

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

**(Adopting Proposed Transcript Corrections, Admitting Post-Hearing Exhibits,
and Closing the Record of the Proceeding)**

The Commission held an evidentiary hearing on the uncontested portion of the captioned proceeding at its Rockville, Maryland headquarters on November 19, 2015. The parties have provided proposed transcript corrections, in accordance with the deadline previously set. The transcript corrections identified in Appendix A to this order are adopted. Appendix B to this order contains a revised hearing transcript that incorporates all of the adopted corrections.

In addition, the parties have submitted responses to post-hearing questions. As directed, these responses were filed as new exhibits, using the previously-established numbering scheme. Neither party objects to the admission of these new exhibits. Therefore, exhibits NRC-016 and STP-016 are admitted into the evidentiary record.

The adoption of transcript corrections and the admission into evidence of the new exhibits completes the procedural activities that remained pending at the conclusion of the mandatory hearing. The record of the uncontested portion of this proceeding is closed, effective as of the date of this Order.

This order is issued pursuant to my authority under 10 C.F.R. § 2.346(a) and (j).

IT IS SO ORDERED.

For the Commission

NRC SEAL

/RA/

Annette L. Vietti-Cook
Secretary of the Commission

Dated at Rockville, Maryland,
this 21st day of December, 2015.

APPENDIX A: Changes to the Transcript for the South Texas Mandatory Hearing
November 19, 2015

Page	Line	Correction
1	22	replace "KRISTIN" with "KRISTINE"
2	14	replace "STACY" with "STACEY"
2	21	insert "the" before "General Counsel"
2	8&9	replace "Director, Office of International Programs" with "General Counsel"
3	4	replace "ORplacementffice of New Reactors" with "Office of Nuclear Reactor Regulation"
6	9	replace "this" with "his"
6	12	replace "in" with "his"
6	15	replace "U.S." with "USS"
6	16	delete "on"
6	18	replace "in" with "on"
7	20	replace "engrave" with "engraved"
8	7&8	after "hearing" delete the period and continue the sentence "on its application filed..."
8	9	delete "th" after "20"
8	9	insert comma after "2007"
8	10	insert comma after "4"
8	11	capitalize "electric" and "generating"
9	19	delete "into - "
9	24	delete "(1)"
10	2	insert a comma after "52.97"
10	16	capitalize "(a)", "(c)", and "(e)"
10	21	insert "of this" before "proceeding"
10	21	replace "few" with "view"
10	22	change the period after "taken" to a semi-colon, and change "Determined" to "determine"
10	25	replace the semi-colon after "alternatives" with a comma
11	13	insert "are" after "order"
11	14	replace "Cole" with "Koehl"
12	7	replace "provide" with "indicate"
12	12	replace the period after "admitted" with a question mark
12	22	delete "so"
12	10&11	delete "let me -- "
12	5&6	delete "to read for the respective"
13	24	replace "Phida" with "Pohida"
14	4	replace "Tariff" with "Tardiff"
14	17	insert "we let" before "some"
14	17	delete "maybe"
14	18	delete "take -- "
15	8	replace "Stacy" with "Stacey"

15	12	replace "McCoffin" with "McCoppin"
15	13	replace "What" with "Where"
15	13	replace "McCoffin" with "McCoppin"
16	4	replace "witnesses" with "witness"
16	21	replace "STP" with "NRC"
17	8	replace "STP" with "NRC"
18	4	replace "Martin" with "Mark"
19	6	replace "his" with "its"
19	16	replace "Artoro Konecko (phonetic)" with "Itaru Kaneko"
20	5	replace "as" with "and is"
20	15	replace "as" with "was"
20	16	replace "dratting" with "drafting"
23	5	replace "Services" with "Service's"
24	8	insert "the" after "supporting"
27	23	replace "a" with "the"
28	19	delete the comma after "addition" and replace "under" with "to"
28	23	replace "load" with "mode"
29	1	insert "the" before "STP"
29	7	insert "the" before "existing"
29	8	replace "election" with "selection"
31	14	replace "function" with "functional"
33	17	replace "ultimate" with "alternate"
33	19	replace the comma after "fleet" with a period; replace "in" with "The"
33	23	delete "of the"
34	7	replace "this" with "the"
34	14	replace "Sogo" with "Isogo"
35	21	replace "embrace" with "embraced"
36	7	replace "cogeneration" with "generation"
37	10	replace "has" with "had"
37	12	replace "they" with "you"
38	23	replace "issued" with "issues"
39	21	replace "J-Powers" with "J-Power"
42	9	replace "MR. HEAD" with "MR. McBURNETT"
42	11	replace "further" with "fairly"
42	19	replace "population's" with "population is"
44	9	delete "But yeah."
44	14	delete "But others," and capitalize "we"
46	24	replace "our" with "your"
49	12	insert "have" after "essentially"
50	5	insert "the" before "financial"
52	7	insert "Mr." before "Akstulewicz"

