers.

16 When we started looking at developing the
17 application, we looked at the environmental reports
18 for Units 1 and 2 done back in the 1970's. The county
19 population's essentially the same. The industries in
20 the county were essentially the same, except for the
21 addition of STP 1 and 2.

22 We've seen the strong positive impacts
23 provided by that into the community. As far as the
24 early forecasts for --

25 MR. HEAD: I'd say the environmental

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1 report notes there will obviously be, you know, a
2 growth of individuals involved with construction, and
3 that's temporary, and then you know, the ABWR will
4 have a staff of 800 or 900 people. As we've seen, you
5 know, 60-70 percent of many of those will actually
6 live in the Bay City area, based on what we've seen at
7 1 and 2.

8 So there will be some impact, and the
9 environmental report notes that the impact with
10 respect to -- the economic impact with respect to the
11 Bay City and Matagorda County is large and positive.

12 COMMISSIONER SVINICKI: Okay, thank you.
13 In your pre-filed testimony, you responded on the
14 issue of departures from the ABWR DCD and you provided
15 a chart on page 12. Of the total number of departures
16 of all types, which was I believe 275 departures, the
17 largest category is administrative, editorial or
18 other, and then they range also.

19 There's, I believe, 92 that are
20 improvements in safety, reliability or technology
21 evolution. Something not discussed in the testimony
22 though is the overall strategic orientation or
23 approach to the taking of departures. I assume that
24 it is beneficial to take the minimum number that is
25 necessary.

1 However, given the initial certification
2 of the ABWR in I believe it was 1997, laying aside the
3 aircraft impact update, which only affected certain
4 parts of the design, can you talk a little bit about
5 your approach to taking departures as necessary? How
6 did you strategically balance the need for departures
7 versus the number that you were planning to take?

8 MR. MCBURNETT: I'll start that and then
9 let Scott wrap it up. But yeah. When we began, our
10 focus was on building the certified design, and we
11 really did intend minimal number of departures, but
12 also recognized that we had to take some site-specific
13 ones, for example.

14 But others, we also didn't want to miss
15 out on important changes that we should make to
16 improve the design, to improve the safety, to improve
17 reliability. So we took a very hard look as we went
18 to adding and selecting what we wanted to add to it.

19 COMMISSIONER SVINICKI: And I note that
20 it's relevant. You mentioned site-specific. I note
21 also in your testimony that of the 275 departures, 246
22 are standard and would be expected to apply to
23 subsequent COLAs. Meaning so again, I drew a
24 conclusion from that that given the original
25 certification of this design was, you know, gosh going

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1 on 20 years ago now, that there were evolutionary --
2 there were technology issues and other improvements
3 that it was simply prudent to take as departures.

4 MR. McBURNETT: Yes, yes. There's things
5 that we learned from operating experience primarily
6 that were just too important to pass up.

7 COMMISSIONER SVINICKI: Mr. Head, did you
8 want to add.

9 MR. HEAD: I'd add just a couple of
10 things. A large proportion of them were I&C related,
11 because that was ten years ago then, certainly even
12 later now. So we appropriately adjusted those. But
13 as you'll -- as I noted, the fundamental concept of
14 the digital control room is still the same.

15 But there have been evolutionary things
16 that have happened in the meantime. A large chunk of
17 the departures were tech spec-related, and one of the
18 things that I would note is that the tech specs we
19 were preparing certainly at one point in time to
20 immediately use to go into training and to support
21 control room activities.

22 So both we and the staff gave the tech
23 specs a very hard scrub, and what we noted is that,
24 and this may be an artifact of the way tech specs were
25 built in the 90's, but there were a number of

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1 occasions where the tech spec and the bases were not
2 exactly aligned.

3 They either had the wrong reference or
4 they referenced maybe the wrong section of the DCD.
5 So as an applicant, like any applicant would do to get
6 their tech specs ready for the control room and meet
7 their expectations, we gave it a hard scrub.

8 So a large number of those administrative,
9 the ones you noted, we declared as -- were really in
10 fact bases changes, to make sure that everything is
11 consistent and reflect what's in the tech specs.

12 COMMISSIONER SVINICKI: Okay, thank you
13 for that, and again please don't conclude from that
14 line of questioning that I thought there was anything
15 irregular in number about the number of departures.

16 Frankly, if I had to react one way or the
17 other, I might fall on the other side. But it seems
18 like a fairly small set of departures, given the time
19 of the development of the ABWR design certification.
20 Thank you, Mr. Chairman.

21 CHAIRMAN BURNS: Thank you. Commissioner
22 Ostendorff.

23 COMMISSIONER OSTENDORFF: Thank you,
24 Chairman. Thank you all for our presentations and for
25 being here. I appreciate, especially as Commissioner

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1 Svinicki noted, the presence of Matagorda County
2 leaders and officials. That's very impressive to see
3 that group come up here.

4 I also appreciate the faces behind the
5 project being here behind you three. I think that the
6 human capital piece is so important to see. The many
7 people, the aggregate years of experience that are
8 behind this project is very helpful for the
9 Commission. So thank you for taking that step.

10 I want to ask a question on design
11 completion, and I guess it's maybe a two-part question
12 I think I'll ask Mr. Head. I know that Commissioner
13 Svinicki asked about departures from the original
14 design certification for the Advanced Boiling Water
15 Reactor.

16 Are there still design areas that are
17 being worked on, or how would you characterize the
18 overall finality of the design for what you would
19 intend to build for the ABWR, and then for any site-
20 specific aspects of that.

21 MR. HEAD: Want me to do that one? Yes
22 sir. You know, the design is about 40 percent
23 complete, detailed design, and so we still have other
24 -- we still have more work to go. But you know, and
25 so as we encounter things that might, you know, might

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1 need to be adjusted or dealt otherwise, then we would,
2 you know, take the appropriate action at that point in
3 time.

4 So you know, we have more work to do and
5 we'll, you know, we'll follow the appropriate process
6 as we move forward with that.

7 COMMISSIONER OSTENDORFF: Is that 40
8 percent a finality for the site-specific aspect?

9 MR. HEAD: Yes.

10 COMMISSIONER OSTENDORFF: Okay. Mr.
11 Koehl, you mentioned the NSIAC/NEI membership
12 discussions on Summer and Vogtle. Are there any
13 particular aspects of the AP-1000 construction that
14 have informed or modified how you're approaching ABWR?

15 MR. MCBURNETT: It has underscored the
16 criticality of having the design essentially --
17 engineering essentially complete before starting
18 construction, is probably one of the biggest lessons
19 learned that I've heard in my communications with
20 those folks.

21 MR. KOEHL: The other piece that's really
22 important is the supply chain for the feed of the
23 equipment. We're also working with several vendors in
24 the industry right now, to look at how we can better
25 that supply, because some of the delays have been

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1 related to not having the supplies show up when
2 they're needed for each and every one of the modules.

3 COMMISSIONER OSTENDORFF: On that point,
4 are there any particular supply chain sources that are
5 not currently available anyplace in the world, that
6 you've had to develop from scratch?

7 MR. McBURNETT: That's one of the real
8 advantages of the ABWR, the fact that since it has
9 construction continuing actually in Japan on plants,
10 that the supply chain is fairly well established. At
11 this point, I'm not aware of anything that we don't
12 essentially available to us.

13 COMMISSIONER OSTENDORFF: Okay. Thank you
14 all. Thank you Chairman.

15 CHAIRMAN BURNS: Thank you. Commissioner
16 Baran.

17 COMMISSIONER BARAN: Thank you all for
18 being here and for your presentation. This is our
19 first mandatory hearing since Fermi Unit 3, and it's
20 the first one involving the Advanced Boiling Water
21 Reactor design. I thought Fermi 3 was really -- went
22 very smoothly, found it very valuable and I anticipate
23 that today will just as helpful to us. So no
24 pressure, but --

25 (Laughter.)

1 COMMISSIONER BARAN: I think it's really
2 useful, and it's a really important part of the
3 process. For this overview panel, I really just have
4 a couple of questions or maybe even just one. We'll
5 get further into financial qualifications exemption I
6 think in later panels. But I wanted to ask you kind
7 of an overall question about the somewhat unique
8 situation you find yourself in, by potentially seeking
9 investors after you've gotten your combined license.

10 If you get a combined license and if you
11 determine at some point that you want to actually
12 build the facility, and you're looking for potential
13 investors, how are you going to ensure that each one
14 of those potential investors understands the need for
15 ongoing investment in the plant to construct and
16 operate it safely? It's a little different than it is
17 for other sectors.

18 MR. MCBURNETT: Would you say that last
19 piece again?

20 COMMISSIONER BARAN: It's just the nuclear
21 sector's different than other sectors, and maybe you'd
22 have investors that are familiar with that sector.
23 But generally, when you're out looking for investors,
24 how do we make sure that they understand?

25 This is, you know, it's a plant that's

1 going to involve capital expenditure up front, but
2 ongoing investments over time, to make sure it's
3 operating safely.

4 MR. McBURNETT: That will all be very well
5 vetted as part of the financial evaluations and
6 closing. The work that the investors will do before
7 they'll invest in this project, the level of research
8 and verification and due diligence will be extensive.

9 They're expecting to make their money back
10 eventually. So there are -- it will be a very
11 rigorous process for establishing what their
12 requirements are, what their expectations are and what
13 the regulations they will have to comply with.

14 MR. KOEHL: And if I may add, our
15 operating agreement that we presently have with our
16 owners is planned to be carried over, and in that
17 operating agreement it is very much clear as to what
18 the responsibilities are of providing, you know, for
19 those type items as the unit, you know, ages is the
20 best terminology for it in service.

21 COMMISSIONER BARAN: Thank you. I'll stop
22 there for now.

23 CHAIRMAN BURNS: All right, thank you very
24 much. We'll now have the staff overview panel. So
25 I'll ask -- we can roll on, as Commissioner Svinicki

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1 said.

2 And I'll remind the witnesses that you
3 remain under oath, and again you can assume that the
4 Commission is familiar with the prehearing filings,
5 and I'll ask, excuse me, I'll ask the panelists to
6 introduce themselves. I'll start here on my left with
7 Akstulewicz.

8 MR. AKSTULEWICZ: My name is Frank
9 Akstulewicz. I'm the Division Director in the
10 Division of New Reactor Licensing.

11 MR. HOLAHAN: Gary Holahan. I'm the
12 Deputy Director of the Office of New Reactors.

13 MS. UHLE: Jennifer Uhle, Director of the
14 Office of New Reactors.

15 MR. DELLIGATTI: Mark Delligatti, Deputy
16 Director, Division of New Reactor Licensing, Office of
17 New Reactors.

18 CHAIRMAN BURNS: Okay. Thank you, and the
19 staff may proceed with its testimony.

20 MS. UHLE: Good morning Chairman and
21 Commissioners. Our team today that you have seen
22 standing up and taking the oath is definitely pleased
23 to address the Commission today at this mandatory
24 hearing.

25 Gary Holahan is the deputy director of the

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1 office. As you know, Frank Akstulewicz is the
2 division -- is the director of the Division for New
3 Reactor Licensing, and Mark Delligatti is the deputy
4 director for the Division of New Reactor Licensing.

5 The team here today will present the
6 results of the staff's review of the application for
7 the combined license for the South Texas Project,
8 Units 3 and 4, proposed to be located at the existing
9 South Texas Project site in Matagorda County, Texas.

10 The staff's final environmental impact
11 statement on this application was completed in 2011.
12 The staff's final safety evaluation report was
13 completed in September of this year. These documents
14 are the culmination of an eight year review effort by
15 the staff.

16 They document the results of a coordinated
17 effort of scientists, engineers, attorneys and
18 administrative professionals. For multiple offices
19 within the agency, as well as efforts of other
20 government agencies and those of our consultants.

21 On this panel, Gary will provide brief
22 remarks pertaining to the review, to preface the more
23 detailed remarks that will be provided by the staff.
24 Mr. Akstulewicz and Mr. Delligatti will briefly
25 describe the staff evaluation for the South Texas

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1 Project 3 and 4 application.

2 This will consist of an overview of the
3 safety review, including the review of the departures
4 from the certified design, which certainly added to
5 the complexity of our review, as well as an overview
6 of the staff's environmental review and summary of the
7 staff's regulatory findings based on our reviews.

8 The staff completed its review of the
9 combined operating license -- excuse me, combined
10 license application in September of 2015. Pre-
11 application activities began in 2006.

12 When the applicant submitted a letter of
13 intent in late 2007, the staff docketed the initial
14 version of the application, and between January 2008
15 and 2009, sections of the safety review were placed on
16 hold while the applicant performed due diligence
17 associated with changing vendors.

18 Since then, the staff has focused
19 approximately 157,000 hours on the safety and
20 environmental reviews. This effort has involved well
21 over 100 scientists, engineers, lawyers and technical
22 specialists. During this time, the staff conducted
23 over 150 public meetings and conference calls in
24 support of the review.

25 The applicant responded to over 1,700

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1 staff questions, of which 1,500 were associated with
2 the safety review and 200 with the environmental
3 review. In addition, the staff considered more than
4 380 comments on the draft environmental impact
5 statements.

6 Contractors, working in collaboration with
7 the staff, devoted approximately 65,000 hours to
8 support the environmental and safety reviews. So as
9 you can tell, the review of the South Texas Project
10 combined license was a very thorough effort.

11 Within the NRC, the offices that
12 contributed to the review include the Office of
13 Nuclear Security and Incident Response, who looked at
14 the emergency and preparedness and security areas; the
15 Office of Nuclear Reactor Regulation evaluated the
16 financial qualification aspects of the application;
17 the Office of Nuclear Materials Safety and Safeguards,
18 as well as Region I, supported the reviews for
19 licenses necessary under Part 30, Part 40 and Part 70.

20 In addition, the Region IV office
21 supported the environmental meetings in the community
22 near the site. The U.S. Army Corps of Engineers,
23 Galveston District and the Department of Homeland
24 Security also contributed to the NRC review.

25 The final safety evaluation report,

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1 environmental impact statement and our statement in
2 support of the hearing provide what the staff
3 considers to be an adequate basis for making the
4 necessary regulatory findings. We look forward to
5 responding to your questions at this hearing. So I'll
6 turn the presentation over to Gary Holahan.

7 MR. HOLAHAN: Thank you, Jennifer. Good
8 morning Chairman and Commissioners. As you heard
9 earlier, I am the deputy director, Office of New
10 Reactors, and I'll provide a few introductory remarks.
11 I may note that what you will hear from the staff will
12 duplicate some of the comments you already heard from
13 the applicant.

14 This is not necessarily a bad thing. It
15 will show that we do have a common understanding of
16 the relevant issues and a common basis for our
17 presentations today. So could I have the next slide?
18 Staff slide. Thank you.

19 On September 24th, 2007, representatives
20 of the South Texas Project Nuclear Operating Company
21 delivered an application, their application dated
22 September 20th, 2007 for the combined license to
23 construct and operate two ABWRs at the existing South
24 Texas site.

25 Following some high level reorganization,

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1 Nuclear Innovation North America or NINA, as you've
2 heard already called today, became the applicant in
3 2011. So NINA would be licensed to construct STP 3
4 and 4, while South Texas Project, the nuclear
5 operating company, would be licensed to operate the
6 units.

7 May I have the next slide? So we note
8 that STP 3 and 4 COL application incorporates by
9 reference the ABWR design certification document, Rev
10 4, aircraft impact assessment amendment to the ABWR,
11 to the original certification, and Appendix A to Part
12 52, which in fact was the original ABWR design
13 certification rule, in fact the first certification.

14 The ABWR design was originally certified
15 in 1997 based on the staff evaluation in 1995. The
16 final aircraft impact assessment amendments to the
17 certification was published, as you heard earlier, in
18 2011.

19 Next slide. Based on the finality that
20 the NRC regulation affords to a certified design, the
21 scope of the staff's COL technical review did not
22 include a re-review of items that were -- that had
23 been resolved within the scope of the original
24 certification.

25 Instead, the COL review is focused on

1 plant-specific aspects of the application, which are
2 the responsibility of this applicant, things like the
3 operational programs, site-specific design features,
4 combined license information items, those items
5 identified in the certification which needed to be
6 fulfilled in the COL, and also departures as were
7 previously noted.

8 Ed, next slide. Also as mentioned
9 earlier, currently STP 3 and 4 COL application is the
10 only one referencing the ABWR design. Should a future
11 COL applicant also refer -- reference the ABWR design,
12 that applicant could elect, and I think the staff
13 would encourage use of a design-centered approach on
14 the standard content of the design, as reviewed in the
15 certification in the STP application.

16 As noted earlier, the ABWR design was
17 certified in 1997, a full ten years before the
18 application for the COL. The long period between the
19 certification and the COL application resulted in a
20 number of new aspects to this application, namely
21 technology improvements, design innovations,
22 regulatory changes in the intervening years.

23 These, as well as the site-specific
24 requirements, have led the applicant to take the
25 relatively large number of departures from the

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1 certified design.

2 The staff evaluated these departures, both
3 for their safety implications and for their adherence
4 to the departure criteria for design certification
5 rule. In the next panel, the staff will discuss the
6 departures and the staff's process for reviewing them.

7 Next slide. Another new aspect of this
8 application resulted from the applicant's decision to
9 use a vendor other than the one that submitted the
10 original design certification. General Electric,
11 specifically General Electric Nuclear Energy was the
12 original vendor for the ABWR design, as certified.

13 But STP Nuclear Operating Company chose
14 Toshiba to supply the ABWR for Units 3 and 4. The
15 regulations do recognize and allow the use of an
16 alternate vendor, if that alternate vendor is
17 qualified to supply the design.

18 So following STP's decision to use the
19 alternate vendor, the staff embarked on an extensive,
20 almost year-long inspection, evaluation and other
21 activities that resulted in the staff determination
22 that Toshiba was qualified and could in fact supply
23 the U.S. certified ABWR.

24 I'd now like to turn the presentation over
25 to Frank Akstulewicz.

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1 MR. AKSTULEWICZ: Thank you, Gary. Good
2 morning Chairman and Commissioners. Can I have Slide
3 8 please? In accordance with 10 C.F.R. 52.87, the
4 Advisory Committee on Reactor Safeguards examined the
5 staff's safety review of the STP 3 and 4 combined
6 license application.

7 The applicant and staff supported 20 ABWR
8 subcommittee meetings specifically related to the STP
9 application and its safety evaluation. The staff
10 presented the results of its review of the STP 3 and
11 4 combined license application to the full ACRS on
12 February 5th, 2015.

13 In response, the ACRS provided a report on
14 February 19th, 2015, which concluded that there is
15 reasonable assurance that South Texas 3 and 4 can be
16 built and operated without undue risk to the public
17 health and safety.

18 The ACRS report also identified four
19 recommendations regarding turbine missile analysis,
20 turbine valve testing, standard review plan acceptance
21 criteria on materials testing, and fire hazards
22 analysis.

23 The first two of these recommendations
24 were specific to the STP review, and will be addressed
25 through the completion of a COL information item,

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1 while the other two were generic in nature and are
2 being pursued by the staff, as detailed in our
3 specific response to the ACRS.

4 Next slide, please. The staff's response
5 to the ACRS report can be found in a letter dated
6 April 2nd, 2015. After completing its response to the
7 ACRS, the staff issued the STP 3 and 4 final safety
8 evaluation report in September of this year.

9 Next slide, please. SECY 15-0123, which
10 is dated September 30th, 2015, was prepared to support
11 this mandatory hearing. In that paper, the staff
12 summarized the bases that would support the
13 Commission's determination that the staff's review is
14 adequate to support the findings set forth in both 10
15 C.F.R. 52.97 and 10 C.F.R. 51.107.

16 That SECY paper provided an overview of
17 the findings that support the issuance of the combined
18 licenses. In order to issue a combined license, the
19 Commission must be able to conclude that each of the
20 following findings in 10 C.F.R. 52.97 is met.

21 I will summarize the staff's bases
22 supporting each of the findings. First, the
23 applicable standards and requirements of the Atomic
24 Energy Act and the Commission's regulations have been
25 met. The staff reviewed and evaluated the application

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1 against the applicable criteria in 10 C.F.R.

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

9 Second, any required notification to other
10 agencies or bodies have been duly made. As documented
11 in the SECY paper, all required notifications,
12 including those to the Electric Reliability Council of
13 Texas, the Public Utility Commission of Texas and the
14 Federal Energy Regulatory Commission, as well as the
15 required *Federal Register* notices have been made.

16 Next slide, please. Third, there is
17 reasonable assurance that the facility will be
18 constructed and operated in conformity with the
19 license, the provisions of the Atomic Energy Act and
20 the Commission's regulations.

21 As the SECY paper states, the staff
22 believes that its review, as documented in its final
23 safety evaluation report, and the final environment
24 statement, the inspections tests, analyses and
25 inspection criteria or ITAAC and the license

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1 conditions provide the necessary assurances that the
2 unit will be constructed and operated as required.

3 Fourth, the applicants are technically and
4 financially qualified to engage in the activities
5 authorized. The technical and financial
6 qualifications of the applicants are summarized in the
7 SECY paper, and documented in detail in Chapters 1 and
8 17 of the final safety evaluation report.

9 The exemption from the financial
10 qualification regulation, as well as the qualification
11 of the alternate vendor, will be discussed by the
12 staff expert panels, and are also discussed in Chapter
13 1 of the final safety evaluation report.

14 Next slide, please. Fifth, the issuance
15 of the COLs might be inimical to the common defense
16 and security or the public health and safety. The
17 specific bases for an inimicality finding have been
18 provided in the staff's SECY report.

19 Sixth, the findings required by Subpart A
20 of 10 C.F.R. Part 51 have been made. The staff's
21 conclusion supporting the findings required by Subpart
22 A will be presented by Mark, who will now provide the
23 overview of the staff's environmental review.

24 MR. DELLIGATTI: Thank you. Next slide,
25 please. As Gary indicated earlier, I am the deputy

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1 director of the Division of New Reactor Licensing in
2 the Office of New Reactors.

3 I will be discussing the environmental
4 review and will provide an overview of the process we
5 used in conducting this review, the draft summary
6 record of decision and the staff's recommendation as
7 a result of the review.

8 I will also discuss the regulatory
9 findings that need to be made before licenses can be
10 granted. The staff prepared an EIS for the STP Units
11 3 and 4 combined license application in accordance
12 with the National Environmental Policy Act of 1969 and
13 the requirements of 10 C.F.R. Part 51.

14 The staff prepared the EIS based on its
15 independent assessment of the information provided by
16 the applicant, and information developed independently
17 by the staff, including information gathered through
18 consultations with other agencies.

19 The U.S. Army Corps of Engineers,
20 Galveston District, fully participated with the staff
21 as a cooperating in preparing the STP Units 3 and 4
22 EIS, under the terms of an updated memorandum of
23 understanding between the NRC and the Corps for the
24 review of nuclear power plant applications.

25 As a member of the Environmental Review

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1 team, the Corps staff participated in site visits,
2 consultations with other agencies and development of
3 the draft EIS and final EIS. We did invite them to
4 join us here today, but they were unable to be here.

5 Next slide, please. The NRC began the
6 environmental review process for the STP Units 3 and
7 4 combined license application by publishing a notice
8 of intent to prepare an EIS and conduct scoping in the
9 *Federal Register* on December 21st, 2007.

10 Two scoping meetings were held to obtain
11 public input on the scope of the environmental review.
12 These were held in Bay City, Texas on February 5th,
13 2008. The staff reviewed the comments received during
14 the scoping process, and responses were developed for
15 each comment.

16 These responses were documented in the
17 scoping summary report and are also provided in
18 Appendix D of the final EIS. The staff contacted
19 federal, state, regional and local agencies and
20 federally-recognized Indian tribes during the scoping
21 period to solicit comments, and it considered these
22 comments in preparing the draft EIS.

23 Specifically, the staff consulted with the
24 U.S. Fish and Wildlife Service, National Marine
25 Fisheries Service, federally-recognized Indian tribes,

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1 the Texas State Historic Preservation Office and other
2 agencies as required by the Endangered Species Act,
3 National Historic Preservation Act and other statutes.