53	18	delete the period after “professionals” and continue the sentence, changing “For” to “from”
55	14	delete “and” after “emergency”
57	4&5	delete the comma and “the” after “Project” and capitalize “nuclear operating company”
58	8	replace “Ed, next slide” with “Can I have the next slide?”
63	15	replace “might be inimical” to “will not be inimical”
63	18	replace “report” with “paper”
64	21	insert “agency” after “cooperating”
70	16	insert “presenting” before “information”
70	18	replace “in” with “and”
74	22	replace “a value” with “evaluated”
75	15	replace “Svnicki” with “Svinicki” [and throughout the rest of the transcript]
76	14	replace “in” with “and”
77	4	replace “Svincki” with “Svinicki” [and throughout the rest of the transcript]
78	4	replace “hear” with “heart”
79	11	replace “AP-1000” with “AP1000”
79	17&18	replace “operating experience as a result. The” with “experience. As a result, the”
80	19	delete the comma
81	3	replace “KKK” with “Mr. Frank Akstulewicz”
81	18	replace “that” with “the”
82	14	replace “while” with “whole”
85	10	replace “the” with “this”
85	23	replace “construction” with “constructed”
86	7	replace “Regulation in” with “Regulation during”
86	25	replace “could have it” with “could have done it.”
87	18	change the question mark to a period
88	25	change “most of you have Frank who gives you the same answer.” to “and see if Frank gives you the same answer.”
95	8	replace “Section 3” with “Section III”
95	12	replace “Section 8 with “Section VIII”
95	15	replace Section 8” with “Section VIII”
95	19	replace “30” with “130”
101	20	replace “detail” with “detailed”
101	25	replace “to” with “of”
102	13	add an a “s” to “platform”
102	18	replace “additional” with “digital”
103	4	replace “AP-1000” with “AP1000”
103	12	replace “and” with “in”
103	14	replace “50.55(a) (H)” with “50.55a(h)”

103	18	replace "addresses" with "address"
104	1	add an "s" to "Request"
105	20	replace "SFAS with "ESFAS"
106	13	replace "AP-1000" with "AP1000"
109	19	replace "7(d)(s)-1" with "7DS-1"
113	1	delete "already"
114	9	replace "expertises" with "expertise"
114	14	replace "STP, NOC" with "STPNOC"
115	1&2	make "rule making" one word
116	15&16	replace "need a" with "such as"
119	18	replace "starting" with "start"
120	4	replace "CHAIR BURNS" with "CHAIRMAN BURNS" [and throughout the rest of the transcript]
121	8	after "strategies" replace "in" with "and"
121	16	insert "are" after "sources"
127	22	replace "RCICs use" with "RCIC uses"
128	22	replace "load-shuttling " with "load shedding"
129	12	insert commas after "cooling" and "containment"
129	25	remove the "a" before "fuel"
132	25	replace "question" with "questions"
135	21	delete "Neither" and capitalize "the"
135	6&7	replace "perspective" with "prospective"
136	13	replace "to" with "that" before "leverage"
136	13	insert "It" before "done"
139	17	replace "used" with "views"
142	13	delete "the" before "STP"
142	14	replace "designed" with "design"
142	18	hyphenate "site specific"
145	21	delete "reason"
146	13	replace "instance" with "incident"
148	13	insert "this" before "thing"
150	9	replace "I" with "we"
159	3	insert "and" after "parameter"
159	13	replace "and" with "an"
159	19	replace "is" with "it's"
160	4	replace "52.73a" with "52.73(a)"
160	21	replace "qualifications and alternate vendor" with "qualification as an alternate vendor"
161	23	replace "an" with "any"
163	10	replace "52.73a" with "52.73(a)"
163	20	insert "on" before "or"
163	21	insert "a" before "particular"