4 The draft EIS was issued in March 2010.
5 A 75-day comment period for the draft EIS began on
6 March 26th, 2010, the date of publication of the U.S.
7 Environmental Protection Agency notice of
8 availability.

9 The staff held two public meetings on May
10 6, 2010 in Bay City, Texas, to describe the results of
11 the staff's environmental review, to provide members
12 of the public with information to assess them in
13 formulating comments on the draft EIS, and to respond
14 to questions and accept comments.

15 The staff developed responses to comments
16 received on the draft EIS, and provided these
17 responses in Appendix E of the final EIS.

18 Next slide, please. On February 24th,
19 2011, the staff published the final EIS as NUREG-1937.
20 As stated in the final EIS, the staff's recommendation
21 related to the environmental aspects of the proposed
22 action is that the COLs should be issued.

23 The staff based its recommendation on the
24 STP Units 3 and 4 COL application environmental
25 report; the consultation with federal, state, tribal

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1 and local agencies; the staff's own independent
2 review; the staff's consideration of comments that
3 were received during the public scoping process; the
4 staff's consideration of comments on the draft EIS;
5 and the assessment summarized in the EIS, including
6 the potential mitigation measures identified in the
7 environmental report and in the EIS.

8 Next slide, please. The staff included a
9 draft summary record of decision as a reference in the
10 SECY. This document states the decision being made,
11 identifies all alternatives considered in reaching the
12 decision, discusses preferences among the
13 alternatives, and states whether the Commission has
14 taken all practical measures within its jurisdiction
15 to avoid or minimize environmental harm from the
16 alternative selected.

17 Next slide, please. This slide lists the
18 environmental findings pursuant to 10 C.F.R. 51.107(a)
19 that the Commission must make to support the issuance
20 of the STP Units 3 and 4 COLs.

21 The staff believes that the scope of the
22 environmental review, the methods used to conduct the
23 review and the conclusions reached in the EIS are
24 sufficient to support a positive determination
25 regarding these findings.

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1 For the first finding, in accordance with
2 NEPA Section 102(2)(a), the staff's environmental
3 review used a systematic interdisciplinary approach to
4 integrate information from many fields, including the
5 natural and social sciences, as well as the
6 environmental sciences.

7 The staff's review also comports with the
8 NRC's requirements in Subpart A of 10 C.F.R. Part 51.
9 The staff concludes that the environmental findings in
10 the EIS constitute the hard look required by NEPA and
11 have reasonable support in logic and fact.

12 The staff's process for developing the EIS
13 will be discussed further in a separate panel, as part
14 of this mandatory hearing. In accordance with NEPA
15 Section 102(2)(c), the EIS for the STP COLs addresses
16 the environmental impact of the proposed action, any
17 unavoidable adverse environmental effects,
18 alternatives to the proposed action, the relationship
19 between local short-term uses of the environment and
20 maintenance and enhancement of long-term productivity,
21 and any irreversible and irretrievable commitments of
22 resources that would be involved in the proposed
23 action should it be implemented.

24 As supported by correspondence presented
25 in Appendix F to the EIS, the staff concludes that the

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1 requirements of NEPA Section 102(2)(c) was fulfilled
2 by consulting with and obtaining comments from other
3 federal agencies with jurisdiction by law or special
4 expertise.

5 As noted earlier, the U.S. Army Corps of
6 Engineers fully participated with NRC as a cooperating
7 agency in preparing the EIS. The staff did not
8 identify any other federal agencies as cooperating
9 agencies in preparing this EIS.

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

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

24 Next slide, please. Based on that staff
25 analysis, the staff concluded that the building and

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1 operation of the proposed STP Units 3 and 4 would have
2 accrued benefits that would be expected to outweigh
3 the economic, environmental and social costs.

4 As a result, the staff recommends that the
5 COLs be issued. For the fourth finding, the staff
6 believes that the Commission will be able to find,
7 after this hearing, that the NEPA review performed by
8 the staff has been adequate.

9 As will be discussed in more detail in
10 later presentations, the staff performed a thorough
11 and complete environmental review sufficient to meet
12 the requirements of NEPA, and adequate to inform the
13 Commission's actions on the request for the COLs.
14 Next slide, please.

15 MS. UHLE: Thank you, Mark. So during
16 this hearing, the staff will be information on the
17 issues listed on this table. Safety Panel 1 will
18 discuss how the staff analyzed departures in
19 exemptions, including the exemption from the financial
20 qualification regulations.

21 Safety Panel 2 will discuss the mitigating
22 strategies for beyond design basis external events, as
23 well as the Byron open phase issue associated with
24 Bulletin 2012-01.

25 Safety Panel 3 will discuss the design

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1 basis flood for the South Texas Project site, and the
2 staff's review of the qualifications of Toshiba as an
3 alternate vendor for the certified ABWR design.

4 The environmental panel will provide a
5 summary of the process for developing the
6 environmental impact statement, the assessment of the
7 environmental impacts, the analysis of alternatives
8 and the conclusions and recommendations of the final
9 environmental impact statement. This concludes the
10 staff's remarks, and we are prepared to respond to any
11 questions you may have.

12 CHAIRMAN BURNS: Thank you, and I want to
13 thank the staff for its testimony. We'll begin the
14 round of questioning with Commissioner Svinicki.

15 COMMISSIONER SVINICKI: Well good morning,
16 and thank you for the staff's overview presentation.
17 The Chairman mentioned at the outset that we can
18 allocate our time. So if you're seeing some cross-
19 talk on the table, it's been a joke that given the
20 prudence of my colleagues, I'm spending like a drunken
21 sailor against my future time on the panels.

22 This is going to become amusing over the
23 course of the day, and by the afternoon, I'm not going
24 to have much to say because I'm not going to have any
25 time left and I've consumed half my time to make this

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1 comment about it.

2 But I do have to say this, because this is
3 such a rare opportunity. It is rare as a Commissioner
4 that I can have so many of the NRC contributors to an
5 individual review gathered in the room, and maybe
6 there's some very studious people back at their desks
7 tuning in throughout the NRC complex as well.

8 So this is a rare opportunity, and I can't
9 let this go without saying, you know, not just as a
10 Commissioner but I think as an American citizen, I'm
11 very, very grateful for the rigor and the discipline
12 of the staff's work on something like this.

13 Now Jennifer threw out a term of 165,000
14 hours for the safety and environmental reviews, 1,700
15 requests for additional information I think she said,
16 responding to almost 400 comments on the environmental
17 impact statement.

18 Although Commissioner Baran complimented
19 the utility of these mandatory hearings, my only
20 nagging concern about them is that they might leave an
21 impression to people who are tuning into the webcast
22 or will look at this later that, you know, is that all
23 there is?

24 The safety evaluation report and
25 environmental impact statement up on a table in my

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1 office are approximately two feet high when stacked
2 together. This is, you know, the testimony. Pre-
3 filed questions in advance of the hearing were
4 submitted to the staff and the applicant, and I
5 reviewed a lot of very high quality NRC work product.

6 But I want to specifically call out the
7 staff's responses to the questions in advance of
8 today's hearing. I thought it was among, out of a lot
9 of high quality work, it stood out as an extremely
10 well done set of responses. Just the coherency and
11 the ability to kind of take these complex issues and
12 make them understandable. So I specifically want to
13 call that out and commend that.

14 I will ask one specific question, again as
15 to kind of set the table there, that amongst
16 government permits and licenses, I'm indicating to you
17 that I think I would put these proposed and
18 recommended licenses that new reactors that go through
19 this NRC process, I think, are among the most
20 evaluated and scrutinized licenses or permits issued
21 by a government agency.

22 At least I need somebody to move me off
23 that presumption. I'm going to stick with it, and I
24 think I have a good sense that on my wager on that, I
25 would prevail. In addition to these staff's review,

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1 however, there are also bodies such as the Advisory
2 Committee on Reactor Safeguards. Gary talked a lot
3 about that.

4 That is a group of I think at full
5 strength, which they may be right now, is 15
6 nationally and sometimes internationally renowned
7 experts in their academic areas of expertise, and some
8 of them have operational expertise as well.

9 They have, of course, exercised their role
10 under law in looking at the staff's work and the
11 technical issues underlying the recommendation to
12 issue these license. I was going to ask one specific
13 question about their --

14 They had four issues identified, and again
15 Gary's touched on this. But the fourth of the four
16 issues was the staff should consider fire-induced
17 spurious actuations on digital instrumentation and
18 control signal cabinets as a generic issue, which is
19 a little odd, in that it was recommended to the staff
20 that this be handled generically.

21 The staff has agreed that the issue should
22 be a value generically, and explained why no further
23 action was needed in dispositioning the ACRS'
24 recommendation. But can Gary or some other staff
25 witness address the fact? Although this is going to

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1 be addressed generically, is there a specific
2 implication for this particular COL and if so, is that
3 dispositioned to the staff's satisfaction?

4 MR. HOLAHAN: Let me try first. I think
5 the ACRS wanted to be quite clear in distinguishing
6 their support for this COL issuance and their ongoing
7 concern about a generic possibility that fire could
8 have some effect on the digital I&C systems, perhaps
9 more so than analog systems or defects of smoke or
10 other particular things. The one particularly
11 interesting aspect of the ABWR design is although the
12 Reactor Protection System is fully digital, its backup
13 is in fact an analog system. So perhaps, and I'm
14 speculating about their concern --

15 COMMISSIONER SVNICKI: You did have another
16 Staff witness.

17 MR. HOLAHAN: No, experts go away.

18 (Laughter.)

19 MR. HOLAHAN: I just want to finish the
20 thought that this design has perhaps less of a generic
21 concern for the digital aspects because its analog is
22 a -- its backup system is an analog system, so that
23 provides some extra added protection.

24 COMMISSIONER SVNICKI: Okay. And if you
25 wanted to add, but could you identify --

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1 CHAIRMAN BURNS: Identify yourself and
2 confirm that --

3 MR. DIAS: My name is Antonio Dias, yes,
4 I've been sworn in. I am the Branch Chief of the
5 Plant Systems NRO. And I completely agree with what
6 Gary said. The ACRS actually had no issues related to
7 the COL application brought in by STP. During the
8 ACRS discussions, they were able to see several layers
9 of defense that their proposed digital design would
10 address and mitigate tremendously the possibility of
11 something like a heat generated or fire generated
12 spurious actuations in digital systems. So the ACRS
13 letter clearly says that, that's not -- there is
14 enough layers of defense in that they didn't see that
15 as an issue.

16 COMMISSIONER SVNICKI: Okay. Thank you.
17 And, Mr. Chairman, I promise that I will become more
18 disciplined. I'm over again. I will not be hitting
19 you all up over the lunch break for raising my credit
20 limit as it were.

21 (Laughter.)

22 COMMISSIONER SVNICKI: I'll get quiet.
23 Thank you.

24 CHAIRMAN BURNS: Right now, you've still
25 got all the time in the world.

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1 (Laughter.)

2 CHAIRMAN BURNS: Commissioner Ostendorff.

3 COMMISSIONER OSTENDORFF: I feel compelled
4 to address Commissioner Svincki's comment.

5 (Laughter.)

6 COMMISSIONER OSTENDORFF: As a submarine
7 sailor for 26 years, I know there's others in the
8 audience here --

9 (Laughter.)

10 COMMISSIONER SVNICKI: It's just a literary
11 flourish. It's not an insult in any way.

12 COMMISSIONER OSTENDORFF: Well, we
13 appreciate it because I know Commissioner Svnicki has
14 great respect for Admiral Rickover and the Navy and
15 often cites the kind old gentleman in her remarks in
16 the various forums, the kindly old gentleman being
17 Admiral Rickover. So I just want to assure everybody
18 in the audience that her comment was not anything
19 other than a complimentary remark. Is that correct?

20 COMMISSIONER SVNICKI: That's correct.

21 COMMISSIONER OSTENDORFF: Very good. So
22 long as that's kind of sorted out, we can proceed. I
23 want to add my thanks to that of others to the Staff
24 for their very professional work and I think this is
25 one of these times when you kind of sit up proud to be

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1 associated as a Commissioner with the NRC Staff who's
2 so capably worked on this for many years. I know I'm
3 very proud, as I know my colleagues are here to my
4 right. So I just thank from the bottom of my heart the
5 NRC Staff for a very professional effort. And I think
6 this is a real significant achievement.

7 Questions. So let me -- I know the
8 Applicant Panel, I'll direct this to Gary and then if
9 you want to direct this to others, please feel free
10 to, but the Applicant Panel mentioned their reliance
11 on operating experience from existing advanced boiling
12 water reactors overseas. And I wanted to find out how
13 we as a regulatory body look at that operating
14 experience in the context of reviewing the COL.
15 Whoever wants to address that.

16 MR. HOLAHAN: Yes. So one of the unique
17 aspects of Part 52, it actually explicitly requires
18 applicants to address operating experience as part of
19 their application. As opposed to the earlier uses of
20 Part 52, this one actually has direct operating
21 experience with the ABWRs in Japan. I've been to both
22 the ABWRs operating and under construction in Japan
23 and they are interesting and impressive activities.
24 So there is an opportunity not just to look at things
25 that might have gone wrong, because, in fact, the

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1 operating experience in Japan has been extraordinarily
2 good.

3 I think the Staff and presumably the
4 Applicant has had the opportunity to also understand
5 the lessons of good operation and construction as
6 well. In Japan, there is considerably more experience
7 with modular construction, for example, and that is a
8 much more mature activity and I would expect to see a
9 more mature level of modular construction and
10 experience in that area than perhaps we've seen for
11 the AP-1000, for example. So the Staff is aware both
12 of event-type experience and construction-type
13 experience and we do learn from that as part of our
14 review.

15 MS. UHLE: Thank you, Gary. I would just
16 also add that it is clear that the Applicant had
17 considered this operating experience as a result. The
18 operating experience contributed in part to some of
19 the deviations that were taken. And the NRC Staff has
20 very good collaboration with Japan and, as a result,
21 the operating experience was considered when reviewing
22 those deviations.

23 COMMISSIONER OSTENDORFF: Thank you for
24 your responses. I think that's a really important
25 aspect of this particular COL review. That there is

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1 experience to be learned from, which is not always the
2 case as Gary pointed out. So thank you for that
3 response. My involvement here on the Commission has
4 seen the AP-1000 Design Certification, the Vogtle and
5 Summer COL mandatory hearings, the ESBWR Design
6 Certification, the Fermi mandatory hearing, which all
7 happened in a fairly short time period from Design
8 Cert to COL.

9 Gary, you made mention in your
10 presentation about the time period between the Design
11 Certification approval here back in the late 1990s and
12 the COL review that's just completed here in the last
13 few months. You mentioned the number of departures
14 and I think it's been a good dialogue, especially with
15 Commissioner Svincki in the first Panel on that topic.
16 Just big picture from the regulatory standpoint, were
17 there any different approaches that the NRC Staff had
18 to use given that longer time period or were there any
19 particular challenges that, that greater time period
20 posed to the Staff?

21 MR. HOLAHAN: I think I want to turn to
22 Frank. But let me just preface it by saying, there
23 was at least some challenge in making sure we had
24 staff familiar with the ABWR. And to a certain
25 extent, reconstituting our full knowledge and maybe

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1 doing some knowledge management for staff that wasn't
2 immediately available. But Frank, can you add?

3 KKK: No, I think Gary has really hit the
4 principal issue on the head. Given the breadth of the
5 review, the change over in the staff, having the
6 expertise continuous throughout the project was a
7 challenge for the staff. And then for the later staff
8 that had to come in, they had to go back and rereview
9 the history of the project to become familiar with the
10 decisions that were made and the bases that were
11 supporting them as part of the process. From a
12 technology standpoint, I don't think there was any
13 specific technology issue that raised a problem for
14 the Staff or challenged the Staff going forward.

15 COMMISSIONER OSTENDORFF: Thank you. Thank
16 you all. Jennifer, I'm sorry.

17 MS. UHLE: I would just like to add that,
18 that delay in some cases can present a challenge, but
19 also can be beneficial in the sense that the operating
20 experience that had been developed for over those 15
21 years or so, 13 to 15, I can't do the math in my head
22 when I'm in front of everybody right now --

23 (Laughter.)

24 MS. UHLE: Do it for me, will you Gary?
25 Okay.

1 MR. HOLAHAN: More than ten.

2 MS. UHLE: More than ten. Okay, thank you.

3 But at any rate, that did allow that experience to be
4 incorporated into the design with the deviations. And
5 I would say you will see, as indicated in the
6 documents, especially in the digital I&C area, where
7 a number of the design specifications are obsolete.
8 And so this allows for a state-of-the-art design for
9 the digital I&C in particular.

10 COMMISSIONER OSTENDORFF: Thank you.

11 MR. HOLAHAN: Could I kind of just --

12 COMMISSIONER OSTENDORFF: Please.

13 MR. HOLAHAN: -- characterize it? When I
14 think about the departures as a while, I don't think
15 of them as subtractions or degrading to design in any
16 way. If anything, they are enhancements and
17 modernizations and taking advantage of technology
18 changes. So they are, process wise, they may be a
19 little complicated and hard to deal with. But in
20 terms of nuclear safety, I think they're actually
21 beneficial.

22 COMMISSIONER OSTENDORFF: Critical point,
23 important messaging, externally in particular. Thank
24 you all.

25 CHAIRMAN BURNS: Thank you. Commissioner

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1 Baran.

2 COMMISSIONER BARAN: Well, I want to start
3 by joining my colleagues in thanking the Staff for all
4 their hard work, not only in preparing for today's
5 hearing, but also all the effort that went into this
6 multi-year process of reviewing the application for
7 this plant. Jennifer and Gary, I want to ask you a
8 question that I asked Glenn Tracy at the Fermi 3
9 hearing. Given that there is no Standard Review Plan
10 or other formalized guidance specifically related to
11 the non-inimicality finding, can you discuss how the
12 Staff made the finding here? And are you confident
13 about this finding for STP Units 3 and 4?

14 MR. AKSTULEWICZ: Okay. We thought you
15 might ask that question, so --

16 (Laughter.)

17 MR. AKSTULEWICZ: -- I prepared remarks.

18 (Laughter.)

19 COMMISSIONER BARAN: How many of the 65,000
20 hours was that?

21 (Laughter.)

22 MR. AKSTULEWICZ: I'll summarize the
23 Staff's findings in the SECY Paper in three short
24 bullets. The first is that the Staff's review -- the
25 inimicality finding is centered around the Staff's

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1 review, the security programs, and the regulations
2 that will be implemented as part of the overall
3 security process. The second element is that the
4 Applicants are all U.S.-based companies. So, that
5 doesn't involve any specific concerns with respect to
6 foreign ownership or something like that.

7 And lastly, Toshiba, as a Japanese
8 corporation, has been providing domestic and
9 international nuclear materials and the NRC is not
10 aware of any information suggesting that Toshiba might
11 be a threat to the common defense and security. I
12 might note that the Committee on Foreign Investment in
13 the U.S. approved the acquisition of Westinghouse by
14 Toshiba and concluded that the acquisition would also
15 not place national security of the U.S. at risk. So
16 those were the key critical elements that focused on
17 the inimicality finding.

18 COMMISSIONER BARAN: I appreciate that
19 comprehensive answer, thank you.

20 MS. UHLE: And if you do have more
21 questions, we do have representatives from the Office
22 of Nuclear Security and Incident Response that can
23 provide more details.

24 COMMISSIONER BARAN: Thank you. That's all
25 I have.

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1 CHAIRMAN BURNS: Thank you, Commissioner.
2 I have really two questions. I think the first one,
3 it's interesting the discussion and response to
4 Commissioner Ostendorff's question, particularly with
5 this building on -- this is a circumstance where we're
6 looking at a COL where we're building on experience
7 with actual construction of a certified design here.
8 One of the things, and this is really probably more a
9 generic question than it is really one pertaining to
10 the particular Application, but one of the things I
11 know we're always concerned about is in effect
12 knowledge management and retrievability and
13 traceability of our conclusions, our reviews, and
14 things like that.

15 Did you come across in the Staff's review,
16 and maybe that's what I think Gary was alluding to,
17 coming across in the Staff's review particular lessons
18 that you might learn in terms of how we document, say,
19 conclusions in a Design Certification, how we document
20 some of our conclusions, even on our Staff reviews
21 here, recognizing -- as I say, the other interesting
22 part of this is not only that this is a facility that
23 has been construction, but it's the initial generation
24 of Design Certifications under Part 52 and here 15
25 years later, as is contemplated under the Rule, we're

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1 looking at it to integrate it into a COL.

2 MS. UHLE: Well, the first thing I would
3 say is Gary will have follow-on comments I'm sure, I
4 have been with the Office of New Reactors a short
5 period of time, Gary has been with the Office since
6 its inception and was very involved as well when he
7 was in the Office of Nuclear Reaction Regulation in
8 the ABWR review. I would say that certainly as
9 technology has evolved with the use of ADAMS in the
10 case of NRC, that has facilitated the documentation or
11 the collection of the appropriate documents. And back
12 in 1997, if anything in the earlier years, the NRC
13 tended to be more prolific. And so there were a great
14 deal of documents available to the Staff and because
15 of ADAMS, they were easily retrievable.

16 However, there were certain, I would say,
17 issues that we did have to develop Interim Staff
18 Guidance documents and they were used a great deal
19 during this review stage. Also, we had specifically
20 in the Office of New Reactors upgraded the Standard
21 Review Plan and NUREG-0800 to facilitate the Staff
22 review. And then, finally, the Staff themselves, all
23 the reviewers were qualified and trained specifically
24 for that review. So the review, I think, was as
25 efficient as we could have it, although I would turn

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1 to Gary to maybe provide some more insights into the
2 specific issues.

3 MR. HOLAHAN: Thank you, Jennifer. Just a
4 few random thoughts perhaps. In our working with our
5 international colleagues, we see that the NRC does
6 perhaps more technical detail work on these kind of
7 design and licensing reviews. And we do
8 extraordinarily more documentation than most other
9 regulators. So even though you've sworn-in an
10 absolutely fabulous technical staff, 15 years from
11 now, I'm not sure how many of us will be here. So the
12 documentation of the findings and the basis for the
13 decisions is really critical.

14 And I think -- I spent the last two weeks
15 working on Project AIM and how to streamline the
16 Agency and there's an inherent challenge between how
17 do you streamline, yet capture the fundamental
18 information? When you hear these many thousands of
19 hours that go into a review, you feel good about
20 you're making the right decision. But that's also a
21 lot of resources and how do you come up with the right
22 balance of I've done enough and I've documented well
23 enough for the future staff to understand what
24 decisions were made and how they were made? So it is
25 a challenge.

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1 I think the documentation of this review
2 is very good. I was also impressed by the answers to
3 the Commission questions. And in part it reflected
4 how much had been documented and the Staff could pull
5 that information out of its evaluations. So I think
6 it's just an ongoing challenge to have the right
7 balance of not doing too much, but realizing that what
8 the Staff is documenting is not just what decision
9 it's making, but it's establishing the knowledge
10 management for the future, for future Commissions and
11 for future staff. So it's always going to be a
12 challenge.

13 CHAIRMAN BURNS: Thanks. The one other
14 question I'll ask here is, the other interesting
15 aspect is there, I don't mean it as too common a
16 term, but there's in a sense a blend of Design
17 Certifications here. From the standpoint we have the
18 1997 ABWR and then we have the supplement information
19 with respect to the aircraft impact analysis. Did
20 that create particular challenges for you? Or what
21 kind of issues -- and briefly sort of maybe a sense of
22 what sort challenges, if any, in terms of dealing with
23 that or integrating that into the review?

24 MR. HOLAHAN: I'm going to say something,
25 most of you have Frank who gives you the same answer.

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1 It might have been a challenge for the Applicant, but
2 for the Staff, the basic requirements, the
3 Certification and the Modification to the
4 Certification and any sort of adequate protection
5 Rules that have come about in the meantime, they all
6 have to be in the Applicant's document. So when Staff
7 is doing its review, it's doing a review of one
8 combined integrated package, not the individual pieces
9 of the regulations. So I think it's probably not such
10 a big challenge. But, Frank?

11 MR. AKSTULEWICZ: I agree with Gary.

12 CHAIRMAN BURNS: All right. Thank --

13 (Laughter.)

14 CHAIRMAN BURNS: Thank you. And at this
15 point, we will take a brief break. I'll give you,
16 instead of five minutes, six minutes. So we'll resume
17 at 11:05 with Safety Panel 1. I would suggest those
18 on Safety Panel 1 not stray too far from the room and
19 only do those things that are necessary and be
20 prepared here at 11:05. Thank you.

21 (Whereupon, the above-entitled matter went
22 off the record at 10:57 a.m. and resumed at 11:07
23 a.m.)

24 CHAIRMAN BURNS: Well, welcome back and
25 we'll begin this session with Safety Panel 1.

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1 Actually, we'll hear Safety Panel 1 this morning and
2 then adjourn until our afternoon session. In this
3 part of the proceeding and in the remaining Panels,
4 we'll hear the testimony from both the Applicant and
5 from the Staff and after hearing that testimony, we'll
6 turn to Commission questions. Again, we'll remind the
7 witnesses on each Panel, Staff and the Applicant, that
8 they remain under oath and that they should assume we
9 are familiar with their pre-hearing filings.

10 I will ask the Panelists to introduce
11 themselves, starting with the Applicant. We'll hear
12 from the Applicant first and then the Staff. I think
13 maybe after the introductions, well, you can do them
14 right now. I appreciate it, Richard. If you all, if
15 the Staff can move a little bit to the side, at least
16 so we can have a line of sight with our witnesses from
17 the Applicant, that will help. But we'll start off,
18 let's have everyone introduce themselves, starting
19 with the Applicant's witnesses.

20 MR. MCBURNETT: Mark McBurnett.

21 MR. HEAD: Scott Head.

22 CHAIRMAN BURNS: Okay. And then the Staff
23 witnesses.

24 MR. TAI: Tom Tai.

25 MR. TURTIL: Richard Turtil.

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1 MR. TANEJA: Dinesh Taneja.

2 CHAIRMAN BURNS: Okay. Thank you very
3 much. And so we'll start then with the Applicant's
4 testimony.

5 MR. HEAD: In this session, I would like to
6 discuss the financial qualifications of NINA. Next
7 slide, please. STP 3 and 4 will produce electricity
8 in a generally deregulated market. In 2012, we raised
9 a Generic Policy Issue regarding projects in
10 deregulated markets that did not have the benefit of
11 traditional cost of service rate regulation. The NRC
12 policies for reactor financial qualifications had been
13 developed before the evolution of merchant power
14 markets in the United States. There was no
15 consideration of how merchant plant applicants might
16 satisfy certain NRC requirements in cases where they
17 may not be ready for immediate start of construction.

18 In response to this Generic Policy Issue,
19 the Executive Director of Operations sent SECY 13-0124
20 to the Commission in November 2013 and the Commission
21 provided direction to the Staff in April 2014 to
22 engage in a rule-making to amend 10 CFR Part 50
23 regarding financial qualifications. The content of
24 this rule-making or the intent of this rule-making is
25 to conform reactor financial qualification

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1 requirements to 10 CFR Part 70 standards. The Staff
2 was to consider using exemptions to address existing
3 cases, such as NINA's application, while the rule-
4 making moved forward. The Staff issued a draft
5 regulatory basis for the rule change this year.

6 In conformance with the Commission
7 guidance and the draft regulatory basis, NINA has
8 submitted a Request for Exemption from the existing
9 financial qualification requirements in Part 50. Our
10 exemption request is based upon the construction and
11 operating cost estimate in Part 1 of the Application,
12 a financial capacity plan, and license conditions
13 based upon those contained in the draft regulatory
14 basis.

15 Our financial capacity plan shows that
16 NINA's management team has the capacity to obtain the
17 necessary financing. For example, NINA has negotiated
18 a detailed loan guarantee with the Department of
19 Energy that was scheduled for approval in March 2011,
20 when the Fukushima accident caused the process to be
21 put on hold. NINA also negotiated and obtained
22 support letters for loans from the Japan Bank of
23 International Cooperation, which is also known as
24 JBIC. Furthermore, NINA has been managing the
25 engineering, procurement, and construction contract

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1 for STP, which to date has involved an expenditure of
2 over \$1 billion.

3 NINA's parent companies, NRG and Toshiba,
4 also have the capacity. NINA's majority owner, NRG,
5 owns and operates more than 52,000 megawatts of
6 electric capacity. Toshiba is one of the world's
7 leading energy and infrastructure companies. Both NRG
8 and Toshiba have experience with the financing of
9 large energy projects. Prior to the start of
10 construction, NINA expects to obtain funding through
11 project financing using a combination of loans under
12 the DOE loan guarantee program and loans from JBIC and
13 other sources, as well as equity.

14 Prior to the signing of the project
15 financing agreements, we expect that the lenders, as
16 part of their due diligence, will engage in a thorough
17 economic evaluation of the project. The establishment
18 of the project financing arrangements will allow NINA
19 to satisfy the license condition requirements and move
20 forward with construction. In summary, NINA has
21 demonstrated its financial capacity to construct and
22 operate STP Units 3 and 4 and, accordingly, our
23 exemption request should be approved. Thank you.

24 CHAIRMAN BURNS: Does that conclude the
25 Applicant's testimony?

1 MR. HEAD: Yes.

2 CHAIRMAN BURNS: Thank you. Then to the
3 Staff.

4 MR. TAI: Good morning, Chairman and
5 Commissioners. My name is Tom Tai, I'm the Lead
6 Project Manager of the STP Units 3 and 4 COL
7 Application Review. Our presentation for this Panel
8 will provide an overview of the exemptions and
9 departures of this Application and discuss two
10 examples in more detail. Next slide, please. With me
11 at table are Richard Turtill, who will describe the
12 financial qualification exemption request, and Dinesh
13 Taneja, who will discuss the Staff's review of the
14 significant departure. Next slide, please.

15 This Application has 275 departures from
16 the ABWR DCD. There are four types of departures,
17 Tier 1, Tier 2*, Tier 2, and departures from Technical
18 Specifications. Tier 1, Tier 2*, and Tech Spec
19 departures require NRC approval. Tier 2 departures
20 generally do not. Next slide, please. Tier 1
21 departures are plant specific changes to Tier 1
22 information in the Certified ABWR Design. There are
23 17 of these in this Application. Technical
24 Specification departures are plant specific changes to
25 the ABWR Technical Specifications and Basis. Tier 1

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1 and Technical Specification departures require an
2 exemption. Next slide, please.

3 Tier 2* departures are departures from
4 Tier 2* information in the DCD. They require NRC
5 approval, but do not require an exemption. Examples
6 of Tier 2* information include piping design
7 acceptance criteria, some codes and standards, such as
8 ASME Section 3, and the fuel burnup limit. Tier 2
9 departures are plant specific changes from the ABWR
10 Tier 2 Design. The Applicant must evaluate these
11 changes using the process and criteria defined in 10
12 CFR Part 52, Appendix A, Section 8. This change
13 process is similar to the existing 10 CFR 50.59
14 process. If the design change does not meet the
15 criteria in Section 8 of Appendix A in Part 52, the
16 departures will require prior NRC approval.

17 For this Application, the Applicant
18 identified one Tier 2 departure requiring prior NRC
19 approval and had 30 that did not require prior NRC
20 approval. This represents about half of the total
21 number of departures of this Application. Next slide,
22 please. Although Tier 2 departures may not require
23 NRC approval, the Staff ensured that the Applicant
24 developed a process to evaluate these departures
25 against the change process criteria. In addition, the

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1 Staff had to understand the proposed designs such that
2 we could agree that it was reasonable for the
3 Applicant to conclude that no prior NRC approval is
4 required.

5 For some departures, the Staff conducted
6 QA inspections to ensure that the change process was
7 in place and that it was applied appropriately. For
8 some departures, the Staff issued Requests for
9 Additional Information asking the Applicant to provide
10 information on how some of these criteria were met.
11 Next slide, please. In addition to the departures,
12 the Applicant also submitted two requests for
13 exemption from the regulations that are relevant to
14 the COL Application.

15 The first exemption request is for an
16 exemption from the requirements in 10 CFR Part 70 and
17 74, for Special Nuclear Material control and
18 accounting. The purpose of this exemption request is
19 to apply the same requirements to STP as are applied
20 to existing nuclear power plants that were licensed
21 under Part 50. The same exemption request has been
22 granted to other Part 52 COL applicants. The second
23 exemption request is on financial qualification. Next
24 slide, please.

25 As stated earlier, we are providing

1 additional discussion on one of the exemptions and one
2 of the significant departures. Richard Turttil will
3 now discuss the financial qualification exemption.
4 Richard will be followed by Mr. Dinesh Taneja, our
5 technical reviewer on instrumentation and control, who
6 will discuss our review of the Tier 1 departure on
7 instrumentation and control. Next slide, please.

8 MR. TURTIL: Good morning. My name is
9 Richard Turttil and I'm the Senior Financial Analyst
10 responsible for the Financial Qualification Review.
11 Current NRC financial qualification requirements are
12 in 10 CFR 50.33(f) and Appendix C to Part 50. In
13 short, applicants must provide information showing
14 reasonable assurance that construction and operational
15 funding will be available. Such information must be
16 in the form of commitments from investors, corporate
17 parents, or other specific sources.

18 Merchant plants have had more difficulty
19 meeting these requirements because they cannot rely on
20 rate recovery like utility applicants can. With over
21 90 percent of the electricity produced by STP 3 and 4
22 to be sold in deregulated markets, the STP Units are
23 considered merchant plants. I will now discuss the
24 challenges faced by the Applicant and how those
25 challenges were overcome. Next slide, please.

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1 Based on the review of the Application and
2 responses to Requests for Additional Information, the
3 Staff was unable to determine that NINA could meet the
4 current financial qualification requirements. In
5 2012, NINA raised concerns about financial
6 requirements for merchant plants. NINA stated that it
7 is difficult, if not impossible, for merchant plant
8 applicants to secure project funding to meet current
9 requirements and requested Commission action to
10 address the issue.

11 In response, Staff provided SECY 13-0124
12 in November of 2013, recommending that the Commission
13 engage in rule-making to modify the financial
14 qualification requirements in 10 CFR Part 50. Next
15 slide, please. In April of 2014, the Commission
16 issued a Staff Requirements Memorandum, or SRM,
17 accepting Staff's recommendation for rule-making and
18 directed Staff to make Part 50 financial qualification
19 requirements similar to those of Part 70. This would
20 change the reasonable assurance standard to a standard
21 of appears to be financially qualified. Per the SRM,
22 applicants could propose license conditions to address
23 financial qualifications. The Commission also
24 directed Staff to consider granting an exemption
25 during the pendency of the rule-making process, if the

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1 exemption anticipates the outcome of that rule-making.

2 Next slide, please.

3 In spring of 2014, the Staff began
4 developing a draft regulatory basis in response to the
5 Commission tasking and in April of 2015, held a public
6 meeting to discuss the draft regulatory basis. The
7 document was published for comment in June and the
8 comment period closed in August of 2015. Commenters
9 with positions on the new standards either supported
10 the standards or proposed that requirements be further
11 reduced or entirely rescinded. None of the comments
12 advocated for standards more strict than those in the
13 draft regulatory basis. Moreover, none undermined the
14 basis for the Applicant's Request for an Exemption
15 from the NRC's financial qualification requirements.
16 Accordingly, Staff concluded that exemption requests
17 that meet the standards proposed in the draft
18 regulatory basis will anticipate the outcome of the
19 rule-making. Next slide, please.

20 As part of the draft regulatory basis,
21 Staff proposed that an applicant submit a financial
22 capacity plan in combination with a cost estimate to
23 demonstrate the applicant appears to be financially
24 qualified. Consistent with the Commission's SRM, an
25 applicant's financial capacity reflects the

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1 applicant's level of understanding of the size and
2 scope of the project, including the level of capacity
3 necessary to undertake the project and the
4 organizational resources, experience, skills, and
5 expertise required to obtain proper financing and
6 ultimately to finance the project. Financial capacity
7 is not a predictive tool that ensures that the
8 applicant will in fact obtain financing, but it does
9 support Staff's review and ultimate determination that
10 an applicant appears to be financially qualified.
11 Next slide, please.

12 In May of 2015, the Applicant submitted an
13 exemption request that addressed the standards in the
14 draft regulatory basis. Staff evaluated NINA's
15 construction and operations cost estimates and
16 concluded that they appear reasonable based on
17 comparable data from construction estimates developed
18 by independent sources and operations costs data
19 reported by industry. Staff reviewed the Applicant's
20 financial capacity and determined that NINA
21 understands the complexities of financing nuclear
22 power plants and the challenges in raising capital.
23 NINA appears to have an understanding of the funding
24 requirements for STP Units 3 and 4, as well as
25 experience in finding financial backers and securing

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1 required capital.

2 Finally, Staff approved of license
3 conditions that will ensure that NINA has adequate
4 funding to undertake both construction and operations.
5 These license conditions must be met prior to
6 construction and operations, respectively. This is
7 consistent with the Commission direction in the SRM.
8 Next slide, please. In summary, Staff concluded that
9 NINA meets the proposed standards in the draft
10 regulatory basis for construction financial
11 qualifications and for its portion of operational
12 financial qualifications.

13 Thus, Staff concluded that NINA appears to
14 be financially qualified. NINA also satisfies the
15 requirements for an exemption as discussed in the SECY
16 Paper. As required by regulations, the Staff is
17 consulting with the Commission on the Staff's finding
18 that special circumstances exist because it is in the
19 public interest to grant the exemption. Specifically,
20 the Staff has determined that the current detail Part
21 50 standards go beyond the NRC's mandate of ensuring
22 safety and have become an unnecessary impediment to
23 licensing. The proposed new standard removes this
24 unnecessary impediment while still ensuring the
25 protection to public health and safety. That

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1 concludes my presentation. Dinesh Taneja will now
2 discuss the instrumentation and controls departure.

3 MR. TANEJA: Thank you, Richard. Good
4 morning. My name is Dinesh Taneja and I am the Lead
5 Reviewer of STP Units 3 and 4 Instrumentation and
6 Control, or I&C, Design. The I&C departure is one of
7 the more significant departures and is described here
8 as an example of impact of departures and how the
9 Staff addressed them. The Applicant's selection of
10 digital I&C platforms for Units 3 and 4 resulted in
11 changes to safety-related I&C architecture. One of
12 the more significant changes from the Certified Design
13 due to selection of digital I&C platform was to data
14 communication architecture and technology.

15 The ABWR Certified Design utilized a dual-
16 ring fiber optic network to transmit vital information
17 among safety-related I&C modules. The selected
18 additional I&C platforms did not readily support this
19 type of data communication, but instead supported
20 point-to-point unidirectional data links. By moving
21 to the point-to-point unidirectional data links, the
22 design is more resilient to signal failures that could
23 impact multiple communication functions. Next slide,
24 please.

25 For the engineered safety features logic

1 and control system, the Applicant selected the Common
2 Q platform, which has been generically reviewed by the
3 Staff through a Topical Report and is used in other
4 new reactor designs, such as the AP-1000. The reactor
5 trip and isolation system uses programmable logic
6 technology supplied by Toshiba and is used in several
7 Japanese nuclear power plants. The use of different
8 platforms enhances the I&C system's protection against
9 common cause failure. Next slide, please.

10 The Staff's review of this departure was
11 based on current regulatory requirements and the
12 guidance and Standard Review Plan. In particular, the
13 modified design was primarily evaluated against 10 CFR
14 50.55(a)(H), which incorporates by reference IEEE
15 Standard 603-1991, whereas the certified ABWR design
16 complies with the older IEEE Standard 279-1971. The
17 IEEE Standard 603 and the current guidance better
18 addresses new I&C systems, including the use of
19 digital technology.

20 In addition, digital I&C Interim Staff
21 Guidance was used to evaluate this departure. These
22 Interim Staff Guidance positions were developed to
23 address potential licensing issues that could arise
24 with the use of modern I&C technology and designs.
25 This review involved a number of public meetings, ACRS

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1 briefings, and Request for Additional Information.
2 The Applicant addressed all of the Staff's safety
3 questions and adequately captured the modified
4 additional I&C design in the FSAR. The I&C departures
5 were determined to meet applicable regulations and the
6 Staff found the changes to enhance overall safety of
7 the I&C design for STP Units 3 and 4. This concludes
8 our presentation.

9 CHAIRMAN BURNS: Thank you very much. And
10 we'll begin the questioning with Commissioner
11 Ostendorff.

12 COMMISSIONER OSTENDORFF: Thank you all for
13 your presentation. Richard, I want to thank you for
14 kind of going back through the regulatory history of
15 the last three plus years on the financial
16 qualification of merchant plants. I don't know if
17 Commissioner Svincki was involved in that decision
18 making here a few years back and I think this may be
19 the only public meeting where we really have talked
20 about, this had nothing to do with South Texas or
21 NINA, just on our regulatory policy, how we have
22 evolved with the times so to speak. And so I
23 appreciate very much your having articulated that for
24 this audience, but also for those watching publicly
25 that may not have really any direct focus on this COL

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1 but more broadly how we're dealing with merchant plant
2 financial qualifications. Thank you.

3 Dinesh, I'd like to ask you a question on
4 the I&C side of the house here. I know that you
5 identified this area, I believe, I think the phrase
6 was the most significant departure. That doesn't
7 surprise me given the dynamic, evolving nature of I&C
8 issues as technology continues to develop in this
9 area. I wanted to maybe -- I'm going to use my time
10 on this one and ask you two questions on Slide 16 and
11 17.

12 MR. TANEJA: Okay.

13 COMMISSIONER OSTENDORFF: On Slide 16, you
14 said the data communication design changed the most.
15 Can you talk a little bit more about some of the
16 details as to what changed there?

17 MR. TANEJA: The design that was certified
18 was based on a dual-ring communication architecture,
19 which was common between the safety-related modules
20 within a division. So, for example, the SFAS and the
21 reactor trip system shared the communication network
22 within a division. So if there was -- so there was
23 that dependence on that communication architecture.
24 Whereas the proposed design under the STP Units 3 and
25 4, it is more point-to-point data communication, where

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1 the modules communicate from one module to the next
2 module. And there is -- susceptibility to signal
3 failure is minimized basically. Or the failures that
4 are resulting from the signal failure would be
5 limited.

6 COMMISSIONER OSTENDORFF: With respect to
7 the ring bus that you mentioned, was the design that
8 you and your team reviewed, is that the same design
9 that's being used in Japan now for ABWRs or is there
10 a delta between the Japanese configuration and what
11 you were reviewing?

12 MR. TANEJA: Well, it's kind of similar to
13 what we looked at AP-1000 design, because it's using
14 the Common Q platform for the ECCS system, for the
15 SFAS. And so it's very, very similar to what we did
16 for AP-1000.

17 COMMISSIONER OSTENDORFF: Okay. On your
18 Slide 17, the bullet says, changes enhance protection
19 against failures. I believe you've probably already
20 addressed that a little bit, but is there anything
21 else you want to add to explain that point a little
22 bit more?

23 MR. TANEJA: Well, the Certified Design, we
24 had reliance on a data communication network which
25 supported all of the safety functions within a

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1 division. So if you had a loss of data communication
2 capabilities within a division, you would have to rely
3 on the redundant divisions to perform the safety
4 function. So we could not count on that division's
5 availability. The enhancement to the design in STP
6 Unit 3 and 4, we have to have multiple failures to
7 lose a division now. So enhancement is that a single
8 failure may be -- I may lose limited functionality in
9 safety division. That's really where the enhancement
10 comes in.

11 COMMISSIONER OSTENDORFF: Okay. Now, I
12 believe that you mentioned the use of Interim Staff
13 Guidance in this area.

14 MR. TANEJA: Right.

15 COMMISSIONER OSTENDORFF: Were there any
16 challenges in developing that Guidance or kind of
17 getting to a regulatory perspective on --

18 MR. TANEJA: Well, those Guidance were
19 developed just in time --

20 COMMISSIONER OSTENDORFF: Yes.

21 MR. TANEJA: -- before we received the
22 Application. So we used those Guidance to really
23 assist us in reviewing the Application and raising the
24 issues in the area of digital I&C.

25 COMMISSIONER OSTENDORFF: So were those --

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1 just help me out here a minute, on the Guidance
2 itself, is that Guidance specific to the ABWR design?

3 MR. TANEJA: No, they are specific to the
4 digital I&C. These are Interim Staff Guidance that
5 were developed back in, I think, 2006 time frame.
6 They were developed with the anticipation that all
7 these digital technologies that are coming in, our
8 existing Guidance may not be adequate to address some
9 of these technologies.

10 COMMISSIONER OSTENDORFF: Does that
11 Guidance provide some flexibility for evolutionary
12 developments on the vendor side of the house?

13 MR. TANEJA: Well, that's Interim Staff
14 Guidance, so we anticipate that as we mature, that we
15 would have to look at those Guidance and come up with
16 more durable Guidance in that area.

17 COMMISSIONER OSTENDORFF: Okay. Thank you
18 very much. Thank you all.

19 CHAIRMAN BURNS: Commissioner Baran.

20 COMMISSIONER BARAN: Thanks. The
21 Commission asked several pre-hearing questions on the
22 digital instrumentation and controls issues. And I
23 wanted to follow up on a couple of those. Dinesh,
24 Pre-hearing Questions 37 and 38 asked about specific
25 ITAAC to ensure that the I&C system is built as

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1 designed. In response to these questions, the
2 Application and Staff in some cases listed different
3 ITAAC as addressing this issue. Do you have thoughts
4 about this? Why are we getting kind of different
5 answers about what ITAAC apply? Are the ITAAC in this
6 area specific enough as written?

7 MR. TANEJA: Well, this is -- during our
8 review, this was one of the areas that we really
9 questioned in depth. And in result of that
10 questioning of the Applicant, they provided a
11 supplemental section in the FSAR, it's Subsection 7-
12 DS, which is a STP specific section. So that section
13 specifically was done to provide the mapping of the
14 Design Acceptance Criteria, DAC, and ITAAC to the
15 design principles.

16 So that section describes all design
17 principles and then it maps it to which DAC and ITAAC
18 would be used to verify that acceptability of that
19 design. And there's specifically a table, 7(d)(s)-1,
20 in that section. So when we answered your question,
21 we basically used what was in the FSAR identified to
22 verify those specific design features what the
23 questions were for. So whereas Applicant may have
24 picked just one or two of those.

25 COMMISSIONER BARAN: Okay. Thanks for that

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1 clarification. Pre-hearing Question 38 focused on the
2 70 percent central processing unit load restriction.
3 Based on the Applicant and Staff responses to that
4 question, it appears that there's no ITAAC
5 specifically testing to ensure that the as-built
6 engineered safety features logic and control system
7 meets the 70 percent load restriction. Should the
8 Commission include acceptance criteria in an ITAAC to
9 specifically address the 70 percent restriction?

10 MR. TANEJA: Well, that is a very design
11 specific load restriction. It is only applicable to
12 the Common Q platform because of the nature of its
13 design. And so the Topical Report that we reviewed on
14 that design actually has in the Topical Report a
15 requirement to limit the loading to 70 percent if a
16 licensee was to use that platform. So the Topical
17 Report has that limitation and the Applicant in the
18 FSAR commits to designing in compliance with that
19 Topical Report that we reviewed.

20 COMMISSIONER BARAN: Okay. So you think --

21 MR. TANEJA: So that's where the 70 percent
22 load restriction -- so the primary requirement is
23 deterministic performance. That it is
24 deterministically performing the safety function
25 reliably and predictably. Now, different technologies

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1 may not have that limitation, whereas Common Q does.
2 For it to perform deterministically, we need to have
3 it loaded less than 70 percent.