166	1	replace "ECCs" with "ECCS"
166	3	replace "As" with "And"
166	23	replace "reservoirs," with "reservoir as"
166	24	replace "the established in" with "establishing"
167	13	replace "PI group" with "PRA group"
168	7	replace "Section 2.4S10" with "Section 2.4S.10"
170	25	replace "was" with "were"
171	2	replace "recast any" with "recasting"
179	21	replace "MR. HEAD" with "MR. THOMAS"
180	24	insert paragraph break after "time."
180	24	insert "CHAIRMAN BURNS" as speaker before "And,"
181	12	replace "regulating" with "regulatory"
182	2	replace "worst to meteorology, 99 percentile" with "worst meteorology, 95 percentile,"
182	3	replace "air" with "F"
182	3	insert "which" before "doesn't"
182	17	replace "one activity" with "some uncertainty"
182	17	replace "really below one" with "a little below one"
183	18	delete "a" before "tornado"
183	18	replace "10 ⁷ " with "10 ⁻⁷ "
183	20	insert a comma after "times"
183	22	replace "10 ⁷ " with "10 ⁻⁷ "
183	23&24	replace "there is logic to latitude to degree boxes" with "there are longitude by latitude two degree boxes"
185	12	replace "plan" with "plant"
186	3	insert a comma after "panel"
186	3	replace "their" with "your"
186	16	insert a comma after "Applicant"
186	21	replace "it" with "he"
190	9	insert "and" after "identified,"
191	21	replace "Fishery" with "Fisheries"
193	10	replace "15.08" with "1508"
193	20	insert a comma after "EIS"
194	24	insert "a" after "only"
196	11	replace "an" with "and"
198	3	replace "MR." with "MS."
200	4	insert "CHAIRMAN BURNS:" at the beginning of the line
200	14	replace "in the staff, you" with "in the staff's view,"
200	23	replace "We, we" with "No, we"
201	6	replace "anymore" with "any more"
202	20,22,23,24	replace "shell" with "shale"
205	8	replace "Stacy" with "Stacey"

205	9	replace "ask" with "answer"
205	14	replace "Stacy" with "Stacey"
208	17	replace "worse" with "worst"
208	20	insert "could" before "be"
208	21	replace "significance" with "significant"
210	13	replace "environmental" with "environmentally"
210	14 & 15	replace "semantic" with "semantics"
212	21	delete "is"
212	23	delete comma after "Knot"
212	24	delete comma after "threatened"
212	24	delete comma after "Service"
213	2	delete the comma after "questions" and insert the word "from"
213	3	replace "it" with "that"
213	6	replace "consequent" with "consequence"
213	9	replace "participated" with "anticipated"
213	12	delete "is,"
214	4	replace "appendix would be" with "Appendix B"
215	8	delete "which" after "happening,"
217	15	replace "\$8,000" with "8,000"
217	21	insert "it" before "probably" and remove the comma
218	8	delete the comma after "Commission"
218	14	replace "5297" with "52.97"
219	9	replace "Applicant's" with "Applicant"
219	17	replace "ultimate" with "alternate"
220	14	replace "significance, yet" with "significance of it"
221	1	delete the comma after "today"
221	15	replace "interfaced" with "demonstrated"
221	16	change comma to period; capitalize "its"
221	18	delete "(Off the record comments.)"
221	25	delete hyphen from "well-prepared"
222	2	replace "Brook" with "Brooke"
222	5	replace "Advisor" with "Advisory"
222	6	replace "and" with "on"
223	6	insert comma after "I'll"
223	7	insert comma after "colleagues" and delete "and"
223	8	delete "and"
223	8	delete comma after "as"
223	13	insert "for" before "a"
223	14	remove comma after "said"
223	14	add comma after "hearing"
223	17	delete "the"
223	19	add comma after "to"