4 COMMISSIONER BARAN: Okay. Thank you. I
5 have one more question. This may fall in the category
6 of a demonstration that we actually read these
7 materials. Tom, the Applicant took a Tier 1 departure
8 to eliminate the flammability control system from the
9 design. In response to Pre-hearing Question 13, the
10 Staff indicated that the Applicant used Revision 3 of
11 the relevant Reg Guide, which is 1.97. But the Final
12 Safety Evaluation Report references Revision 4 as the
13 one that was used by the Staff for its review. Can
14 you just clarify for us whether the Staff used
15 Revision 3 or 4 in its review?

16 MR. TAI: Yes. I think I can ask our
17 containment branch folks to help out with this answer
18 with more detail.

19 COMMISSIONER SVNICKI: Don't all run up
20 there at once.

21 (Laughter.)

22 MR. TANEJA: I can speak to this.

23 MR. TAI: Dinesh can start it then.

24 MR. TANEJA: The ABWR Design Certification
25 is based on Reg Guide 1.97 Revision 3. The Applicant

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1 did not take departure from compliance with Reg Guide
2 1.97 Revision 3. The Revision 4 really is requiring
3 the new reactor applicants to do a performance-based
4 identification of the instruments required for post-
5 accident monitoring, whereas the Revision 3 is a
6 predefined list that we have in Rev 3 of the Reg Guide
7 1.97. So the area that they took departure was that
8 just specific item within the Revision 3 of Reg Guide
9 1.97 Rev 3, not departing and complying with the 4.
10 They did not do that.

11 COMMISSIONER BARAN: Okay. Thank you.

12 CHAIRMAN BURNS: Okay. Thank you,
13 Commissioner. I have a couple questions. One for the
14 Applicant. And it deals with a question in a sense
15 that Mr. Holahan pointed to in terms of in a sense a
16 knowledge management problem or challenge, I should
17 say, for the NRC as we do the Design Certification as
18 we move forward. The interesting -- and the question
19 I have for you, it relates to the Commission must make
20 a finding that an applicant for a combined license is
21 technically qualified to engage in the activities
22 authorized, which includes the construction and
23 operation of the proposed units.

24 In the circumstance that we have here in
25 terms of the Application that you're proceeding with

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1 the Application already to obtain the COL, deferring
2 ultimate decisions, as you're able to do, with respect
3 ultimately whether or not to take advantage of the COL
4 and proceed with the project. So, this decision might
5 play out for a number of years. So my question comes
6 back in a sense to this knowledge management issue,
7 what do you do in terms of knowledge management to
8 ensure that in effect you remain technically qualified
9 to carry out the project if and when you decide to
10 proceed with construction?

11 MR. MCBURNETT: Whereas NINA is owned by
12 NRG and Toshiba, Toshiba being the vendor/supplier,
13 has a vast resource of knowledge and one thing that
14 always impresses me when I work with their staff is
15 they're much younger.

16 (Laughter.)

17 MR. MCBURNETT: And only aside, and they're
18 currently engaged in building ABWRs and maintaining
19 ABWRs, so that knowledge is ongoing is under
20 development there. Of course, I have an EPC contract
21 with them. And within the NINA staff, we work to
22 ensure that our documents and records trails and
23 everything are well compiled and sortable and
24 searchable and findable for future going forward. And
25 to the extent practical, I'll work to retain the

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1 expertise we've had here.

2 And, in fact, as we work through the
3 years, we back in 2010, we had over 100 people in the
4 project. We developed that team from 2006 and we're
5 bringing in various expertise and developing that to
6 the extent practical. And, again, I've maintained
7 contact with various individuals that have worked for
8 us. In fact, I have contractual relationships with a
9 number of them where there is specific expertises that
10 I may need to draw on that I don't need to retain on
11 staff because I don't have work for them unless
12 something comes up. So we work to do that. And what
13 we'll do going forward, we'll reestablish that
14 process, drawing again on STP, NOC, the industry,
15 various contractors, BWR operators, to reconstruct
16 that and take the information we've compiled forward.

17 CHAIRMAN BURNS: Okay. Thank you. And for
18 the Staff, my question relates to the exemption
19 related to financial qualification requirements. I
20 think Mr. Turtill gave a good explanation of where we
21 are or where the Staff is in terms of current
22 requirements, the nature of the exemption request, and
23 the circumstances the Staff believes supports it. One
24 thing just to carry that perhaps a little bit further,
25 given as you described the Commission had initiated a

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1 rule-making, I take it, without prejudicing the
2 outcome of the rule-making as it may come to the
3 Commission and as the Staff may evaluate comments and
4 prepare a proposed final rule, I take it that you
5 don't see coming down the path any significant
6 deviations from the proposed rule or other
7 circumstances that might cloud your discussion or
8 evaluation of the exemption request? Am I correct?

9 MR. TURTIL: You are correct. We received
10 a small handful of comments, none really presented any
11 either positions or comments that would jeopardize
12 Staff's current -- the direction of the SRM or Staff's
13 working at this point or its efforts on this. That is
14 correct.

15 CHAIRMAN BURNS: Okay. Thank you.
16 Commissioner Svnicki.

17 COMMISSIONER SVNICKI: I thank both the
18 Applicant Panel and the Staff witnesses for their
19 presentations. I don't have any questions for the
20 Applicant witnesses on this topic. For the Staff
21 witnesses, Dr. Uhle, in her presentation in the
22 Staff's Overview Panel, stated, departures added to
23 the complexity of the Staff's review. But in light of
24 both departures and exemptions, were there any areas
25 where the Staff feels that the quality or completeness

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1 of information or the issues at play cause you to have
2 any reservations or concerns about your recommendation
3 that the Commission authorize issuance of these
4 licenses? Are there any remaining -- and are you
5 aware of any other Staff witnesses that feel that
6 there are -- well, I guess there may be unresolved
7 issues, but are there also regulatory processes
8 through DAC and ITAAC and other things to resolve
9 those as we move forward?

10 MR. TAI: No, we don't think so. We
11 haven't seen any indications that the quality has been
12 degraded. I mean, the departures, we did a very
13 extensive review and the Applicant has been very
14 responsive to give us all the information, so is the
15 exemption request. Any other issues that came up need
16 a Part 21 evaluations or industry reporting, we get on
17 it and they respond to it very quickly. So we're
18 pretty satisfied with the results so far.

19 COMMISSIONER SVNICKI: Okay. Thank you.

20 MR. TURTIL: And I would say similarly with
21 the financial reviews and other such reviews that we
22 performed, we do not see any -- we don't have any
23 other issues or concerns.

24 COMMISSIONER SVNICKI: Okay. Thank you.
25 Dinesh, did you want to speak to that? Okay.

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1 MR. TANEJA: I mean, I was involved in the
2 review of this design from the initial submission.
3 And so the focus was to really review the departures
4 because the IBR part was incorporated by reference --

5 COMMISSIONER SVNICKI: Yes.

6 MR. TANEJA: -- in the Certified Design.
7 So our focus was -- so there was an extensive effort
8 that went into reviewing the departures. So Tier 1,
9 specifically where the NRC had to approve them, and
10 then we -- but I personally went out and audited the
11 Tier 2 departures and their procedures on how they did
12 that. So I was actually at Bay City looking at how
13 they did Tier 2 departures personally.

14 COMMISSIONER SVNICKI: Based on that, I
15 might ask you a broader question about our regulatory
16 framework. It's not dispositive to the findings that
17 we're making as a result of today's hearing, but based
18 on the experience you have on being with this review
19 and these issues, and particularly because you were
20 working in the area of instrumentation and control,
21 the nature of having Certified Designs and then
22 incorporation into COLs is to, of course, give
23 finality to the issues resolved in the certification,
24 therefore the COL Application does not need to have a
25 review of all those issues.

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1 So we're focused very much today on
2 departures, that's a natural outgrowth of having this
3 incorporation, and so you're going to have some
4 limited set of things where a departure is taken. I
5 think it was Chairman Burns though who mentioned the
6 prolonged duration that may be between the Agency's
7 review and certification of a design and its
8 subsequent incorporation in a COL. Did you feel that
9 the processes available to you in this case in terms
10 of Requests for Additional Information and the way
11 that we've structured COL reviews, is that adequate
12 going forward?

13 I guess what I'm asking is, this isn't
14 going to be the only circumstance of a design reviewed
15 and then 15 years later, someone's incorporating by
16 reference. And again, because you worked on I&C,
17 that's kind of the -- that's the leading, one of the
18 most dynamic technology areas that we're looking at.
19 Did you think that the process, generally, is going to
20 be adequate for dealing with this time disconnect?

21 MR. TANEJA: The existing framework, the
22 process worked for us in reviewing the STP Units 3 and
23 4 design. But we did take a lot of Lessons Learned
24 from this review. And for looking at the future
25 reviews, for these small modular reactors for example,

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1 we updated the Design Specific Review Plan Chapter 7,
2 which is the I&C area, specifically, where we took the
3 Lessons Learned and we feel that we can now have a
4 design certified at an architecture level without
5 getting into the specificities where we potentially
6 eliminate departures and allow for the detail design
7 to be developed as part of the COL process,
8 construction process.

9 COMMISSIONER SVNICKI: Okay. Thank you.

10 MR. TANEJA: So there is an attempt to try
11 to take the Lessons Learned and move forward with
12 that.

13 COMMISSIONER SVNICKI: Well, I appreciate
14 that. The Commission may be contemplating a meeting
15 specifically to drill down on digital I&C issues. You
16 may be back at this witness table. So --

17 (Laughter.)

18 COMMISSIONER SVNICKI: -- you can starting
19 thinking about that now. Thank you, Mr. Chairman.

20 CHAIRMAN BURNS: Well, thank you again to
21 our Panels, both the first Overview Panels, as well as
22 the participants in Safety Panel 1. We will take our
23 break now. We will resume the proceedings at 1:30
24 this afternoon and that will give you lots of time to
25 think about answers to some of these questions. Thank

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1 you again and we'll see you at 1:30.

2 (Whereupon, the above-entitled matter went
3 off the record at 11:47 a.m. and resumed at 1:32 p.m.)

4 CHAIR BURNS: And, we'll resume our
5 hearing on the South Texas 3 and 4 Application for a
6 Combined License.

7 The second -- this is Safety Panel Number
8 2, the second of the three that we will have on safety
9 issues.

10 And, I'll, in a moment, ask our witnesses
11 to introduce themselves. I remind them, again, that
12 you're under oath.

13 As we did for the last panel of the
14 morning, we'll have the presentations -- testimony
15 from the Applicant and then from the staff and then
16 open it up to questions from the Commission.

17 So, I'll begin, again, with the
18 Applicant's witnesses for this Panel Number 2.

19 MR. THOMAS: My name is Steve Thomas, I'm
20 the Engineering Manager for STP Units 3 and 4.

21 MR. HEAD: Scott Head.

22 MR. MOOKHOEK: Bill Mookhoek, I'm the
23 Licensing Supervisor for NINA.

24 CHAIR BURNS: Okay. And, I'll ask the
25 staff witnesses to identify themselves.

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1 MR. TAI: Tom Tai.

2 MR. NOLAN: Ryan Nolan.

3 MS. RAY: Sheila Ray.

4 CHAIR BURNS: Okay. And, we'll begin with
5 the -- we'll start with the Applicant's panel and
6 their testimony. Please proceed.

7 MR. HEAD: In this panel, we're going to
8 discuss mitigating strategies in the open phase issue.

9 Next slide, please?

10 With respect to mitigating strategies for
11 the type of accident that occurred at Fukushima, STP
12 3 and 4 would initially rely upon its combustion
13 turbine generators to preclude an extended loss of AC
14 power.

15 Nevertheless, consistent with NRC endorsed
16 guidance which assumed that any installed AC sources
17 unavailable, the ABWR can support a Phase 1 coping
18 duration of at least 36 hours using other permanently
19 installed plant equipment, specifically, the reactor
20 core isolation cooling, the AC independent water
21 addition system, containment overpressure protection
22 system and the remote shutdown system.

23 By employing proper load management, the
24 Train A batteries can supply all necessary loads
25 including lighting and instrumentation for over 40

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1 hours.

2 Since the Phase 1 capability is long
3 enough for Phase 3 offsite equipment to arrive at the
4 site, there is no requirement for a Phase 2 in our
5 FLEX strategy.

6 STP 3 and 4 does, in fact, have portable
7 equipment including diesel powered pumps, power
8 supplies, hoses and fittings and portable diesel
9 generators, this portable onsite equipment provides
10 additional defense in depth.

11 This straightforward approach of our FLEX
12 strategy is possible because the ABWR certified design
13 provides defense in depth with installed equipment to
14 mitigate loss of power events.

15 The next topic I would like to cover is
16 the open phase issue.

17 Next slide, please?

18 The Byron open phase event occurred in
19 January 2012. In response to the event, the industry
20 and the operating fleet are developing, testing and
21 implementing new technology to address the issue.

22 The time frame for completion of all
23 activities, including developing the new designs,
24 installation and testing and declaring the new systems
25 functional will extend, in some cases, out to 2017.

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1 This time frame did not support the STP 3
2 and 4 licensing review schedule. NINA was in the
3 unusual position of needing to arrive at a solution
4 prior to the operating fleet solution being totally
5 defined and approved by the NRC.

6 To resolve this schedule issue and meet
7 the NRC staff's expectation for STP 3 and 4, NINA
8 proposed a non-safety related detection and alarm
9 scheme and a safety related actuation and protection
10 design.

11 We will install non-safety related open
12 phase detection equipment on the high side of the main
13 and reserve auxiliary transformers, provide an alarm
14 in the main control room in the event of an open phase
15 condition.

16 Our approach for actuation employs
17 currently available safety related negative phase
18 sequence relays on the engineered safety feature buses
19 to detect conditions potentially harmful to the
20 engineered safety featured equipment.

21 These relays will open the feeder breakers
22 and de-energize the affected bus. The existing under
23 voltage relays will then start the emergency diesel
24 generators and sequence the equipment on to the bus.

25 The negative phase sequence relays are

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1 included in the technical specifications and will be
2 tested regularly.

3 We believe our approach summarized here
4 resolves the open phase issue.

5 That concludes our remarks.

6 CHAIR BURNS: Thank you.

7 Staff?

8 MR. TAI: Good afternoon, this is Safety
9 Panel Number 2. Our presenters are Ryan Nolan from
10 our Plant System Branch and Sheila Ray from our
11 Electrical Branch.

12 Next slide, please?

13 Ryan and Sheila will present STP's
14 mitigation strategies for beyond design basis events.
15 And Sheila will present NRC Bulletin 2012-01 design
16 vulnerability and electric power systems.

17 Next slide, please?

18 MR. NOLAN: Good afternoon. My name is
19 Ryan Nolan and, after some brief background
20 information, my portion of the presentation will focus
21 on the systems review performed by the staff on how
22 STP Units 3 and 4 address Fukushima Near Term Task
23 Force Recommendation 4.2, mitigation strategies for
24 beyond design basis external events.

25 In SECY-12-0025, the staff provided the

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1 Commission with proposed orders requiring mitigation
2 strategies for beyond design basis external events to
3 be issued to all power reactor licensees and holders
4 of construction permits.

5 In the paper, the staff indicated that for
6 new reactors that are currently under active staff
7 review, the staff plans to ensure that the Commission
8 approved Fukushima recommended actions are addressed
9 prior to licensing.

10 On March 12, 2012, the NRC issued orders
11 requiring operating nuclear plants to develop and
12 implement strategies that will allow them to cope
13 without AC power for an indefinite amount of time.

14 The strategies must ensure that the
15 reactor core and spent fuel pool are adequately cooled
16 and containment function is maintained.

17 The strategies are to be developed using
18 a three phase approach, an initial phase using
19 installed equipment, a transition phase using onsite
20 portable equipment and consumables to sustain coping
21 capability until resources can be brought in from
22 offsite and a final phase of indefinite sustainment
23 using offsite resources.

24 In 2012, the NRC issued Interim Staff
25 Guidance JLD-ISG-2012-01 which provided the guidance

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1 for the staff review of the STP 3 and 4 mitigation
2 strategies.

3 Next slide, please?

4 In its Application, the Applicant
5 describes how STP 3 and 4, by use of its design
6 features, conforms to the standards described in SECY-
7 12-0025 and its associated SRM.

8 The Applicant states that Phase 1, or
9 initial phase mitigation, is accomplished using the
10 permanently installed plant equipment which provides
11 36-hour coping capability without the use of AC power
12 or water sources external to the system.

13 Due to this extended coping capability, no
14 Phase 2 strategy is needed because adequate time is
15 available to bring in offsite equipment and resources,
16 if needed.

17 Therefore, there will be a direct
18 transition from Phase 1 to Phase 3. The Phase 3, or
19 final phase mitigation, will use offsite resources to
20 support the continued use of installed plant equipment
21 to maintain key safety functions beyond 36 hours.

22 Next slide, please?

23 Core cooling in Phase 1 is accomplished by
24 the safety related reactor core isolation cooling, or
25 RCIC system, for 36 hours.

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1 Core cooling in Phase 3 is accomplished by
2 the protected permanently installed AC independent
3 water addition system. Heat removed from the core is
4 transferred through the suppression pool and then to
5 containment.

6 The containment will heat up and
7 pressurize and the containment overpressure protection
8 system will automatically actuate at approximately 20
9 hours into the event in order to maintain containment
10 structural integrity.

11 During Phase 1, spent fuel pool cooling is
12 accomplished by passive means. The water in spent
13 fuel pool provides the cooling of the fuel and the
14 pool has sufficient inventory to maintain stored fuel
15 in a submerged and cooled condition.

16 After 36 hours, the AC independent water
17 addition system is used to make up water, as
18 necessary, in order to maintain the water level.

19 Next slide, please?

20 To support core and spent fuel pool
21 cooling, sufficient water sources were identified. In
22 Phase 1, RCICs use water from the suppression pool in
23 the condensate storage tank.

24 Beyond 36 hours, the AC independent water
25 addition system uses water from the fire water storage

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1 tanks for core and spent fuel pool cooling. Once the
2 water in the fire water storage tanks is depleted at
3 around 72 hours, operators will shift the AC
4 independent water addition system pump suction to the
5 ultimate heat sink.

6 Instead of normal access to the ultimate
7 heat sink, the STP 3 and 4 design utilizes a
8 permanently installed piping connection for the system
9 to access water from the ultimate heat sink basin.

10 In addition, after 36 hours, operators
11 will need to transfer diesel fuel from the protected
12 seismic Category 1 fuel oil storage tanks to support
13 the use of the water addition system.

14 This concludes my portion of the
15 presentation. Now, I will turn it over to Sheila Ray
16 to discuss the staff's electrical review of STP 3 and
17 4 and mitigation strategies.

18 MS. RAY: Thank you, Ryan.

19 For Phase 1 only the safety related 125
20 volt DC station batteries are available. Each of the
21 four divisions has its own 125 volt battery.

22 Load-shutting is an established industry
23 practice to extend the time during which the battery
24 supply DC power before needing to be recharged.

25 The staff confirmed that the battery has

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1 adequate capacity to power the loads for 36 hours via
2 audits of the battery sizing analyses.

3 For Phase 3, staff verified that the two
4 FLEX 480-volt 1,500 kilowatt diesel generators have
5 sufficient capacity to power the loads.

6 Also, the staff verified that the safety
7 related systems electrically isolated from the FLEX
8 equipment via disconnect switches and circuit
9 breakers.

10 Next slide, please?

11 The STP 3 and 4 mitigation strategies
12 provide core cooling containment and spent fuel pool
13 cooling capability as discussed in SECY-12-0025 and
14 order EA-12-049.

15 The staff proposed a license condition
16 that requires the licensee at least one year prior to
17 completion of the last ITAAC to finalize the
18 development of strategies and guidance to be used for
19 mitigation and to specify implementation details.

20 This includes procedures, training,
21 acquisition, staging or installing of equipment and
22 consumables, configuration controls and provisions for
23 maintenance and testing.

24 The required strategies and guidance shall
25 be fully implemented before a fuel load.

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1 This concludes today's presentation on
2 mitigation strategies and now, I will address STP's
3 technical solution to open phase conditions.

4 Next slide, please?

5 At Byron Nuclear Generating Station, as
6 well as several other plants, open phase conditions
7 transpired in the offsite power sources.

8 Open phase conditions occur when one or
9 more of the three phases is lost. Bulletin 2012-01
10 was issued in July of 2012 after the event at Byron.
11 The regulatory basis includes GDC 17 and 10 CFR
12 50.55a(h)(3).

13 Next slide, please?

14 The failure to design the electric power
15 systems protection scheme to sense a loss of phase
16 event has three potential consequences. These include
17 unbalanced voltages at the safety related buses,
18 tripping of safety related equipment and the
19 unavailability of the onsite electric power system.

20 This situation could result in the onsite
21 or the offsite electric power systems being unable to
22 perform their intended safety functions. Thus, the
23 potential common cause failure event would prevent the
24 supply of electric power to the safety related buses
25 with sufficient capacity and capability to prevent

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1 functioning of SSCs important to safety.

2 Since a degraded offsite power source
3 could potentially damage both trains of the emergency
4 core cooling system, the protection scheme must
5 automatically initiate isolation of the degraded
6 offsite power source and transfer the safety buses to
7 the emergency power source.

8 Bulletin 2012-01 was issued to notify
9 plants of the design vulnerability and the potential
10 impact on safety related equipment.

11 Next slide, please?

12 To address the vulnerability, reactor
13 designs with active safety systems including STP
14 should have the following in place.

15 First, detection of an offsite power
16 system open phase circuit condition on the high
17 voltage side of the transformers under all loading and
18 operating configurations.

19 Second, alarm in the Main Control Room.

20 And, third, automatic mitigation and
21 response to the event.

22 These steps help ensure that AC power with
23 adequate capacity and capability is available to
24 safety related equipment to meet their intended safety
25 function.

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1 Next slide, please?

2 STP is the first new reactor design COL
3 Applicant with active safety systems to resolve the
4 open phase issue. STP's technical solution is a
5 scheme to detect, alarm and automatically respond to
6 open phase conditions on credited offsite power
7 circuits.

8 Next slide, please?

9 The information provided by the Applicant
10 was sufficient because the technical solution provides
11 features for detection and alarm as well as
12 automatically protecting safety related equipment.

13 Staff determined that the technical
14 solution prevents safety related or non-safety related
15 loads from exceeding their ratings which would damage
16 the equipment.

17 To address implementation of this
18 solution, the Applicant has added ITAAC and technical
19 specification surveillance requirements as well as
20 committed to develop procedures and training.

21 Furthermore, the design meets the
22 requirements in GDC 17 and 10 CFR 50.55a(h) (3).

23 This concludes the staff's presentation.

24 CHAIR BURNS: Okay, thank you very much.

25 And, we'll begin this afternoon's question

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1 with Commissioner Baran.

2 COMMISSIONER BARAN: Thanks. Thank you
3 for your presentations.

4 I'd like to ask some questions about a few
5 of the post-Fukushima safety issues starting with
6 containment.

7 As part of its response to pre-hearing
8 questions regarding the Units 3 and 4 containment, the
9 staff stated that the ABWR would be considered under
10 Near Term Task Force Recommendation 5.2 which is being
11 treated as a Tier III Fukushima action item.

12 But, the staff paper with proposed plans
13 for resolving open Tier II and III items doesn't
14 specifically discuss ABWR in its preliminary
15 analysis of Part 52 containments.

16 Did the staff perform an evaluation of the
17 ABWR as part of this Tier III item and do you think
18 this analysis is necessary for the Commission to make
19 the required safety findings for STP?

20 MR. TAI: We have staff to give us some
21 detail.

22 CHAIR BURNS: Would you state your name
23 for the record and your position and --

24 MR. ASHLEY: My name is Clint Ashley. I
25 have been sworn in as a witness and I represent the

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1 Containment Branch.

2 Commissioner Baran, could you repeat your
3 question? I was walking up at the end.

4 COMMISSIONER BARAN: Sure. It's a little
5 of a compound question.

6 The first part of it is, did the staff
7 perform an evaluation of the ABWR containment as part
8 of this Tier III item? And then, I guess depend how
9 the answer to that question, do you think this
10 analysis is necessary for the Commission to make the
11 required safety findings for Units 3 and 4?

12 MR. ASHLEY: I think for other containment
13 designs with respect to events, ABWR or South Texas
14 Project Units 3 and 4 does have the severe accident
15 capable vent.

16 So, 5.2 was addressed at a high level for
17 new reactors. There's a part 52 section which talks
18 about severe accident design features.

19 ABWR or South Texas Project does have that
20 severe accident design feature already built in to the
21 design of the plant. So, in effect, it does address
22 it I believe.

23 COMMISSIONER BARAN: Okay. Thank you.

24 For the license condition regarding post-
25 Fukushima mitigating strategies, can you tell us a

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1 little bit more about what needs to be done to satisfy
2 the license condition? For example, what do you
3 expect to see in the integrated plan that's required
4 by the license condition?

5 MR. TAI: The license conditions for the
6 Fukushima 4.2 requires the licensee, perspective
7 licensee, to take care of procedures, program staffing
8 requirements and purchase of equipment and staging of
9 equipment.

10 COMMISSIONER BARAN: Okay. And, can you
11 talk a little bit about why this will be developed
12 after the Combined License is issued instead of being
13 completed as part of the licensing process?

14 MR. TAI: At this stage of the
15 Application, it's not feasible for them to talk about
16 procedures and staffing because none of the system has
17 been finished, detailed design hasn't been finished
18 and other operating procedures has not been
19 established either.

20 And, as far as staging, same thing.
21 Neither the building are not built yet.

22 COMMISSIONER BARAN: Okay. And so, as
23 licensees and the staff continue to make progress
24 addressing post-Fukushima safety enhancements, at a
25 more general level, do you expect that future COL

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1 Applicants will be completing more of these activities
2 as part of initial licensing rather than as under
3 license conditions?

4 MR. TAI: If we were to talk about another
5 ABWR and S-COL Applicant, perhaps. I think for the
6 design side of this preparation, STP provided a pretty
7 mature design already. But, all the other license
8 conditions that we would impose on them, again,
9 procedures and programs, those are kind of items that
10 we require afterwards anyway.

11 COMMISSIONER BARAN: Okay.

12 MR. TAI: But, the license condition, we
13 do have to leverage to make sure they get done.

14 COMMISSIONER BARAN: Okay. Ryan, as you
15 mentioned, Units 3 and 4 would utilize installed plant
16 equipment to maintain key safety functions for 36
17 hours in response to an extended loss of AC power.

18 This is different from the current active
19 plant designs which generally rely on portable
20 equipment stored onsite to address a wide variety of
21 potential initiating events for at least some period
22 of that time.

23 Does the staff view permanently installed
24 plant equipment as providing a safety benefit as
25 compared to portable equipment?

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1 MR. NOLAN: Yes.

2 COMMISSIONER BARAN: Can you tell us a
3 little bit why?

4 MR. NOLAN: The reason that a Phase 2 or
5 a transition phase is specified in the order was
6 because, like you mentioned, a lot of operating plants
7 could only in Phase 1 only operate on permanently
8 installed equipment for approximately six to eight
9 hours. And, therefore, they would need some sort of
10 portable onsite equipment to get them to that Phase 3.

11 NEI 12-06, which is the guidance,
12 specifies that the combination of Phase 1 plus Phase
13 2 should be a minimum of 24 hours. And, in the staff
14 safety evaluation, we conclude that the STP 3 and 4
15 Phase 1 coping of 36 hours using permanently installed
16 equipment sufficiently addresses both the initial and
17 the transition phase specified in the order.

18 And, more importantly, provides the same
19 key safety functions specified in the order.

20 Also, I'd like to highlight that this
21 approach is consistent with all current COL holders.

22 COMMISSIONER BARAN: Okay. And, what
23 factors did the staff assess for Phase 1 plant
24 equipment to ensure installed equipment survivability
25 in the event of an extended loss of AC power due to

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1 beyond design basis accident?

2 MR. NOLAN: And so, what we did is we
3 reviewed the equipment against the guidance of NEI 12-
4 06 and ensured that it is designed to meet all the
5 applicable hazards that are specified in the guidance.

6 We reviewed the FSAR, did a thorough
7 review of the FLEX integrated plan. We issued RAIs.
8 We performed audits of the calculations for core spent
9 fuel pool cooling and containment.

10 COMMISSIONER BARAN: Okay. How will the
11 AC independent water addition system which is relied
12 on for Phase 3 indefinite cooling be protected from
13 beyond design basis initiating events?

14 MR. NOLAN: The building is located in a
15 robust structure and is designed against all
16 applicable hazards. It's designed against the site
17 specific SSC and flood protected, missile protected.

18 COMMISSIONER BARAN: Okay. And, I have a
19 question for the Applicant which I'll just scoot over
20 a little bit.

21 Where is the industry in developing SAMGs
22 for ABWRs?

23 MR. THOMAS: Do you want me to do that?

24 MR. HEAD: Yes, I'm going to ask Steve
25 Thomas to address that one.

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1 MR. THOMAS: Yes, as members of the
2 Boiling Water Reactor Owners Group, we're aware of the
3 development of that. Currently, the industry has
4 issued revisions for the EPG SAMGs which is currently
5 being implemented by the fleet at this time.

6 The Owners Group is also working on ABWR
7 specific EPG SAMGs which should be issued, I think,
8 sometime next year.

9 COMMISSIONER BARAN: Okay, thank you.

10 This is probably a question for Tom. In
11 pre-hearing questions 49 and 50, the staff and the
12 Applicant provided different responses regarding who
13 developed the license conditions regarding physical
14 security and cybersecurity and whether those license
15 conditions are necessary.

16 Can you clarify the purpose of the license
17 conditions and whether the staff used them as
18 necessary?

19 MR. TAI: These license conditions, to ask
20 the Applicant to provide the strategy, the written
21 strategy eight months before they implement the
22 strategy, we don't necessarily ask the same question
23 to the other COL Applicant.

24 At the time, we did but we didn't think we
25 imposed any unnecessary burden because that's an extra

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1 step for them to proceed before implementation anyway.

2 So, when they have this particular written
3 strategy available, we will have a chance to look at
4 it if we want to.

5 COMMISSIONER BARAN: Okay. Does the
6 Applicant want to add anything to that discussion?

7 MR. HEAD: Could you repeat the question?

8 COMMISSIONER BARAN: Well, so we get our
9 responses to the written questions and there were
10 questions about physical security and cybersecurity
11 license conditions.

12 And, it was a little bit of a, you know,
13 kind of cross finger pointing about who came up with
14 the idea of putting these license conditions in and
15 whether they were necessary.

16 And, I'm just trying to get a little
17 clarity about those issues?

18 MR. HEAD: Well, I believe maybe we are
19 more closely pointing in the same direction. We
20 believe the license conditions were, you know,
21 expected by the SECY. There's a SECY document that we
22 thought we were fulfilling that expectation.

23 The actual crafting of the wording of the
24 license condition may be a little bit different than
25 what we thought it would be, but it's still acceptable

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1 to us.

2 COMMISSIONER BARAN: Okay, thank you.

3 Thanks, Mr. Chairman.

4 CHAIR BURNS: Thank you, Commissioner.

5 There was a comment, I think it may have
6 been Ms. Ray who discussed that, but if I'm wrong,
7 whoever did, please jump in, but there was an
8 indication that one aspect of the mitigating strategy
9 would be submitted a year before the last ITAAC. I
10 wanted to make sure I understood what I was hearing.
11 It was you, right? Okay.

12 MR. NOLAN: She said it, I'll address it.

13 CHAIR BURNS: Okay, okay. So, I'm not
14 confused.

15 MR. NOLAN: Yes, so the first part of the
16 license condition says that they should have and
17 submit a fully -- have an overall integrated plan
18 completed before -- one year before the last ITAAC.

19 And, the reason for that --

20 CHAIR BURNS: A plan is for -- describe
21 for me again what the plan covers?

22 MR. NOLAN: It's their FLEX plan.

23 CHAIR BURNS: Oh, the FLEX plan, okay.

24 MR. NOLAN: And the timing of it allows us
25 to inspect it and then it needs to be the overall plan

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1 including procedures, guidance, training, maintenance,
2 testing, those sorts of things are fully implemented
3 before initial fuel load.

4 CHAIR BURNS: Right. Okay. So the idea
5 of this one year before the last ITAAC standing, I
6 guess, is to allow a period of review?

7 MR. NOLAN: Yes, and it's consistent with
8 the previous COL.

9 CHAIR BURNS: Okay, okay. All right,
10 thanks.

11 One of the things we talked about -- you
12 talked about in terms of this open phase issue is that
13 the STP is really the first Part 52 active reactor
14 designed COL Applicant to address this and provide a
15 resolution to it.

16 Where do you see other COL Applicants? Do
17 you see them employing similar solutions? Can the
18 site specific ITAAC developed for STP potentially be
19 used in other Applications?

20 MS. RAY: So, your first part of the
21 question on whether other COLs could use this
22 solution, yes. However, STP is using a safety related
23 solution for their safety buses.

24 CHAIR BURNS: Okay.

25 MS. RAY: And other COLs may choose to use

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1 a non-safety related solution. That is an option.

2 And, on the second part of your question
3 on whether a similar ITAAC could be used for
4 subsequent COLS, yes.

5 CHAIR BURNS: But, again, it may depend on
6 whether they're treating it as safety related or
7 otherwise?

8 MS. RAY: Correct. It will depend
9 specifically on the solution.

10 CHAIR BURNS: Okay, good. Let me see, I
11 think that's it for me.

12 Commissioner Svinicki?

13 COMMISSIONER SVINICKI: I thank everyone
14 for their presentations.

15 I think my colleagues have covered a lot
16 of the topics already. Perhaps just one question for
17 the staff panel, mitigating strategies order and the
18 implementation of FLEX is occurring across the
19 operating reactors in the United States right now.
20 Did you monitor the implementation of those
21 activities? And, if so, were there any lessons
22 learned or things that you drew into addressing these
23 issues for the STP Application?

24 MR. NOLAN: STP takes a pretty unique
25 approach because they are in the design phase, they

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1 can do things that operating plants that have existing
2 SSCs maybe they can't modify. And so, I don't recall
3 any specific lessons learned because they have an
4 opportunity where, like for example, the CST is,
5 they're designing it -- South Texas 3 and 4 is
6 designing it to meet the site specific SSC and be
7 protected against the hazards, where that's not
8 necessarily an option for a current reactor.

9 COMMISSIONER SVINICKI: Okay, thank you.

10 Thank you, Chairman.

11 CHAIR BURNS: Thank you.

12 Commissioner Ostendorff?

13 COMMISSIONER OSTENDORFF: Thank you for
14 our briefs.

15 My first question is for NINA. With
16 respect to the mitigating strategies and the 36-hour
17 coping time, was that factor originally part of the
18 capabilities of the ABWR or was there some design
19 change required in order to meet that 36-hour coping?

20 MR. HEAD: Yes, 36 hours was a crucial
21 aspect and it, obviously, depends on battery supply.
22 And, it was not an initial part of it but the
23 capability was there.

24 So, but to give you a more complete
25 answer, I'm going to ask Bill Mookhoek to give a

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1 little additional background on how we got there.

2 MR. MOOKHOEK: Actually, we developed the
3 36-hour space.

4 CHAIR BURNS: Can you make sure that your
5 button is on and pull the mic a little bit closer to
6 you, please?

7 MR. MOOKHOEK: So, we developed the 36
8 hours based on the time it would take to get the Phase
9 3 equipment to the site. We actually have
10 significantly more battery capacity than we need to
11 satisfy the 36 hours.

12 Per the offsite agreements, from the time
13 we make the phone call, we can have the offsite
14 equipment at the staging area within 24 hours. That
15 gives us six hours to get it to the site from likely
16 Bay City area and then another six hours to hook it up
17 and get it operational.

18 If needed, we could have gone longer, but
19 that's what drove the 36 hours.

20 COMMISSIONER OSTENDORFF: And, do you --
21 would you rely on Phase 3 for the reason regional
22 response center out in Phoenix to ship that equipment
23 to you?

24 MR. MOOKHOEK: I believe ours is Memphis.

25 COMMISSIONER OSTENDORFF: Memphis?

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1 MR. MOOKHOEK: Yes, sir.

2 COMMISSIONER OSTENDORFF: But it's the
3 same type of equipment, so that --

4 MR. MOOKHOEK: Yes, sir. And, the 480-
5 volt 1,500 kw diesels are going to be fairly standard
6 in those regional response centers and the connections
7 will be standardized as well.

8 COMMISSIONER OSTENDORFF: Okay, thank you.

9 Let me shift over to the open phase
10 condition and I guess, let me think, this is a
11 question maybe it's for the staff.

12 I was just in Byron last Thursday
13 afternoon, so I had a refresher on the 2012 instance
14 so the timing was good. And I was looking at the
15 negative phase sequence relays which I'm not familiar
16 with. Is that something that the NRC staff had prior
17 experience with?

18 MS. RAY: So, we reviewed the negative
19 sequence relays and in, basically, they can detect
20 unbalanced conditions. So, it's not -- they do detect
21 open phase conditions, but they also detect other
22 faults.

23 We have some experience with them but we
24 did review the simulations that the STP did to ensure
25 that the relay actuates and actually protects the

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1 safety related equipment.

2 COMMISSIONER OSTENDORFF: Do you know
3 whether or not any other existing commercial plant in
4 the United States has these negative phase sequence
5 relays?

6 MS. RAY: I would defer to my colleague,
7 Jacob Zimmerman who has been working on the operating
8 fleet side for the open phase issue.

9 COMMISSIONER OSTENDORFF: I think Jake was
10 looking for an opportunity to come to the podium, this
11 is good.

12 MR. ZIMMERMAN: Jake Zimmerman, Electrical
13 Engineering Branch, Division of Engineering, NRR and
14 I have been sworn in.

15 There are currently no plants, operating
16 plants, among the fleet that have the negative
17 sequence relays installed the way that STP is going
18 to.

19 There is a design -- there are five
20 solutions that are being considered by the industry,
21 one of which is that similar design and it's in
22 various stages right now of development and then
23 implementation.

24 And, they will be going through a series
25 of testing before it actually would go live and

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1 actuate. It will have the detection and the alarm in
2 place, but the mitigation won't be in place until
3 they've actually tested it.

4 For example, Byron tested it for
5 approximately a year, their solution, before it went
6 live and it's one of only two plants in the U.S. right
7 now that it's currently live, where, if it detects
8 that particular situation with an open phase, it will
9 actuate to disconnect the offsite power and the
10 diesels will start and load the emergency buses.

11 COMMISSIONER OSTENDORFF: At the risk of
12 asking a dangerous question, I'll ask it anyway, high
13 level, how does thing operate?

14 MR. ZIMMERMAN: Well, basically, what will
15 happen is on the high side of the main transformer,
16 for this particular solution, they will pick up if
17 there is a loss of phase.

18 What it will do then is it will isolate
19 the offsite power source which then will allow the
20 relays on the emergency buses to pick up that loss of
21 voltage and detect the unbalanced conditions.

22 In the case of South Texas, theirs is a
23 little bit -- it's more sensitive and so, it will pick
24 up under all of the accident -- all of the loading and
25 operating conditions, but, again, the system has to be

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1 more fully developed but that's basically the concept
2 and I defer to Sheila for more details on that if you
3 want.

4 COMMISSIONER OSTENDORFF: Okay. Do you
5 have anything you want to add?

6 MS. RAY: I don't have anything further to
7 add.

8 COMMISSIONER OSTENDORFF: Okay. All
9 right, thank you all.

10 CHAIR BURNS: Okay, just for -- Mr.
11 Zimmerman, will you please confirm that you took the
12 oath this morning?

13 MR. ZIMMERMAN: Yes, I did.

14 CHAIR BURNS: All right, thank you.

15 Anything else? I think we're done with
16 Panel 2. We'll convert to Panel 3 and I believe the
17 Applicant's witnesses are the same.

18 MR. HEAD: Yes, sir.

19 CHAIR BURNS: So, we'll excuse the -- and
20 at least one of staff witnesses is the same.

21 Okay, we'll proceed with the third safety
22 panel here. I remind the witnesses on the panel that
23 they remain under oath.

24 Again, I think we can dispense with the
25 introduction of the Applicant's witnesses, they are

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1 the same as the -- on the second panel, Mr. Thomas,
2 Mr. Head and Mr. Mookhoek.

3 And, for the staff, Mr. Tai will continue,
4 but I'd ask the other -- our other two witnesses to
5 introduce themselves.

6 Dr. Jones?

7 MR. JONES: Henry Jones.

8 MR. MCINTYRE: Richard McIntyre.

9 CHAIR BURNS: Okay. And, from there, I
10 will proceed with the Applicant's testimony on the new
11 panel.

12 MR. HEAD: Yes, if I could, could we make
13 a comment regarding the negative phase sequence
14 relays? And, if not now, then we can certainly do it
15 at the closing? But, we just want to make a quick
16 comment.

17 CHAIR BURNS: Why don't we do it now while
18 it's still fresh?

19 MR. HEAD: Steve, will you please?

20 MR. THOMAS: Yes, we just wanted to point
21 out that the reason that we selected these relays for
22 this Application is they are commonly used throughout
23 the industry for motor protection purposes to detect
24 unbalanced phase conditions to protect motors. They
25 are available under Appendix B quality programs as

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1 well.

2 So, this is primarily the reason why we
3 chose this is they are used frequently in these types
4 of applications. What's unique in this application is
5 we're using it to detect bus conditions, not just
6 motor conditions.

7 COMMISSIONER OSTENDORFF: Can I respond to
8 that?

9 CHAIR BURNS: Yes, Commissioner?

10 COMMISSIONER OSTENDORFF: And I appreciate
11 the clarification. I just had not come across them in
12 the context of this open phase problem solving. So,
13 I appreciate the fact that you tell us where --

14 MR. THOMAS: They are being used by some
15 other utilities as well.

16 COMMISSIONER OSTENDORFF: Yes, that's
17 helpful to know. Thank you.

18 MR. THOMAS: Thank you.

19 MR. HEAD: Thank you for that opportunity.

20 CHAIR BURNS: Okay, you're welcome. And
21 please proceed.

22 MR. HEAD: Okay. The hypothetical
23 embankment failure of the main cooling reservoir
24 defines the design basis flood for the site.
25 Therefore, we think it's important to focus on this

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1 topic in this session.

2 We also have a closing remark regarding
3 our selection of Toshiba as the alternate vendor.

4 Next slide, please?

5 In this picture, you see Units 1 and 2 as
6 well as the north embankment of the reservoir. Units
7 3 and 4 will be located in the right portion of the
8 picture.

9 Several events are assumed to
10 simultaneously occur in order to create the worst case
11 scenario for the design basis flood.

12 First, the analysis assumes the breach
13 develops at a specific location in the 12.4 mile long
14 embankment directly opposite each of the units. The
15 failure mechanism assumed is due to uncontrolled
16 seepage through or under the embankment resulting in
17 the removal of material to the point that a breach is
18 initiated. We assumed that the seepage is undetected
19 and progresses rapidly to failure.

20 The resulting flood elevation depends on
21 the flow rate out of the breach which, in turn,
22 depends on the sizes of the breach and the height of
23 the water in the reservoir.

24 To calculate the flood level, we used
25 empirical equations developed based on studies of

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1 previous embankment failures. Those empirical
2 equations utilized the height of the water contained
3 volume, height of water and contained volume in the
4 reservoir to determine the maximum breach width and
5 maximum flow rate as well as time to failure.

6 To ensure conservatism, we further assume
7 that the breach width grew at a much faster rate than
8 the empirical equation predicts. And, we assume that
9 the starting height of the reservoir level was almost
10 two feet higher than the maximum operating level.

11 These assumptions produce a flow rate
12 about twice what the empirical equations predict and
13 result in a flood elevation at the power block of
14 about 4.8 feet above grade.

15 For additional margin, this value was then
16 increased to six feet above grade.

17 We then validated these results using an
18 industry recognized computer model. This model
19 incorporates hydrodynamic principles, soil properties,
20 erosion effects to determine the breach flow rate over
21 time.

22 This modeling effort confirmed that the
23 empirical model results and our design basis flood
24 elevation are conservative.

25 Given all the conservatisms in our

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1 analysis, we believe that a realistic flood elevation
2 resulting from a breach of the main cooling reservoir
3 embankment will be much less severe than the elevation
4 predicted by the design basis analysis.

5 Next slide, please?

6 The next topics for this panel is a
7 discussion of the alternate vendor. We believe we've
8 covered that topic adequately in our opening remarks
9 so we have nothing new to add except to note that we
10 worked with our colleagues from Toshiba and their
11 partners for over seven years in licensing and design
12 related work.

13 During that time, we have reaffirmed our
14 conclusion that Toshiba can supply the ABWR certified
15 design for STP 3 and 4.

16 That concludes our remarks.

17 CHAIR BURNS: Thank you.

18 And, we'll proceed with the staff's
19 testimony. I presume, Mr. Tai, you'll begin?

20 MR. TAI: Yes. This is Safety Panel
21 Number 3. Our presenters are Dr. Henry Jones from our
22 meteorology and oceanography branch and Richard
23 McIntyre from the mechanical vendor inspection branch.

24 Next slide, please?

25 Dr. Henry Jones will discuss the design

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1 basis flood for the STP site and Mr. Richard McIntyre
2 will present the staff's review of the qualification
3 of Toshiba as the alternate vendor for the certified
4 ABWR design.

5 Next slide, please?

6 DR. JONES: I am Henry Jones, Dr. Henry
7 Jones. I am a hydrologist, oceanographer and
8 meteorologist in the Office of New Reactors and the
9 lead hydrologist for the South Texas Project Hydrology
10 Safety Review.

11 We'll begin with an overview of the site
12 setting showing the primary surface water feature on
13 the site which is the main cooling reservoir, or MCR
14 for short.

15 The South Texas Project site is located
16 near Bay City, Texas on the west bank of the Colorado
17 River and 15 miles inland from the Gulf of Mexico.

18 Today's topic is the design basis flood
19 which is the flood caused by a combination of
20 postulated events that result in the most severe
21 hazard for safety related structures, systems and
22 components.

23 Next slide, please?

24 The staff conducted a safety review using
25 several potential flooding scenarios. Based on the

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1 staff's analysis, the peak flood level or design basis
2 flood or postulated MCR breach was established at an
3 elevation of 40 feet mean sea level or, if you look at
4 the level at zero at a 34 grade, it's six feet above
5 the plant grade.

6 Staff notes that establish an existing MCR
7 operation and maintenance and requirements include
8 embankment inspections, groundwater level monitoring
9 along the embankments which make the postulated
10 embankment breach an unlikely event.

11 However, for purposes of the safety
12 review, the staff considered the event a worst case
13 flooding scenario.

14 Next slide, please?

15 This is an aerial view of the site looking
16 southward towards the Texas Gulf Coast. From the STP
17 site in the north to the south end, the MCR length is
18 approximately 3.5 miles. The MCR is a 7,000 acre
19 above ground non-safety related surface water
20 impoundment used as normal cooling water source for
21 the two operating units and it would also be used for
22 the two proposed units.

23 Next slide, please?

24 Here are the results of the STP analysis
25 and collectively shown for your perspective. Water

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1 levels from the design basis flood of the MCR
2 embankment breach are six feet above plant grade. The
3 flooding levels of the MCR breach local intense
4 precipitation and dam failure are all above the plant
5 grade while the flooding levels for storm surge,
6 streams and rivers and tsunamis are all below the plant
7 grade.

8 For comparison, the highest recorded storm
9 surge in the United States was the result of Hurricane
10 Katrina as measured on the Mississippi Gulf Coast and
11 the STP site is 15 miles inland from the Gulf Coast.