225	18	replace "accomodation" with "commendation"
226	8	insert "of" after "30th"
226	21	replace "posed" with "provided"

APPENDIX B: Corrected Transcript
November 19, 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

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

+ + + + +

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

KRISTINE L. SVINICKI

ALSO PRESENT:

ANNETTE L. VIETTI-COOK, Secretary of the Commission

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NRC STAFF PRESENT:

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

CLINTON ASHLEY, Office of New Reactors

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

ANTONIO DIAS, Office of New Reactors

MARGARET M. DOANE, General Counsel

SCOTT FLANDERS, Office of New Reactors

MOHAMMAD HAQUE, Office of New Reactors

BRAD HARVEY, Office of New Reactors

GARY HOLAHAN, Deputy Director, NRO

STACEY IMBODEN, Office of New Reactors

HENRY JONES, Senior Hydrologist, NRO/DSEA/RHM1

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

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

MARIE POHIDA, Office of New Reactors

SHEILA RAY, Senior Electrical Engineer, NRR/DE/EEEB

MICHAEL SPENCER, Office of the General Counsel

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

RAO TAMMARA, Office of New Reactors

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

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RICHARD TURTIL, Senior Financial Analyst,

NRR/DIRS/IFAIB

JENNIFER UHLE, Director, Office of New Reactors

JACOB ZIMMERMAN, Office of Nuclear Reactor Regulation

ALSO PRESENT:

STEVEN FRANTZ, NINA

SCOTT HEAD, NINA

DENNIS KOEHL, NINA

MARK McBURNETT, NINA

WILLEM MOOKHOEK, NINA

STEVEN THOMAS, NINA

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P R O C E E D I N G S

9:03 a.m.

1
2
3 CHAIRMAN BURNS: I call the hearing to
4 order, but before we begin the proceedings that are
5 before us today, I want to begin to take an opportunity
6 to mark the passing of Vice Admiral Kenneth Monroe Carr,
7 who served the NRC as a Commissioner from 1986 to 1989
8 and then Chairman from 1989 to 1991, and I had the honor
9 of serving on his staff during those five years.

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

18 Before retiring from the Navy in 1985, he
19 served in a number of important capacities, as
20 commander of the USS Flasher and the USS John Adams,
21 and also was the commander of the Atlantic submarine
22 fleet. As a Commissioner, he was focused on improving
23 operational performance in the industry, operational
24 professionalism, and one of his legacies is his
25 advocacy of the maintenance rule.

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

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

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

21 CHAIRMAN BURNS: Thanks . Well then I will
22 call his hearing to order, and I want to welcome those
23 of you in the room here today and those who may be
24 listening in. Particularly, we'll be hearing today
25 from the applicant and the staff.

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1 And to provide a context for our
2 proceedings, the Commission is here to conduct an
3 evidentiary hearing on Nuclear Innovation North
4 America, LLC, which I think a lot of us will refer to
5 as NINA during today's hearing on its application filed
6 September 20, 2007, for combined licenses to construct
7 and operate two additional units, Units 3 and 4, at the
8 existing South Texas Project Electric Generating
9 station site in Matagorda County near Bay City, Texas.

10 This hearing is required under Section
11 189(a) of the Atomic Energy Act of 1954, as amended.
12 The Commission also will be reviewing the adequacy of
13 the staff's environmental impact analysis under the
14 National Environmental Policy Act of 1969.

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

23 The other thing I would note is that
24 Commissioners will have the opportunity to allocate the
25 total time that would be available. So there may be

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1 -- in some panels, there may be more questioning from
2 a particular Commissioner on a matter of interest to
3 him or her as they see fit.

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

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

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

20 On the safety side, the Commission will
21 determine whether the applicable standards and
22 requirements of the Atomic Energy Act and the
23 Commission's regulations, particularly those in 10
24 C.F.R. Section 52.97, have been met; any required
25 notifications to other agencies or bodies have been

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1 duly made; that there is reasonable assurance that the
2 facility will be constructed and will operate in
3 conformity with the license, the provisions of the
4 Atomic Energy Act and the Commission's regulations;
5 that the applicant is technically and financially
6 qualified to engage in the activities to be authorized,
7 and that issuance of the license will not be inimical
8 to the common defense and security, or to the health
9 and safety of the public.