12 Next slide, please?

13 The NRC staff analyzed the implications of
14 the STP design basis flood being approximately six
15 feet above the grade of the power block. The
16 Applicant stated that all safety related facilities
17 below 40 feet mean sea level in the power block are
18 water tight.

19 Further, the Applicant stated that all
20 water tight doors and hatches will be opened outward
21 and these water tight doors will normally be closed in
22 a closed position under administrative controls.

23 Lastly, all ventilation openings are
24 located above 40 feet mean sea level. The NRC staff
25 concluded that this configuration is acceptable.

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1 Staff notes that in a matter of hours
2 water from the postulated design basis flood event
3 would receded from the site.

4 Next slide, please?

5 During the review, an NRC staff member
6 raised concerns about the design basis flood analysis.
7 The nonconcurring individual asserted that the NRC
8 staff's MCR breach flood analysis was not
9 conservative, that the NRC staff's hurricane storm
10 surge analysis was not conservative and that the
11 safety evaluation report inappropriately identified
12 the maximum groundwater level which should be
13 established in relation to the design basis flood.

14 Next slide, please?

15 The NRC solicited independent expert
16 reviewers for dam breach and probable maximum
17 hurricane storm surge related and related issues from
18 the University of Maryland, the Corps of Engineers,
19 the Bureau of Reclamation, Virginia Tech, Taylor
20 Engineering Research Institute and the University of
21 North Carolina.

22 An independent review panel and the ACRS
23 concluded that all of the technical issues were
24 resolved correctly by the NRC staff for the MCR breach
25 and the hurricane storm surge analysis.

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1 With respect to groundwater, no external
2 review was solicited as the maximum groundwater level
3 is a design control document site parameter is not
4 associated with the design flood basis event.

5 That concludes my presentation.

6 Richard McIntyre will be presenting the
7 alternative vendor qualification.

8 MR. MCINTYRE: Thank you, Dr. Jones.

9 NINA, the COL Applicant, announced its
10 intention to change the ABWR design plant vendor from
11 GE-Hitachi to Toshiba. NINA awarded the engineering
12 procurement and construction, or EPC, contract to
13 Toshiba to supply and ABWR design for STP 3 and 4.

14 As holder of the EPC contract, Toshiba
15 assumed the duties normally assigned to the plant
16 vendor and the entity that originally obtained the
17 design certification.

18 Because Toshiba is not the entity that
19 originally obtained the design certification, is
20 referred to as an alternate vendor.

21 The Applicant submitted a due diligence
22 report, or DDR, that provided the qualification
23 assessment to determine whether Toshiba is qualified
24 to supply the ABWR design to STP 3 and 4.

25 The due diligence effort was intended to

1 assess areas where, in the Applicant's opinion,
2 Toshiba may not have the direct experience necessary
3 to support the certified ABWR design as required by 10
4 CFR Part 52.73a.

5 In order to confirm the Applicant's
6 conclusion in the DDR, the staff performed a review of
7 the DDR and conducted a vendor inspection at Toshiba.

8 Next slide, please?

9 The NRC staff conducted a vendor
10 inspection at Toshiba's Isogo Nuclear Engineering
11 Center in Yokohama, Japan. The purpose of this
12 inspection was to independently assess the basis upon
13 which the Applicant determined that Toshiba's capable
14 of providing the certified ABWR design for STP 3 and
15 4 and to confirm the Applicant's conclusion in the
16 DDR.

17 This effort constituted part of the
18 staff's independent assessment of Toshiba's ability to
19 provide the U.S. certified ABWR design to STP 3 and 4.

20 The NRC staff looked at Toshiba's
21 qualifications and alternate vendor and checked to
22 determine whether Toshiba had access to engineering
23 documents that are design basis documents for U.S.
24 ABWRs.

25 In cases where a document may not be

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1 readily available, the staff looked at Toshiba's
2 ability to develop the needed document independently.

3 The inspection verified Toshiba's
4 implementation of selected portions of its quality
5 assurance, or QA, program for compliance with Appendix
6 B to 10 CFR Part 50.

7 The staff inspected Toshiba's QA program
8 implementation related to areas such as design
9 control, procurement document control and corrective
10 action.

11 The NRC staff also looked at Toshiba's
12 policies in implementing procedures for reporting
13 defects and noncompliances to determine whether or not
14 these are consistent with 10 CFR Part 21.

15 Next slide, please?

16 The staff also inspected Toshiba's
17 policies and procedures for developing and
18 implementing the STP 3 and 4 initial plant test
19 program, examined Toshiba's design control processes
20 for digital instrumentation and control systems and
21 evaluated its ability to perform licensing containment
22 safety analysis.

23 The inspection did not identify an issues
24 in these areas.

25 Next slide, please?

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1 The Applicant submitted a due diligence
2 report providing an assessment of Toshiba's
3 qualifications to provide the ABWR design. Toshiba
4 had considerable experience in the design and
5 construction of nuclear power plants and has supplied
6 major portions of the international design of ABWRs
7 currently in operation.

8 The U.S. ABWR design certification safety
9 evaluation report describes the relationship between
10 GE and it's technical associates including Toshiba.

11 The staff reviewed the due diligence
12 report and examined various technical documents for
13 regulatory actions. This review examined areas where
14 Toshiba may not have the experience to support the
15 U.S. certified design.

16 Examples include design documentation,
17 ongoing technical development, licensing support and
18 the development and implementation of a supply chain.

19 Examples of technical review included the
20 pressure-temperature limits report, inspection of the
21 containment safety analysis and audit of the
22 hydrodynamic load analysis.

23 Next slide, please?

24 The NRC staff concluded that Toshiba's
25 programs are consistent with Appendix B to 10 CFR Part

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1 50 and with 10 CFR Part 21 and that Toshiba has both
2 the technical ability and access to technical
3 documentation necessary to provide a design for the
4 U.S. certified ABWR.

5 Based on the areas reviewed during the
6 inspection, the NRC inspectors were able to
7 independently confirm that the Applicant's due
8 diligence review adequately demonstrate that Toshiba
9 is qualified to supply the ABWR certified design as
10 required by 10 CFR 52.73a.

11 This concludes our presentation.

12 CHAIR BURNS: Okay, thank you very much.

13 To play off of your presentation, Mr.
14 McIntyre, I want to make sure, can we go back to the
15 last staff slide?

16 With respect to the first conclusion,
17 Toshiba's programs are consistent with the
18 requirements of Appendix B to Part 50 and Part 21, it
19 seems to me that that's really not something that's
20 dependent upon their reliance or implementation of
21 particular design certification.

22 They would need to be that, in effect, the
23 Applicant, meaning South Texas or NINA, is responsible
24 overall for the Appendix B program? I want to be sure
25 --

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1 MR. MCINTYRE: Correct.

2 CHAIR BURNS: -- that's correct.

3 MR. MCINTYRE: Correct, right.

4 CHAIR BURNS: And then, from tiering off
5 of that, there are vendors primary, secondary,
6 tertiary to the extent that they need to basically
7 provide -- are subject to a nuclear grade quality
8 assurance program they would have to do.

9 So, what I'm trying to understand, that's
10 really -- I'm trying to say, is that really an outcome
11 of Toshiba's ability to implement the design or is
12 that something really that Toshiba independently would
13 need to meet?

14 MR. MCINTYRE: I think it's both. They do
15 have to meet, obviously, they have to meet --
16 implement an Appendix B program. But, what our
17 inspection did is reviewed an implementation of their
18 program in areas such as design control, like one of
19 the areas we looked at was digital I&C systems. We
20 looked at initial test program and containment
21 analysis.

22 So, we took a snapshot of certain
23 activities related to those specific technical areas
24 under the Toshiba QA program.

25 Now, you're right, STP already has ongoing

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1 qualification of Toshiba as an Appendix B Part 21
2 supplier.

3 CHAIR BURNS: And, I guess maybe to make
4 -- to focus a little bit more, is that part of looking
5 at the Toshiba program, is that also in the context of
6 the ability -- I take it's in the context of the
7 ability to implement that particular design which is
8 not their proprietary design, is that what you're
9 saying?

10 MR. MCINTYRE: Yes.

11 CHAIR BURNS: Okay.

12 MR. MCINTYRE: And I guess, stepping back
13 a little bit, when we did the inspection at Toshiba,
14 it was part of the inspection plan was developed based
15 upon the staff evaluation of the DDR and the quality
16 assurance program was identified as one of the areas
17 that needed to be either inspected, audited or other
18 -- review other information to make the conclusion
19 that Toshiba could be qualified as an alternate
20 vendor.

21 CHAIR BURNS: Okay. All right, thank you.

22 One of the areas, regarding the
23 requirements for long term recirculation following a
24 LOCA, NINA described how it addressed NRC guidance
25 related to various aspects of design and operation of

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1 the ECCs system, Emergency Core Cooling System
2 Strainers, in response to pre-hearing question 34.

3 As this is actually directed toward NINA,
4 excuse me, that wasn't clear.

5 In NINA's -- or part of the evaluation the
6 effect of debris passing through the strainers on
7 downstream components, NINA committed to have a future
8 downstream test on fuel that it will use in the
9 initial cycle of operation following -- to be
10 performed 18 months after or 18 months prior to
11 operation.

12 How is that document or how is that
13 commitment documented in the Application or in the
14 Combined -- or the draft Combined License and how
15 would the results be communicated to the NRC?

16 MR. HEAD: There is a specific section in
17 Chapter 6 with the details of how that was to unfold
18 -- exist and then it's captured in a license
19 condition.

20 CHAIR BURNS: Okay, good.

21 For the -- one other question I had I
22 think for the staff here, again, we're talking about,
23 Dr. Jones, talking about the main cooling reservoirs,
24 the controlling event for the established in the
25 design basis flood level for the site.

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1 And, we talked about -- you talked about
2 in your testimony that the assurance, the staff
3 looking into the assurance that the closure of certain
4 water tight doors during a breach of the reservoir,
5 it's an important risk insight.

6 Can you describe what controls are in
7 place to ensure closure of the water tight doors in
8 the event of a flooding event and are there license
9 conditions, ITAAC or other commitments cited in the
10 staff's SER related to this issue?

11 DR. JONES: I would have to refer to --

12 MR. TAI: That is a review that we did
13 under the PI group. And, if I may ask Marie to help
14 us to give you a lot more detail?

15 CHAIR BURNS: Okay. And, again, when you
16 come forward, state your name, your position and
17 confirm that you've been put under oath.

18 MS. POHIDA: Good afternoon. I'm Marie
19 Pohida and I'm a Senior PRA Reviewer in the Office of
20 New Reactors. And I have been sworn in.

21 CHAIR BURNS: Okay, thank you.

22 MS. POHIDA: Okay, could you please repeat
23 the question for me?

24 CHAIR BURNS: Okay. The question is, what
25 are the controls again just relates to the flooding

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1 event from the breach of the reservoir, what controls
2 are in place to ensure closure of these water tight
3 doors during a flooding event? Are there license
4 conditions, other controls that would apply to this?

5 MS. POHIDA: Thank you.

6 The water tight door status, it's
7 documented in the FSAR in Section 2.4S10 for flooding
8 protection requirements. And, if there were to be
9 proposed change to these administrative controls, they
10 would be covered by 10 CFR 50.59, changes, tests and
11 experiments.

12 Does that answer your question?

13 CHAIR BURNS: Okay. Thank you, yes.

14 Commissioner Svinicki?

15 COMMISSIONER SVINICKI: Thank you,
16 everyone for your presentations.

17 I have questions on two topics. The first
18 question is, I ask for a response from both the staff
19 and the Applicant.

20 Members of our Commission received
21 directly a Statement of Concern regarding the design
22 basis flood level for Units 3 and 4 from an NRC staff
23 member on November 12th. This Statement of Concern
24 was served on all the parties for this hearing.

25 My question is, and again, Dr. Jones, you

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1 gave as part of your presentation a discussion of the
2 nonconcurrency. These are substantively the same
3 areas covered in the Statement of Concern, but I'm
4 still going to ask that you respond to this question.

5 Have both the staff and the Applicant had
6 an opportunity to review the Statement of Concern?
7 And, if so, does it bring to light or challenge any of
8 the conclusions that you've made?

9 MR. JONES: Yes, Commissioner. Actually,
10 the Statement that you have has added nothing new to
11 the prior NCP. It's all included in the ACRS report
12 and all the documentation for the nonconcurring, that
13 was just a summary of what has been previously
14 submitted back in 2013.

15 Not only did we address it and had open
16 meetings and discussions with the nonconcurring
17 individual and also that the nonconcurring individual
18 also had a presentation at the ACRS meeting with the
19 staff also, a chance to reply.

20 We actually included in the SER, we didn't
21 change our conclusions, they were the same, but we
22 actually modified it to give more detail to explain
23 our conservatism for the different flooding mechanisms
24 in the SER.

25 So, what we did is we modified our SER to

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1 make sure we had detail -- more detail to the staff's
2 analysis.

3 COMMISSIONER SVINICKI: Okay. Scott,
4 before I get to you, could I just have the Applicant
5 confirm that this was served. You had an opportunity
6 to review this Statement of Concern which was I
7 believe served to your counsel and that it did not
8 alter any of the analysis or conclusions that you
9 reached?

10 MR. HEAD: Yes, ma'am, it did not alter
11 our conclusions that we had reached. And, I agree
12 with Dr. Jones's statements.

13 COMMISSIONER SVINICKI: Okay, thank you.

14 Scott, did -- oh, I'm sorry and the
15 Chairman will want you to give your name, your
16 position and confirm that you are --

17 CHAIR BURNS: Your name, position and
18 confirm that you're under oath.

19 MR. FLANDERS: My name's Scott Flanders,
20 Director of the Division of Site Safety and
21 Environmental Analysis in the Office of New Reactors
22 and I have been sworn in.

23 I agree with all that Dr. Jones said. I
24 would just add that in the material that you received,
25 there was some aspects of it that recast the issue

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1 based on response from the expert panels. But,
2 however that recast any of the issues, as Dr. Jones
3 stated, were the same issues that we've already
4 evaluated and we still continue to maintain the same
5 position even after reviewing this most recent
6 information.

7 COMMISSIONER SVINICKI: Okay, thank you.
8 And, I appreciate that, Scott, because I think that's
9 a very important point that it may have been an
10 emphasis or a, you know, a restatement can sometimes
11 bring different points of emphasis to light, so I
12 appreciate it.

13 And that was the purpose of my question
14 was to say, with this articulation of concerns, did it
15 alter conclusions? It appears that it did not.

16 And, I would just like to state that
17 consistent with the Agency's open collaborative work
18 environment and safety culture, I commend the
19 concerned expert who brought these matters forward.
20 The purpose of my question was to make certain that we
21 had looked at them very closely and analyzed them and,
22 Dr. Jones, you've assured me both in your initial
23 presentation and your subsequent assurance that this
24 was evaluated once again just to make sure that we had
25 covered everything that was raised. So, thank you for

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1 that.

2 My second question is only for the
3 Applicant. In approaching the development of the due
4 diligence that you undertook to qualify Toshiba as an
5 alternate vendor, is there any sort of benchmarking or
6 standards for approaching the structure of a due
7 diligence review of this type?

8 Did you -- how did you come to establish
9 the parameters that you've testified that you
10 undertook a very significant due diligence, are there
11 models or benchmarks for structuring a review of this
12 type?

13 MR. HEAD: I'm going to ask Steve to
14 address that.

15 MR. THOMAS: Thank you, Scott.

16 I'm not aware of any particular benchmark,
17 although we are experienced to some extent with doing
18 these types of reviews based on other work in the
19 industry.

20 I will say that as a key participant in
21 this evaluation, I did approach it initially with some
22 degree of skepticism and we established a team with
23 the EPC team to basically determine the areas that we
24 felt that Toshiba might be soft. What were the
25 vulnerabilities?

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1 And those formed the core, I guess, of the
2 areas that we decided that we wanted to explore in
3 great detail. And, I think we came up with about 17
4 total areas, 17 or 18 areas that we explored with
5 different teams in great detail in the time that we
6 were over there.

7 And, I emphasize what Scott mentioned, we
8 came away really 180 degrees from our approach going
9 into this and we're very impressed with the way
10 Toshiba dealt with those issues we presented them
11 with.

12 COMMISSIONER SVINICKI: Okay. So, can I
13 ask that no matter your mind set going in, upon the
14 conclusion of your due diligence review, you were
15 confident in the decision you had made?

16 MR. THOMAS: Yes, absolutely.

17 COMMISSIONER SVINICKI: Okay, thank you.
18 Thank you, Mr. Chairman.

19 CHAIR BURNS: Okay, thank you.

20 Commissioner Ostendorff?

21 COMMISSIONER OSTENDORFF: Thank you for
22 your presentations.

23 I want to kind of pick up with where
24 Commissioner Svinicki left off on the alternate
25 vendor. This is a question for the Applicant.

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1 How did you assess the transfer of
2 information on the ABWR design from General Electric
3 to Toshiba to ensure that all the required background
4 information that was with the original design was
5 appropriately in the hands of the alternate vendor?

6 MR. THOMAS: That would be mine, too.

7 I'm not certain that an actual transfer
8 took place. If we go back to the development of the
9 Kashiwazaki-Kariwa 6 and 7 projects, it was a joint
10 effort and the documentation you're referring to that
11 we looked at in some detail over there was referred to
12 as a common -- a basis of common engineer documents
13 and I forget the total number, it was 800 or 900
14 documents that form that, the set of common
15 engineering documents.

16 And those were developed jointly. They
17 were owned jointly by all the participants in that.

18 And, as we went through our process to
19 review and examine those documents and to see that
20 they had them there, I know on the particular team
21 that I was involved with, they were able to produce
22 100 percent of all the references that were cited in
23 the DCD that we requested as well as all of the design
24 basis calculations that we requested.

25 And not only did they show us these

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1 documents, but we were able to meet and discuss them
2 with the engineers that prepared them, which I was
3 very impressed.

4 COMMISSIONER OSTENDORFF: When you say
5 that, let me stop you right there because it leads to
6 my second question, but it's a great set up.

7 Are there any areas of engineering
8 calculation, for instance, on the ABWR design that
9 Toshiba had to go back and redo or that used a
10 different set of engineering assumptions as to how
11 they approached issues that had already been worked on
12 by GE?

13 MR. THOMAS: Yes.

14 COMMISSIONER OSTENDORFF: Were there any
15 significant concerns raised in any of those areas?

16 MR. THOMAS: No, there were no significant
17 concerns raised in that area. I think their
18 competency was demonstrated more than adequately.

19 COMMISSIONER OSTENDORFF: Okay. So, let
20 me shift back to the NRC staff and ask Richard a
21 related question.

22 Did -- nothing is ever seamless when you
23 transfer from one design agent to the other, there's
24 always going to be some, you know, transaction costs
25 to that. Did the NRC staff see any significant, I use

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1 the word significant intentionally here, differences
2 that made the review more difficult for NRC staff?

3 MR. MCINTYRE: No, I don't believe so.
4 And, as I mentioned in responding to Chairman Burns'
5 question earlier, I think we, you know, we tried to
6 concentrate on areas where, as someone mentioned,
7 where there would be soft areas where they would
8 require some additional translating of the design
9 basis from the GE into Toshiba.

10 But, no, we didn't see -- everything that
11 we looked at, we didn't have any findings in those
12 areas and it seemed like a pretty seamless transition.

13 COMMISSIONER OSTENDORFF: Okay. Because
14 I can imagine there would be circumstances where,
15 well, you know, very highly competent engineers may
16 take different approaches to crafting assumptions or,
17 you know, methodologies for a particular issue.

18 MR. MCINTYRE: We didn't see that in the
19 areas that we inspected.

20 COMMISSIONER OSTENDORFF: Did you see
21 anything in that, you know, Tom, and your project
22 manager?

23 MR. TAI: When we participate in the
24 inspection, the NRC inspection, we picked analysis
25 that we consider challenging and important.

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1 Our job was to make sure that we agree
2 with NINA's assessment that Toshiba is a qualified
3 alternate vendor to supply the ABWR design because it
4 is, like you said, there are a lot of analysis being
5 done and some of them are not available to them
6 directly.

7 So, the analysis and review, we were
8 pretty impressed with them. And, but more
9 importantly, we continue with the review of the COL
10 project and Toshiba was continuing to be involved in
11 supplying some of the design.

12 And, they continued to show that they are
13 capable of doing the work. So, there's no transfer
14 document per se if that is the direct question.

15 COMMISSIONER OSTENDORFF: No, no, I just
16 -- I think you've answered the question, I appreciate
17 that.

18 Though I don't have a comment or question
19 for Dr. Jones, I will comment to my colleague,
20 Commissioner Svinicki that Dr. Jones is also a sailor
21 and he and I served together in the faculty at the
22 Naval Academy about 15 years ago. And he was --

23 COMMISSIONER SVINICKI: Oh, if this is
24 going somewhere interesting, but I just want to
25 comment that Dr. Jones appears the model of sobriety

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1 in this moment.

2 CHAIR BURNS: I couldn't have sworn him
3 in.

4 COMMISSIONER OSTENDORFF: I'll attest to
5 that based on personal observation, but also state
6 that Henry was a very highly regarded member of the
7 oceanography faculty when I was serving over there.
8 So, Henry, it's good to see you here.

9 I have no other questions.

10 CHAIR BURNS: Thank you.

11 Commissioner Baran?

12 COMMISSIONER BARAN: Thanks.

13 It seems like my colleague covered a lot
14 of the flooding and alternate vendor issues, so I'll
15 touch on just a few other issues.

16 I wanted to start with a question for
17 NINA. The Application states that the reactor vessel
18 material surveillance program will include four
19 surveillance capsules and that the withdrawal schedule
20 is based on American Society for Testing and Materials
21 Standard E185.

22 But, the Applicant's schedule doesn't
23 appear to match either the three or four capsule
24 withdrawal schedule in that Standard. Can you clarify
25 how many capsules you plan to withdraw during the

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1 initial 40-year licensing period, three or four?

2 MR. HEAD: Just let me ask for a
3 clarification. Did you say for 3 and 4 or three?

4 COMMISSIONER BARAN: I meant three
5 capsules or four capsules, but I can understand why --
6 yes, for either.

7 MR. HEAD: I don't know -- I think it's
8 four. It's four capsules.

9 COMMISSIONER BARAN: It's four capsules?
10 And, it's consistent with the Standard? With the ASTM
11 Standard?

12 MR. HEAD: Yes.

13 COMMISSIONER BARAN: Okay.

14 MR. HEAD: Was there something our
15 response that didn't --

16 COMMISSIONER BARAN: That was just our
17 review of the materials. It wasn't clear it really
18 lined up, so we wanted that clarification. Four
19 capsules and, from your point view, it is consistent
20 with the --

21 MR. HEAD: It was certainly our intent to
22 be consistent with the Standard.

23 COMMISSIONER BARAN: Okay, thank you.

24 Turn to the staff, I wanted to follow up
25 on pre-hearing question 14 which dealt with the

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1 protection of safety related concrete structures from
2 hazards such as explosions.

3 Under the Reg Guide criteria, a safety
4 related structure has to be able to withstand one psi
5 of pressure. According to the FSAR, an explosion
6 could create pressure on safety related structures of
7 .987 psi which is pretty close to the one psi
8 threshold.

9 The staff and Applicant responses stated
10 that there were conservatisms built into the setting
11 of the one psi standard. Can you briefly describe
12 those conservatisms in a little bit more detail and
13 explain why you found the .987 psi to be acceptable?

14 MR. TAI: Yes. I think we looked at that
15 in detail. And, if I may ask my colleague from DSEA,
16 Rao, is he here?

17 COMMISSIONER BARAN: It's good that I
18 built up extra time. I didn't factor in the walking
19 across the room.

20 MR. TAMMARA: I did not take the oath.

21 CHAIR BURNS: Oh, you need to take the
22 oath? Okay. Let me find it.

23 COMMISSIONER BARAN: Now, this definitely
24 shouldn't come off my time. And, for the staff people
25 who were too quick, this is why we do this -- why I

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1 ask those questions. I'm going to do it freelance.

2 CHAIR BURNS: Would you state your name?

3 MR. TAMMARA: My name is Rao Tammara. I'm
4 the lead reviewer for the hazards evaluation.

5 CHAIR BURNS: Okay. And, do you swear or
6 affirm that the testimony you're about to give is the
7 truth, the whole truth and nothing but the truth?

8 MR. TAMMARA: Yes, I do.

9 CHAIR BURNS: Okay, thank you. You may
10 proceed.

11 MR. TAMMARA: In evaluating the
12 overpressure, we followed the guidance regulating
13 requirement specified under 1.91, Reg Guide 1.91.

14 In evaluation of that one, the
15 conservatisms on some built in part, we assumed the
16 entire amount of the tank is spilled and the entire
17 amount is available for the explosion which is a more
18 of a bounding case.

19 So, based upon that one we have calculated
20 what would be the minimum distance to get to the one
21 psi overpressure. So, that is in reality, that is a
22 most conservative evaluation.

23 If it was a vapor or whatever it is, still
24 we will consider the entire amount is available, so
25 that is the bounding case.

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1 In evaluation of the vapor cloud, we are
2 instituting the worst to meteorology, 99 percentile
3 assuming one meter per second in air stability doesn't
4 have the much dispersion. So, therefore, the plume
5 will travel straight, therefore, it will calculate the
6 highest amount without dispersing.

7 So, there are built in conservatisms
8 already in the calculation of one psi distance. In
9 considering the one psi itself is also a very
10 conservatism because at one psi, only the windows will
11 shatter and a minor damage will be occurred.

12 Therefore, they set the limit in Reg Guide
13 1.91 to be a very conservative value. If you screen
14 one psi, the whole building will be intact. So, to
15 damage the concrete structure it should have much more
16 than one psi. So, even though it is .98, even with
17 one activity, if it is really below one, still
18 concrete structure would not be damaged.

19 So, there are --

20 COMMISSIONER BARAN: Okay, thank you.

21 MR. TAMMARA: -- a lot of levels of
22 conservatisms.

23 COMMISSIONER BARAN: I appreciate that
24 description. Thank you very much.

25 I also wanted to follow up on pre-hearing

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1 question 15 regarding the annual tornado strike
2 frequency for each unit.

3 Can the staff briefly explain how the
4 tornado design basis for the site meets the
5 characteristics of Reg Guide 1.76?

6 MR. TAI: Yes. May I ask Brad Harvey to
7 help us out with this?

8 CHAIR BURNS: And, will you state your
9 name? Have you been sworn?

10 MR. HARVEY: Yes, I have.

11 CHAIR BURNS: Okay, and state your name
12 and your position for the record.

13 MR. HARVEY: My name is Brad Harvey, I'm
14 the Senior Physical Scientist in the Division of Site
15 Safety and Environmental Analysis.

16 CHAIR BURNS: Okay, thank you.

17 MR. HARVEY: Reg Guide 1.76 basically
18 defines a tornado wind speeds at a probability of 10^7
19 per year occurrence, so that's really the probability
20 of a structure being struck times given that the
21 structure has been struck, the wind speed that would
22 a combination of which would be 10^7 .

23 So, if you go into the Reg Guide, there is
24 logic to latitude to degree boxes that gives you the
25 design basis wind speed, tornado wind speed for that

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1 probability level.

2 COMMISSIONER BARAN: Okay. Stay there one
3 second just in case you're going to answer this
4 question, too, I'm just guessing.

5 Following up on hearing question or pre-
6 hearing question 25 related to site specific departure
7 for hurricane generated missile protection, did the
8 staff evaluate all the seismic Category 1 structures
9 on site under the hurricane loading criteria as
10 specified in the recently revised Reg Guide 1.221?

11 MR. HARVEY: I am probably not the right
12 person to ask.

13 COMMISSIONER BARAN: Okay. Someone else
14 will walk.

15 MR. TAI: The answer is yes. Do you need
16 to elaborate some more or just yes is sufficient?

17 COMMISSIONER BARAN: Even though it's my
18 time, I'll ask the elaboration question and we'll see
19 if you guys can handle it at the table or want someone
20 to come up.

21 How did the staff briefly conclude that
22 the site specific Category 1 structures were adequate
23 to withstand the design basis hurricane load specified
24 in that Reg Guide?

25 MR. TAI: Manas, can you help us giving

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1 more detail?

2 COMMISSIONER BARAN: You guys didn't
3 realize there's a physical fitness element to these
4 proceedings.

5 CHAIR BURNS: Again, state your name for
6 the record and have you been put under oath?

7 MR. CHAKRAVORTY: My name is Manas
8 Chakravorty and I'm in the structural engineering
9 branch and I have been sworn.

10 CHAIR BURNS: Okay, please proceed.

11 MR. CHAKRAVORTY: We have reviewed both
12 the standard plan structures as well as the site
13 specific structures for Reg Guide 1.221 and this has
14 been documented in the SER pertinent sections.

15 And, what we have found basically that
16 those structures were good enough and for site
17 specific structures, we have done the design also.
18 So, they are site specific. We made sure that those
19 structures are adequate.

20 Now, we used basically the guidelines that
21 is in the SRP and regulatory guide to do that and,
22 basically, this structure successfully passed even
23 though the missiles were a little higher than tornado
24 missiles.

25 COMMISSIONER BARAN: Great, thank you very

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1 much.

2 CHAIR BURNS: Okay. Well, thank you all
3 for this panel for their testimony. That concludes
4 the overview of the safety panels.

5 We're going to take a brief break, about
6 a five minute break and then after the break, we'll
7 proceed with the environmental panel and then the
8 conclusion of our proceedings.

9 (Whereupon, the above-entitled matter went
10 off the record at 2:49 p.m. and resumed at 2:39 p.m.)

11 CHAIR BURNS: I will call the proceedings
12 back to order.

13 And we will now proceed with the overview
14 panel on the environmental issues treated during the
15 Application review.

16 And, again, we'll hear from the Applicant
17 then from the staff and then open it to the
18 Commissioners questions.

19 So, I'll begin by asking the Applicant --
20 I'll ask Mr. Head who's been the rock here during the
21 presentations, it will be on this panel, but I'll ask
22 the other Applicant witnesses to introduce themselves.

23 MS. TRAVIS: I'm Peggy Travis,
24 Environmental Supervisor for STP Nuclear Operating
25 Company.

1 CHAIR BURNS: Okay.

2 MR. KIESLING: And, I'm Russell Kiesling,
3 I was the Environmental Lead for NINA.

4 CHAIR BURNS: Okay. And the staff?

5 MR. KUGLER: Andy Kugler, Senior
6 Environmental Project Manager. I worked on
7 alternatives.

8 MS. VOKOUN: Pat Vokoun, Environmental
9 Project Manager.

10 CHAIR BURNS: Okay, and we'll proceed
11 again with the Applicant first.

12 MR. HEAD: Okay, thank you.

13 Next slide, please?

14 The STP site consists of approximately
15 12,200 acres. It is located in rural Matagorda County
16 approximately 12 miles southwest of the city limits of
17 Bay City, Texas and ten miles north of Matagorda Bay.

18 The STP site and the surrounding area fall
19 within the Coastal Prairie, a broad band parallel to
20 the Texas coast which is predominately farm land and
21 pasture.

22 The topography of the area is
23 characterized by fairly flat land and area is sparsely
24 populated with approximately 7,000 residents within
25 the ten mile emergency planning zone.

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1 The existing Units 1 and 2 began operating
2 in 1987. The site is considered a brownfield and has
3 the advantage of an established infrastructure.

4 Key programs like environmental monitoring
5 are well established and will apply across all units
6 on the site.

7 The switchyard at STP currently has nine
8 transmission circuits to connect it to the grid.
9 These nine circuits occupy three corridors and no
10 additional corridors are needed to support operations
11 of the new units.

12 As noted earlier today, the existing main
13 cooling reservoir has the capability to serve all four
14 units.

15 The site is already used for operations of
16 Units 1 and 2 and operations of those units has not
17 caused any significant environmental impact.

18 Our operating company has been a good
19 environmental steward and will continue to fulfill
20 those obligations during -- both during construction
21 and operations of Units 3 and 4.

22 We've conducted a thorough evaluation of
23 the environmental impacts and alternatives to Units 3
24 and 4 as discussed in our environmental report.

25 In summary, almost all the environmental

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1 impacts for the construction and operations will be
2 small. Furthermore, there are no reasonable
3 alternatives that would be environmentally preferable
4 to construction and operations of Units 3 and 4 at the
5 STP site.

6 Power demand projections for Texas
7 continue to show the need for new baseload generation.
8 In fact, the Electrical Reliability Council of Texas
9 had an all time high power demand record set during
10 the second week of August this year.

11 In addition, we continue to believe that
12 new nuclear generation is an essential component as we
13 face a carbon-constrained future.

14 And finally, I would note that the
15 development of the STP Units 3 and 4 will have a large
16 positive economic impact on Matagorda County. It will
17 bring new high paying jobs, skilled employees and
18 substantially increase the tax base.

19 This concludes my overview. Thank you.

20 CHAIR BURNS: Thank you, Mr. Head.

21 And the staff?

22 MS. VOKOUN: Good afternoon.

23 Next slide, please? Next slide, please?

24 I am Patricia Vokoun, the Project Manager
25 for STP 3 and 4 Environmental Review. With me today

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1 is Andrew Kugler, a Senior Project Manager in the
2 Environmental Technical Support Branch in the Division
3 of Site Safety and Environmental Analysis.

4 This afternoon, we will discuss the
5 environmental review for the STP 3 and 4. The
6 proposed site is co-located with existing STP 1 and 2
7 and would use much of the existing infrastructure.

8 I will discuss an overview of the staff's
9 process, the impacts we identified, the outcome of the
10 staff's assessment of new information, that is
11 information that arose after the environmental impact
12 statement, or EIS, was final. Andy will discuss the
13 alternatives considered.

14 The National Environmental Policy Act,
15 also known as NEPA, requires federal agencies to use
16 a systematic approach to consider environmental
17 impacts of major agency actions.

18 The NRC regulations that implement NEPA
19 are found in 10 CFR 51. The NRC determined that the
20 issuance of a Combined License is a major federal
21 action under NEPA that requires the development and
22 issuance of an EIS.

23 In addition, the staff's environmental
24 review addresses requirements of the Endangered
25 Species Act, the National Historic Preservation Act

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1 and other laws.

2 Detailed guidance for conducting the
3 environmental review is found in NUREG-1555, the
4 Environmental Standard Review Plan and in numerous
5 regulatory guides, Interim Staff Guidance documents
6 and internal guidance developed to address potential
7 new and significant information after the final EIS is
8 published until the Combined License is issued.

9 Next slide, please?

10 This slide shows the major parts of the
11 NRC environmental review for STP 3 and 4. Before
12 starting development of the draft EIS, the staff
13 issued a Notice of Intent to conduct scoping and
14 invite public participation.

15 Scoping provided stakeholders with the
16 opportunity to participate in determining the extent
17 of the environmental review.

18 Stakeholders include but are not limited
19 to the public, federal, state and local agencies,
20 federally recognized Indian Tribes, the Fish and
21 Wildlife Service, the National Marine Fishery Service
22 and the State Historic Preservation Officer.

23 The review team then conducted the
24 detailed environmental review that included analysis
25 of the Applicant's environmental report, audits of the

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1 proposed and alternative sites, development of
2 Requests for Additional Information and confirmatory
3 modeling and analysis.

4 It also included development of
5 independent information through interviews with
6 stakeholders, review of relevant databases and maps
7 and other methods.

8 The draft EIS summarizing the staff's
9 findings was filed with the Environmental Protection
10 Agency and issued for public comment. During this
11 comment period, the staff held two public meetings to
12 present its findings and to solicit comments.

13 The staff considered all comments received
14 and described how the comments were dispositioned in
15 Appendix E of the final EIS.

16 Next slide, please?

17 This slide shows the major resource areas
18 considered in the final EIS. To prepare for the STP
19 EIS, we assembled a team of environmental experts with
20 backgrounds in the necessary scientific and technical
21 disciplines to conduct the review.

22 The NRC contracted with the Pacific
23 Northwest National Laboratory and the Idaho National
24 Laboratory to assist in preparing the EIS. As a
25 cooperating Agency, the Army Corps of Engineers

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1 Galveston District also provided technical expertise
2 in developing the EIS which also supported the
3 evaluations necessary for its Army Corps permit.

4 Next slide, please?

5 To guide its assessment of the
6 environmental impacts of the proposed action and the
7 alternative actions, the NRC has established a
8 standard of significance for impacts based on the
9 Council on Environmental Quality Guidance in 40 CFR
10 Section 15.08.

11 We used the three significance levels of
12 small, moderate and large as defined in 10 CFR Part 51
13 Appendix B. The definitions are reproduced on this
14 slide.

15 This framework for categorizing impacts
16 helps to explain the effects of the project
17 consistently for each of the resource areas analyzed
18 in the EIS.

19 Next slide, please?

20 As detailed in the final EIS for almost
21 all resource areas, the impacts from building and
22 operating STP 3 and 4 would be small.

23 Next slide, please?

24 There were a limited number of areas where
25 the impacts were greater than small. In the

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1 socioeconomic resource area, the staff determined that
2 impacts would be small to moderate for demography and
3 infrastructure and community services during
4 construction.

5 The potential for a moderate socioeconomic
6 impact is based on the possible adverse effects from
7 construction workers migrating to the region. The
8 percentage of construction workers relocating to the
9 region likely would be small relative to the existing
10 population base except in Matagorda County where the
11 impact could be moderate. These impacts would only
12 apply during the building phase.

13 The staff's evaluation of economic impacts
14 indicate that site development would be beneficial to
15 local economies and, in Matagorda County, beneficial
16 impacts would likely be moderate while impacts
17 elsewhere would be small.

18 Many of the cumulative impacts resulting
19 from building and operation of STP 3 and 4 and past,
20 present and foreseeable future actions are small.

21 Many resource areas are small to moderate
22 or moderate when considering the cumulative impacts.
23 However, building and operating STP 3 and 4 would have
24 only small incremental contribution to these adverse
25 impacts.

1 Finally, operation and cumulative impacts
2 on the economy would be small to large and beneficial.

3 Next slide, please?

4 Andy will discuss the alternatives review
5 next.

6 MR. KUGLER: Thank you, Pat.

7 The review team evaluated the no action
8 alternative, alternative energy sources, alternative
9 system designs and alternative sites.

10 In the alternative energy analysis, the
11 review team evaluated options for the generation of
12 baseload Electrical power. For baseload power
13 sources, the review team examined alternative energy
14 sources such as coal or natural gas fueled power
15 generation and the combination of energy sources
16 including natural gas, biomass and wind coupled with
17 conservation and demand side management.

18 The staff evaluated in detail the
19 reasonable alternatives that could meet the project's
20 purpose and need which was to address the need for
21 additional baseload electrical generating capacity
22 within the Electric Reliability Council of Texas, or
23 ERCOT.

24 An alternative was not considered feasible
25 if it could not meet the purpose and need for baseload

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1 power. For the alternatives that could meet the
2 purpose and need, the review team determined that none
3 would be environmentally preferable to the proposed
4 action.

5 Conservation and demand side management
6 plans were also considered independently but were not
7 determined to be capable of meeting the baseload
8 energy supply needs.

9 The review team also evaluated alternative
10 system designs including six alternative heat
11 dissipation systems, an alternative intake, discharge
12 and water supply systems and locations.

13 The alternative system designs were not
14 environmentally preferable for a number of reasons.
15 For example, they would result in hydrologic
16 alterations of water bodies, higher levels of
17 impingement and entrainment or increased land
18 requirements.

19 Next slide, please?

20 In its site selection process, the
21 Applicant identified candidate areas within the ERCOT
22 region based on proximity to such things as
23 transmission corridors and water supply.

24 Next, the Applicant selected parcels of
25 land within the candidate areas that had sufficient

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1 space for a nuclear facility and met other screening
2 criteria such as distance to rail lines and water
3 availability.

4 Thirty-three potential sites were
5 identified. The potential sites were screened further
6 in two steps to identify the candidate sites.

7 The candidate sites were then evaluated
8 using weighting factors to ensure that the alternative
9 sites selected were among the best sites available in
10 the region of interest.

11 In addition to the STP site, the Applicant
12 identified the Red 2, Allens Creek and Trinity 2 sites
13 as alternatives.

14 These three alternative sites were then
15 considered by the review team in its evaluation. The
16 review team compared the impacts of building and
17 operating two new reactors at the STP site and at each
18 alternative site.

19 While there were differences in the
20 impacts to the various resource areas between the STP
21 site and the alternative sites, none of the
22 alternative sites were environmentally preferable to
23 the STP site.

24 That concludes my presentation. Pat will
25 now discuss the outcome of our analysis of new

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1 information.

2 Next slide, please?

3 MR. VOKOUN: Thank you, Andy.

4 The STP 3 and 4 final EIS was published on
5 February 24, 2011. At the time the final EIS was
6 completed the staff's safety review of the Application
7 was still in progress. 10 CFR 51.92 requires the NRC
8 staff to prepare a supplement to a final EIS if there
9 are substantial changes in the proposed action that
10 are relevant to environmental concerns or if there are
11 new and significant circumstances or information
12 relevant to environmental concerns that bear on the
13 proposed action or its impacts.

14 Accordingly, after completion of the STP
15 final EIS, the staff followed its process for
16 consideration of any new information to determine
17 whether a supplement to the EIS might be necessary.

18 In the case of STP 3 and 4, the staff
19 reviewed changes to the project and environmental
20 regulations. As part of this post-final EIS review,
21 the NRC staff conducted an audit of the Applicant's
22 process for identifying and assessing new information
23 in February 2015.

24 The staff performed an analysis of whether
25 information in the continued storage rule would lead

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1 to the supplementation of the final EIS as part of its
2 review.

3 Based on its consideration of new
4 information since the final EIS was published,
5 including the completion of the continued storage
6 rule, the staff found that a supplement to the final
7 EIS was not warranted.

8 Next slide, please?

9 In summary, the environmental impacts for
10 most resource are small. None of the reasonable
11 alternative energy sources, sites or system designs
12 would be environmentally preferable. And new
13 information did not affect these conclusions.

14 Next slide, please?

15 As stated in the final EIS, the staff
16 recommendation related to the environmental aspects of
17 the proposed action is that the COLs should be issued.

18 The information supporting the
19 recommendation comes from the STP 3 and 4 COL
20 Application Environmental Report, consultation with
21 federal, state, Tribal and local agencies, the staff's
22 own independent review, the staff's consideration of
23 comments received during the public scoping process
24 and the comment period on the draft EIS and the
25 assessments summarized in the EIS including the

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1 potential mitigation measures identified in the
2 environmental report and in the EIS.

3 This concludes the presentation.

4 I want to thank both panels for their
5 presentation. We'll begin questioning with the
6 Commissioner Svinicki.

7 COMMISSIONER SVINICKI: Again, thank you,
8 to both panels, witnesses, for their presentations.
9 I have two questions and I'm going to direct them,
10 both, to the staff witnesses. If the Applicant feels
11 a strong desire to, also, provide an answer, please,
12 chime in. But, I, I think they are appropriately
13 directed to the staff.

14 The first question is, in the staff, you
15 did the Applicant propose any novel environmental
16 approaches in the environmental proportion of its
17 application for impact assessments related to resource
18 areas in the FEIS, and if there were any novel
19 approaches to the environmental analysis and
20 consideration, how did the staff address any of those
21 approaches? Did you see any novelty in the
22 Applicant's approach to the assessment?

23 MS. VOKOUN: We, we did not.

24 COMMISSIONER SVINICKI: Okay. Thank you.
25 And, the staff has discussed its process for doing a

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1 new information assessment. Andrew, you, in your
2 testimony just now, talked about considerations of
3 ERCOT annual energy forecast to assess the need for
4 power, has the staff reviewed more recent annual
5 forecasts from ERCOT, as part of its new information
6 assessment, and if so, do anymore recent forecasts
7 provide a seriously different picture of the need for
8 power in the ERCOT region than the staff evaluated in
9 the FEIS?

10 MS. VOKOUN: We did review updated reports
11 and it did not present a seriously different picture.

12 COMMISSIONER SVINICKI: Okay. Thank you.
13 Thank you, Mr. Chairman.

14 CHAIRMAN BURNS: Thank you. Commissioner
15 Ostendorff.

16 COMMISSIONER OSTENDORFF: Thank you for
17 your briefs. I'm going to start out with the
18 Applicant, first. I've had a chance to go to this
19 South Texas site, a few years back, and I remember
20 seeing this very large main coolant reservoir.

21 I know that we talked to the previous
22 panels about flooding, hurricane, local intense
23 precipitation, a lot of water. I wanted to, kind of,
24 get to the other end of the spectrum. I know that
25 from time to time, you know, droughts can occur and so

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1 forth. I know, when they do happen they happen over
2 a long period of time. I'm just curious if there's
3 any concerns, or any aspects of lack of water from the
4 main coolant reservoir that you want to highlight?

5 MR. HEAD: Yes, sir. We, we used the most
6 recent Texas drought --

7 COMMISSIONER OSTENDORFF: Okay.

8 MR. HEAD: -- to watch it and observe it,
9 in real-time, and we, we looked at that and compared
10 it to our calculations that we did, regarding
11 operating of all four units in context, with our
12 environmental permits that we had for the water, and,
13 and, you know, we've confirmed that we would be able
14 to operate all four units and the conditions that we
15 saw, recently.

16 COMMISSIONER OSTENDORFF: Okay. I'm going
17 to state it to the Applicant, just, this is out of
18 curiosity, not associated with any safety
19 environmental finding, from my standpoint, but is
20 there much Shell gas exploration, or is there any
21 around the South Texas site?

22 MR. HEAD: Shell --

23 COMMISSIONER OSTENDORFF: Shell Gas,
24 actually, is there much drilling activity for Shell
25 Gas?

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1 MR. HEAD: And, maybe, I'm trying to,
2 maybe, answer a Commission question, are you asking a
3 fracking question, or just drilling, in general?

4 COMMISSIONER OSTENDORFF: Just drilling in
5 general, I guess.

6 MR. HEAD: There's some in the area, but
7 certainly nothing like the fracking that's going on --

8 COMMISSIONER OSTENDORFF: East, Eastern
9 Texas.

10 MR. HEAD: -- South of San Antonio and the
11 Eagle Ford.

12 COMMISSIONER OSTENDORFF: Okay.

13 MR. HEAD: I mean, that's where the vast
14 majority of the drilling right now, but there are gas
15 wells and oil in the area, but not, nothing like the
16 Eagle Ford.

17 COMMISSIONER OSTENDORFF: Yes. Okay.

18 MR. HEAD: I'm sorry, did that answer your
19 question?

20 COMMISSIONER OSTENDORFF: No, no, it did.
21 I was just curious. I just, you know, couldn't
22 recall. Thank you, very much. I have no further
23 questions. Thank you.

24 CHAIRMAN BURNS: Commissioner Baran.

25 COMMISSIONER BARAN: Thanks. I have a few

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1 questions for Staff. And my first question, really,
2 is a follow-up to Commissioner Ostendorff's question
3 about drought.

4 In response to prehearing questions, the
5 staff and Applicant stated that the environmental
6 impacts from the record-setting recent drought in
7 Texas were bounded by the extreme drought of the 1950s
8 in Texas. So that's, primarily, kind of, a backward
9 looking review at historical droughts. I want to ask,
10 how we consider future changes.

11 The 2014 National Climate Assessment
12 included detailed discussions and projected climate
13 change impacts in different regions of the country.
14 For example, the National Assessment found that large
15 parts of Texas and Oklahoma are projected to see
16 longer dry spells, up to five more days, on average,
17 by mid-century.

18 The National Assessment also stated "the
19 trend toward dry day, more dry days and higher
20 temperatures across the South, will increase the
21 evaporation, decrease water supplies, reduce
22 electricity transmission capacity and increase cooling
23 demands.