10 On the environmental side, the Commission
11 will determine whether the requirements of the National
12 Environmental Policy Act, Section 102, paragraphs
13 2 (A), 2 (C) and 2 (E) and the applicable regulations and
14 NRC's regulations in 10 C.F.R. Part 51 have been met.

15 We'll independently consider the final
16 balance among conflicting factors contained in the
17 record of this proceeding, with a view to determining
18 the appropriate action to be taken; determine, after
19 weighing the environmental, economic, technical and
20 other benefits against environmental and other costs,
21 considering reasonable alternatives, whether the
22 license should be issued, denied or appropriately
23 conditioned to protect environmental values.

24 Finally, we will determine whether the
25 NEPA review conducted by the staff has been adequate.

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1 I'll stop there and ask whether my colleagues have any
2 comments before we begin and go further.

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

8 MR. FRANTZ: Thank you, Chairman Burns.
9 Our witnesses in alphabetical order are Scott Head,
10 Russell Kiesling, Dennis Koehl --

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

14 MR. FRANTZ: Mark McBurnett, Willem
15 Mookhoek, Marion Smith, Steven Thomas and Peggy Travis.

16 CHAIRMAN BURNS: I'm going to ask the
17 witnesses to raise their right hands and take the oath.

18 [WITNESSES SWORN.]

19 CHAIRMAN BURNS: Are there any objections
20 to including these witnesses for this record? You may
21 sit down, thank you.

22 MR. SPENCER: No objections.

23 CHAIRMAN BURNS: Okay, and then also -- I
24 would also ask counsel for the applicant with respect
25 to the admission of evidence, to indicate whether there

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1 are any edits to your exhibit list?

2 MR. FRANTZ: No, there are not.

3 CHAIRMAN BURNS: Okay. Would you provide
4 the Commission the range of numbers of the exhibits you
5 plan to have admitted?

6 MR. FRANTZ: Yes. Our exhibits numbers
7 are STP-001 through STP-015.

8 (Whereupon, the above-referred to
9 document was marked as STP Exhibit Nos. 001 through 015
10 for identification.)

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

14 MR. SPENCER: No objection.

15 CHAIRMAN BURNS: No objection. Then
16 we'll duly admit that list.

17 (Whereupon, the above-referred to
18 document was received into evidence as STP Exhibit Nos.
19 001 through 015.)

20 CHAIRMAN BURNS: All right. For the NRC
21 staff, we'll repeat this, and again I would ask the
22 witnesses to stand when their name is called. Counsel
23 for the staff, would you read the names of the staff
24 witnesses.

25 MR. SPENCER: Yes. Mary Adams, Frank

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1 Akstulewicz, Brian Anderson, James Anderson, Dennis
2 Andrukat, Clinton Ashley, Dan Barss, Laurel Bauer, Luis
3 Betancourt, Tony Bowers, John Budzynski, Andrew
4 Campbell, Manas Chakravorty, Michael Cheok, Theresa
5 Clark, Ian Cozens, Gordon Curran, Mark Delligatti,
6 Antonio Dias, James Down, Steven Downey, Scott
7 Flanders, John Frost, Joseph Giacinto, James Gilmer,
8 Anne-Marie Grady, Syed Haider, Craig Harbuck, Michelle
9 Hart, Brad Harvey, Raul Hernandez, Gary Holahan, John
10 Honcharik, Ronaldo Jenkins, Robert Johnson, Henry
11 Jones, Michael Junge, Kerri Kavanagh, Jim Kellum,
12 Andrea Kock, Sam Lee, Young Li, Chang Li, Greg Makar,
13 Yanely Malave, Michael McCoppin, Richard McIntyre,
14 John McKirgan, Matthew Mitchell, John Monninger, Lynn
15 Mrowca, Adrian Muniz, Cliff Munson, Charles Murray,
16 Bruce Musico, Tony Nakanishi, Ryan Nolan, Eric Olvera,
17 Tom Pham, Paul Pieringer, Marie Pohida, Sheila Ray,
18 Mary Jane Ross-Lee, John Rycyna, Eduardo Sastre, Thomas
19 Scarbrough, Jason Schaperow, John Segala, James
20 Strnisha, Angelo Stubbs, Edward Stutzcage, Sarah
21 Tabatabai, Tom Tai, Dinesh Taneja, John Tappert, Al
22 Tardiff, Boyce Travis, Richard Turtill, Jennifer Uhle,
23 Frankie Vega, Henry Wagage, Duncan White, Steve
24 Williams -- is Steve?