24 These changes will add stress to limited
25 water resources and effect management choices, related

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1 to irrigation and municipal use and energy
2 generation."

3 How does the staff's analysis of
4 environmental impacts from Units 3 and 4 take into
5 account the effects of climate change that are
6 expected to occur, during the multi-decade lifetime of
7 the plant?

8 MS. VOKOUN: I'm going to ask Stacy
9 Imboden to come to the mic and ask some questions
10 about that.

11 CHAIRMAN BURNS: Okay, again, identify
12 yourself and your position and would you confirm
13 whether you've been put under oath.

14 MS. IMBODEN: Oh. Stacy Imboden. I'm a
15 Senior Project Manager in NRO's Division of Site and
16 Environmental Analysis, and yes, I've been sworn in.

17 CHAIRMAN BURNS: Okay. Proceed.

18 MS. IMBODEN: The Staff looked at climate
19 change, specifically, climate change impacts, on the
20 resources that are also impacted by the project.
21 Throughout the EIS, we referenced the work of the
22 Global Change Research Program, which you had also
23 mentioned, Commissioner, and for the areas of, like,
24 water quality, evaporation, drought, those would have
25 been referenced in the operational impacts chapter.

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1 Perhaps, Mohammad might want to speak more to that,
2 because he looked at that, specifically.

3 MR. HAQUE: Okay.

4 MS. VOKOUN: Mohammad Haque, do you have
5 anything to add?

6 CHAIRMAN BURNS: Again, state your name,
7 your position, and confirm whether you've been put
8 under oath.

9 MR. HAQUE: My name is Mohammad Haque and
10 I was sworn in this morning. I'm a Senior Hydrologist
11 with the Office of New Reactors.

12 CHAIRMAN BURNS: Okay, please proceed.

13 MR. HAQUE: Basically, you know, I am
14 talking about the drought in this, 2010's drought that
15 was one of the pretty intense drought, however, it is,
16 kind of, difficult to compare one drought with the
17 other drought, because drought severity depends on its
18 intensity and duration. And so different duration
19 droughts have different effects.

20 And if it, say, a short duration drought,
21 it will have more effect on the agriculture users.
22 And if, really, the drought duration is longer, as was
23 in the 50s, which is the drought of the record, it
24 starts impacting the water supply resources, so it has
25 effect on the water supply side of it.

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1 In terms of the, I think the climate
2 change in hydrology, as such that we are talking
3 about, we are talking statistically, based on the
4 record that we have, you know, in this case, the flow
5 record in the, basically, gauge, which is the nearest
6 gauge, and we looked at the flows in the river and on
7 the record that what has been, and that's all we look
8 at.

9 COMMISSIONER BARAN: So let me ask --

10 MR. HAQUE: And the --

11 COMMISSIONER BARAN: -- a follow-up
12 question there. So, so with respect to drought, say,
13 we're looking at the, kind of, worse droughts in
14 recent, or more extended history.

15 We had the recent drought of 2010/2011.
16 There was a 1950s drought. When you look at the
17 expected, kind of, intensity and duration of droughts,
18 is that purely a backward looking analysis, or do you
19 factor in that, if this plant isn't constructed in a
20 few years and, for a few years, and then, it has a
21 40-year lifetime that we're talking about 2050, 2060,
22 potentially, and by that time, there could be
23 significant changes to what would today be, kind of,
24 a more extreme drought, is that factored into the
25 analysis, at all?

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1 MR. HAQUE: Yes. Because when we're
2 saying, you know, if, let's look at it in two ways.
3 One is that the drought, meaning that the, the loss of
4 rainfall and that translates into the river flow, so
5 when we look at the record that gives you certain
6 chance of occurrence, statistically speaking.

7 And so in the 50s' drought was the drought
8 of record, and in our evaluation that, what impact it
9 may have on the water users and the water supply
10 system, we looked at that particular that this is the
11 worst drought that could occur, because that's the
12 historical record. If you will ask that, if any worse
13 than that could occur, yes, it could occur. We don't
14 know, so --

15 COMMISSIONER BARAN: And is that the
16 potential for something worse than the historically
17 worse drought, is that something that's discussed in
18 the EIS, at all? I mean, particular to climate
19 change, not just because it's always possible that
20 something in the future be worse than the past, but
21 given the significance scientific evidence of the
22 changes we'll see, particular to that region, over the
23 coming decades, is that factored in to the analysis in
24 a concrete way?

25 MR. FLANDERS: Okay.

1 COMMISSIONER BARAN: Hi Scott.

2 MR. HAQUE: Scott would, would comment on
3 that subject.

4 CHAIRMAN BURNS: Scott, just identify
5 yourself, we know you've been sworn in.

6 MR. FLANDERS: Okay. Scott Flanders,
7 Director of Division Site Safety and Environmental
8 Analysis. I would say, as Mohammad was explaining
9 that, we do consider past information, in terms of
10 looking at a drought.

11 We do consider, as Stacy mentioned, the
12 forecast and all considerations about potential
13 changes, or effects, in climate, climate change. And
14 in our climate change analysis, we do look at the
15 cumulative impacts associated with climate change and
16 factor in the changes in population, changes in
17 potential uses of water, industries in the area, and
18 factor that in to some kind of baseline conditions
19 that we would consider as a part of climate change
20 condition.

21 However, it is somewhat challenging when
22 you're doing that type of evaluation, given the
23 uncertainty around climate change and making those
24 types of predictions, so we have to try to ground it
25 in some level of information that we can rely on,

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1 which is, as Mohammad talked about, the past
2 information, as well as forecasting and looking at it
3 from a cumulative impact standpoint.

4 COMMISSIONER BARAN: Okay. Thank you.
5 Thank you, Mr. Chairman.

6 CHAIRMAN BURNS: Okay, thank you. A
7 couple of questions, I think, primarily, for the
8 Staff, from my standpoint. I understand that the U.S.
9 Army Corps of Engineers was a cooperating agency on
10 our environmental impact statement.

11 How, given that, how do the environmental
12 findings that we make different from the Corps'
13 determination of a least environmental damaging
14 practical alternative, is this just semantic, merely
15 semantic, or is there a difference in the quality of
16 our finding versus that finding?

17 MS. VOKOUN: There's not a difference in
18 quality, per se, it's just a different measure they
19 are looking at, often, wetlands and waters and they're
20 looking for the least damaging and environmentally
21 preferable. I'm going to let Andy speak to that, a
22 little bit, but it's just a different measure, but
23 it's not worse, or better.

24 CHAIRMAN BURNS: Okay.

25 MR. KUGLER: Yes, I tend to agree with

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1 what Pat said. That, there's really, maybe, a bit of
2 a difference in focus. The Corps is very focused on
3 wetlands and waters in the United States, but they do
4 look at other environmental factors, as well.

5 We've looked at it and we've actually
6 talked a lot with the Corps. There are a lot of
7 similarities, really. They're more similar than
8 different.

9 When you look at the term least
10 environmentally damaging practical alternative, what
11 they're saying is, first it's got to be practical,
12 it's got to be something you can do. And then, you
13 look to see, what is the least environmentally
14 damaging of those?

15 Our process is laid out a little
16 differently, but it's going to lead you, pretty well,
17 to the same place, because what we do is we look for,
18 you know, what, is there a site that has less
19 environmental impact?

20 And, of course, the sites we're looking
21 at, we have to determine are sites they could actually
22 build at, well that's part of the guidance we give the
23 applicants and something we look for, so it has to be
24 a place you could actually build. It has be
25 practical.

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1 And then, we're looking to see if there's
2 a site that would be clearly environmentally better,
3 and if there's not, which is what we concluded here,
4 then the proposed site prevails. So in the end, they
5 lead you to the same place. They're really pretty
6 similar.

7 CHAIRMAN BURNS: Okay. Thank you. Just
8 for a point of information, when you talked about the
9 alternative sites that were looked at, you mentioned
10 Alan's Creek, I presume this is a site that was
11 actually under consideration in the 1970s for a
12 potential site?

13 MR. KUGLER: Yes that's correct. The
14 associated reservoir has never been built --

15 CHAIRMAN BURNS: Okay.

16 MR. KUGLER: -- so they would have to
17 build a reservoir at that location. But it was a site
18 that was considered previously, yes.

19 CHAIRMAN BURNS: Okay. Thanks. With
20 respect to, we had one potential endangered species
21 issues here, is a bird species that had been sighted
22 in Matagorda County.

23 The Rufa Red Knot, was listed as
24 threatened, by U.S. Fish and Wildlife Service, earlier
25 this year. Although, I think, in response, maybe have

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1 the Applicant confirm, I think, in response to
2 prehearing questions, the Commission indicated it had
3 not been seen on the South Texas site, itself, is it
4 correct?

5 MR. HEAD: That's correct.

6 CHAIRMAN BURNS: Yes. As a consequent,
7 you know, I think, the evaluation is a potential for
8 occurrence of the species on site is low, with no
9 impacts, participated during construction, or
10 operation.

11 That's my question to the Staff and,
12 perhaps, the Applicant, is, what obligations, if any,
13 are there, with respect to, if the bird is seen on the
14 site, is there notification that has to be made to the
15 Fish and Wildlife Service, or what, what are the
16 implications of that? I'll start with the Staff and
17 Applicant may have --

18 MS. VOKOUN: Yes, if it were to be seen,
19 first, I would say that the Rufa Red Knot is a shore
20 bird and its habitat is, the closest is 15 or more
21 miles away, so it's highly unlikely that that would
22 happen and has not been seen, as you mentioned. But
23 there are notification requirements to Fish and
24 Wildlife, as well as, to us, I believe.

25 CHAIRMAN BURNS: Okay.

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1 MS. VOKOUN: So --

2 CHAIRMAN BURNS: Do you have anything to
3 add to that, Mr. Head?

4 MR. HEAD: Yes, I think our appendix would
5 be, that came with the license, would require us to
6 report that.

7 CHAIRMAN BURNS: Okay. All right, thanks.
8 Let's see if -- oh, I think that's, that's it for me.
9 Thanks. So that concludes our, our environmental
10 panel. I think we'll take a very brief break to
11 allow, we're coming to the point of closing statements
12 from the Applicant and the Staff, so we can break
13 briefly here to get the table set for our final
14 speakers, and then we'll proceed with the closing
15 statements.

16 (Whereupon, the foregoing matter went off
17 the record at 3:33 p.m. and went back on the record at
18 3:38 p.m.)

19 CHAIRMAN BURNS: We'll resume. And at
20 this portion of the proceeding, we'll have closing
21 statements. Actually, we'll begin with the Applicant,
22 so we'll do the NRC shuffle one more time here.

23 MR. MCBURNETT: All right.

24 CHAIRMAN BURNS: You feel like Moses back
25 there, right?

1 MR. MCBURNETT: It's hard to see here.
2 All right, all right, very good. I have a just a
3 short couple of comments I wanted to add and really
4 hit, coming back to a question I was asked earlier,
5 about the impacts and the impacts on Texas and I
6 addressed it from a Matagorda County standpoint, but
7 to step back, because we have looked, you know, beyond
8 that, and then what's happening, which Texas is
9 growing, the economy is growing, the electric demand's
10 growing.

11 We look at what the ERCOT, the Energy
12 Reliability Council of Texas, says and they do
13 predictions and publish about once every six months.
14 They're showing an increasing demand of requirement
15 for 10,000, about 10,000 new megawatts, in the next
16 ten years.

17 And that does not include any early
18 retirements of plants for, either environmental, or
19 energy policy reasons, particularly, the clean power
20 plant, or, you know, such things. So, you know,
21 clearly, there's a strong demand for new generation
22 coming in Texas.

23 You know, we look at it as NINA, and as
24 our owners, from an energy diversity standpoint, if a
25 fuel supply diversity is a strategy, you know, we

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1 didn't predict that in 2006 the gas prices would be
2 where they are today, and we really don't believe that
3 we can predict, accurately, you know, well into the
4 future, it's just that the history doesn't support it.

5 We haven't, the things like the liquefied
6 natural gas export facilities that are all under
7 construction on the Texas coast and we, you know,
8 what's the impact? Well, we know what the EIA tells
9 us, but, you know, we know one thing about future
10 predictions, they're typically wrong.

11 So having the combined license really
12 gives us the ability to act on, you know, that
13 opportunity when it comes to us. So we look at when
14 we started eight years ago, to start at eight years to
15 get a license and then another five, or six, or so to
16 build it.

17 That's just too long a time horizon,
18 putting us in a position where we already have a COL
19 in hand, then a time horizon for construction and
20 putting it in service is, you know, five to
21 seven-year, is kind of a number that's much more
22 reasonable in planning times.

23 The other, just on impacts, we did, we did
24 do some studies back in the 2010 time frame, this was
25 for marketing purposes, so, you know, consider the

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1 source on it, but it's business development and
2 marketing.

3 But we did look at the, you know, what's
4 the impact of building these units in Texas, during
5 construction? A \$15 Billion Dollar incremental
6 spending stimulus impact from construction that's the
7 flow down through the economy of the construction
8 activity, relating to about 90,000 person years of
9 employments.

10 During construction, about \$500 Million
11 Dollars in state and local revenue generated.
12 Annually, during operation, about \$200 Million Dollars
13 in state and local revenue generated.

14 And, just again, the flow down in
15 permanent jobs, about \$8,000. I mean, look at what
16 the impacts are of building one of these projects,
17 it's a big impact on the overall economy of the, of
18 the State. That concludes my remarks.

19 CHAIRMAN BURNS: Okay. Thank you, Mr.
20 McBurnett. Dr. Uhle, do you want to start, or begin
21 the Staff's closing? You know, probably, would be a
22 good idea to introduce yourselves again.

23 DR. UHLE: Okay. Thank you, Chairman. My
24 name is Jennifer Uhle, I'm the Director of the Office
25 of New Reactors. To my right is Gary Holahan, the

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1 Deputy Director of the Office, and Frank Akstulewicz,
2 to the right of Gary is the Director of the Division
3 of New Reactor Licensing, and Mark Delligatti, to my
4 left, is the Deputy Director of the Division of New
5 Reactor Licensing.

6 So again, we thank you for the opportunity
7 to speak today. In the Staff's paper to the
8 Commission, pertaining to this mandatory hearing and
9 in the Staff's final Safety Analysis Report, or Safety
10 Evaluation Report and final Environmental Impact
11 Statement and in our presentations to you, during this
12 hearing, we believe we've provided an adequate basis
13 for making the necessary findings set forth in 10
14 C.F.R. 5297 and 10 C.F.R. 51.107, to support the
15 issuance of the combined licensees for South Texas
16 projects Units 3 and 4.

17 In this hearing today we've described why
18 the Staff's review of the application has been
19 thorough and complete. The review was appropriately
20 focused by finality, accorded to issues within the
21 scope of the ABWR design certification.

22 We discussed the relevant information
23 incorporated, by reference, from the ABWR design and
24 basis information submitted to justify the licensee's
25 deviations and exemptions.

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1 The Staff has demonstrated the
2 thoroughness of our review, in part, through its
3 reliance on staff guidance and interactions with the
4 ACRS. The ACRS agrees with the Staff's conclusions
5 that the combined licenses for the South Texas project
6 Units 3 and 4 should be issued.

7 Today, we highlighted certain aspects of
8 our safety review and environmental review. We
9 explained the Staff's conclusion that the Applicant's
10 successfully addressed mitigating strategies for
11 beyond design basis events.

12 We explained how the Staff analyzed
13 departures and exemptions. We explained the Staff's
14 evaluation of the design basis flood for the South
15 Texas project site.

16 We explained the Staff's review of the
17 qualifications of Toshiba, as the ultimate vendor for
18 the certified BWR design. We explained how the staff
19 verified that the Applicant addressed the concerns
20 identified with Bulletin 2012-01, or the Byron open
21 phase electrical issue.

22 During the last Staff Expert Panel, we
23 highlighted our process for compliance with the NRC's
24 NEPA Regulations, specified in Part 51, and other
25 applicable environmental statutes, as well as our

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1 appropriate interactions with other government
2 agencies and the public.

3 We are similarly confident that, through
4 the ITAAC process, the construction reactor oversight
5 process, inspections of construction activities,
6 inspections of operational programs, and oversight of
7 the transition from construction to operation we will
8 be able to confirm that the plant has been constructed
9 and will operate in conformance with the license, the
10 Atomic Energy Act, and the Commission's regulations.

11 The Applicant understands the necessity of
12 complying with requirements and also understand what
13 needs to be done, if any noncompliance is discovered,
14 including determining the safety significance, yet,
15 determining operability, the extent of condition, and
16 taking prompt, corrective action to restore
17 compliance.

18 In those instances in which we relied on
19 commitments, we've done so in accordance with the
20 Commission's commitment policies and practices. We
21 have verified that there's an established process, by
22 which the licensee maintains commitments and
23 implements changes, and we, of course, oversee those
24 changes, if any are made.

25 The Staff appreciates the opportunity to

1 present to the Commission today, the results of our
2 thorough and complete review. And this concludes
3 Staff's presentation.

4 CHAIRMAN BURNS: Okay. Thank you, very
5 much. Before we take any closing remarks from the
6 Commissioners, are there any final questions any of my
7 colleagues have, at this point?

8 (No Response)

9 CHAIRMAN BURNS: Okay. With that, I think
10 we'll begin with Commissioner Ostendorff.

11 COMMISSIONER OSTENDORFF: Thank you. A
12 couple words of thanks, for the Applicant. NINA, I
13 want to commend you and your team for the hard work,
14 the high quality of your submittal and the
15 professional conduct you interfaced throughout the
16 entire time you've been dealing with our staff, it's
17 been noted in a very positive way.

18 (Off the record comments.)

19 COMMISSIONER OSTENDORFF: For our staff,
20 I want to thank you, again, for all, and a lot of
21 people here in various offices, obviously, NRO, but
22 lots of other offices across the entire agency,
23 supporting efforts, for the professionalism of your
24 work effort.

25 It's, I think, we were very well-prepared

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1 for this meeting today. I thank the Staff, I also
2 thank Brook Clark and OCAA, for their work the last
3 several months, in particular, to get us ready for
4 this, with prehearing questions and the responsiveness
5 from that group. Also, I thank the Advisor Committee
6 and Reactor Safeguards.

7 Obviously, this is a sufficiency hearing.
8 That's what our goal is, not to go through and do a
9 detailed SlideRule analysis of different calculations,
10 but rather to assess the status of our staff's review
11 of the license application and their recommendations.

12 I note that, if I'm correct, I think every
13 question that was asked today, was answered, either by
14 the Applicant, or by the Staff, and I think that's
15 important to recognize the professionalism on
16 everybody's part. And I think, going forward, the
17 Commission has a very solid foundation upon which to
18 make a decision, so thank you, all.

19 CHAIRMAN BURNS: Okay. Commissioner
20 Baran.

21 COMMISSIONER BARAN: Well I just want to
22 echo Commissioner Ostendorff's thanks to, both, the
23 Staff and the Applicant. Thank you, to the Staff,
24 again, for all of your hard work over many months and
25 years on this, on this review.

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1 And from my point of view, at least, I
2 thought the high-level of preparation by, both, the
3 Staff and NINA, for today's hearing was really
4 demonstrated and obvious, throughout the day, so I
5 think it's been a valuable hearing and, thank you.

6 CHAIRMAN BURNS: And I'll like the
7 comments of my colleagues and add my thanks to OCAA
8 and, as well as, the Office of the Secretary, for a
9 lot of behind the scenes work to help us and keep me,
10 sort of, on the right track, in terms of conducting
11 the proceeding and, also, providing the background.

12 And, again, to, I think, the Applicant and
13 to the Staff, a lot of work. I echo what Commissioner
14 Svinicki said, at the beginning of the hearing that we
15 are taking, sort of, a surface dive here and there
16 into different aspects of the proceeding.

17 But, the much work, much documentation
18 really goes into the consideration of application and
19 the evaluation, which we can only, you know, begin to
20 begin to touch in the hearing today.

21 But, again, that's the purpose of this, is
22 the, as a general overview and a sampling that we can
23 do of areas of interest to us. I'll have some final
24 procedural things to do, but I'll turn to Commissioner
25 Svinicki.

1 COMMISSIONER SVINICKI: Well, when I
2 reflect upon the comments and questions I've asked
3 today and the comments made about comments I've made,
4 I wonder if, perhaps, I should dispel any lingering
5 view that I lack the requisite reverence for the
6 seafaring traditions of the U.S. Navy.

7 I do not. And, again, you know, spending
8 money like a drunken sailor has its roots in history.
9 Sailors, as I understand it, I'm sure that
10 Commissioner Ostendorff is ready to correct me and
11 probably has his microphone on, would receive their
12 wages at sea and had nothing to spend them on, so when
13 they got into port they, you know, went about, kind
14 of, spending money in a way that the citizens thought,
15 oh they're just spending all their money.

16 So in any event, it's a much, much broader
17 and so I do have great respect for the naval
18 traditions and for all seagoing and seafaring people
19 of the world.

20 (Laughter)

21 COMMISSIONER SVINICKI: I don't know, let
22 me just cover myself and from one side to the other
23 there. I share Commissioner Ostendorff's observation
24 that there wasn't a single topic that was raised and
25 Commissioners are good at finding the topics that are,

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1 kind of, strange and only tangentially related.

2 For both, the Applicant and the Staff,
3 there wasn't anything that we raised that there wasn't
4 someone at the ready to come to the, either someone at
5 the table, already, or someone ready to come to the
6 microphone.

7 And, again, I return to my view that, I
8 think there's many things to doubt in life, but the
9 thoroughness and rigor of the review that is done, I
10 reside great confidence in the NRC processes and the
11 people behind them, so today, as I reflect on it, is
12 just a demonstration of why the Staff holds my high
13 confidence in that way.

14 And to the Applicant, I state that we
15 don't get to today, unless you have similar experts
16 and professional individuals, who support this
17 extremely meticulous and rigorous NRC review, so
18 again, appreciation and accommodation for all of the
19 many tens of thousands of hours of work done by the
20 Applicant and the contractor supporting the Applicant.

21 I'll just close by saying I agree with
22 Commissioner Ostendorff that we both have and have
23 added to today a very solid record for the Commission
24 to conclude its deliberations and make a decision.
25 Thank you.

1 CHAIRMAN BURNS: Okay. Thank you,
2 Commissioner. And some brief procedural notes, with
3 respect to the proceeding. There will, we have the
4 possibility, as a Commission, to provide, or ask you,
5 some post-hearing questions.

6 The anticipation is that the Secretary
7 will issue an order with post-hearing questions on, or
8 about, November 30th this year. If it's on November
9 30th, the deadline for response would be December 7th.

10 There is, also, a transcript being taken,
11 has been taken of the proceedings here today, and we
12 anticipate that an order seeking transcript
13 corrections, if any, to be issued on, or about,
14 November 24th, with a request to reply with any
15 corrections by December 3rd.

16 I note, today, there was no objection to
17 the admission of, either, exhibits and evidence, nor
18 today the testimony of any particular individual, who
19 testified as one of the panels, or who came up in
20 support of, or came in to supplement some of the
21 answers that were posed, so we don't need to deal with
22 resolving objections, in that regard.

23 And finally, when we receive the final
24 submissions, in terms of, particularly, in terms of
25 the post-hearing questions, we will take this matter

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1 under advisement and we will expect to issue a final
2 decision promptly, with due regard to the complexity
3 of the issues.

4 Again, we thank you, who are here today,
5 in this room. And those of you, who have monitored
6 the proceedings online, we hope you have found this
7 informative today. And with that, we stand adjourned.

8 (Whereupon, the hearing in the above-
9 entitled matter was concluded at 3:54 p.m.)

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
)
NUCLEAR INNOVATION NORTH AMERICA, LLC) Docket Nos. 52-012-COL and 52-013-COL
)
)
(South Texas Project, Units 3 and 4))
(Mandatory Hearing))

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[Original signed by Brian Newell _____]
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Dated at Rockville, Maryland
this 23rd day of November, 2015