25 MALE SPEAKER: Yeah, he'll be right back.

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1 I'll go get him.

2 MR. SPENCER: Okay. He had a coughing fit
3 so he --

4 CHAIRMAN BURNS: Okay.

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

9 CHAIRMAN BURNS: Actually, in the
10 interest of -- why don't we let some of these folks sit
11 down. Why don't we administer the oath. So I ask the
12 staff witnesses here to raise their right hand.

13 [WITNESSES SWORN.]

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

16 (No response.)

17 CHAIRMAN BURNS: All right. You may be
18 seated, and we'll get the other two at the -- did they
19 come back in? Okay. We'll get them after your
20 environmental witnesses.

21 MR. SPENCER: The environmental witnesses
22 are Daniel Barnhurst, Andrew Campbell, Jack Cushing,
23 Mark Delligatti, he's already been sworn in, Jennifer
24 Dixon-Herrity, Peyton Doub, Scott Flanders, who I
25 believe has already been sworn in, Mohammad Haque,

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1 Stacey Imboden, Andrew Kugler, Nancy Kuntzleman,
2 Michael Masnik, Daniel Mussatti, Donald Palmrose and
3 Patricia Vokoun.

4 And we have Steve Williams and -- oh,
5 Michael McCoppin, okay.

6 CHAIRMAN BURNS: Where is Mr. McCoppin?

7 MR. SPENCER: Mr. Williams, come over.
8 Steve, come over.

9 CHAIRMAN BURNS: We need to see you.

10 MR. SPENCER: Come up Steve. Come on
11 over.

12 CHAIRMAN BURNS: Okay. I ask these
13 witnesses to raise their right hand and to take the
14 oath.

15 [WITNESSES SWORN.]

16 CHAIRMAN BURNS: Did anyone -- and you
17 only say no if you refused to take that oath -- did
18 anyone decline to take the oath?

19 (No response.)

20 CHAIRMAN BURNS: All right. You may be
21 seated. And for both counsel, if there is some other
22 witness who has not been sworn in at this time but who
23 may provide testimony during the course of the
24 proceeding, what I would ask you to do is identify that
25 and we can administer the oath at a future point in the

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1 proceeding, as necessary.

2 And finally with respect to the staff's
3 evidence, are there any additions, counsel, to the
4 exhibit list for the staff?

5 MR. SPENCER: No Chairman. There are no
6 additions or changes to the revised exhibit list we
7 filed.

8 CHAIRMAN BURNS: Okay, and would you
9 provide us the range of numbers of the exhibits to be
10 admitted?

11 MR. SPENCER: The exhibits run from
12 NRC-001 to NRC-015.

13 (Whereupon, the above-referred to
14 document was marked as NRC Exhibit Nos. 001 through 015
15 for identification.)

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

18 MR. SPENCER: Yes. I move to have those
19 exhibits admitted into the record.

20 CHAIRMAN BURNS: Thank you, and are there
21 any objections from counsel?

22 MR. FRANTZ: We have no objections.

23 CHAIRMAN BURNS: Okay, and with no
24 objection, they are admitted.

25 (Whereupon, the above-referred to

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1 document was received into evidence as NRC Exhibit Nos.
2 001 through 015.)

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

6 Right on time. We're doing well, and our
7 first panel will be an overview panel from -- and we'll
8 have the presentation from the applicant. Actually
9 for the staff, I believe because the -- I will ask you
10 to move aside so we can see our applicant witnesses
11 here.

12 Again, I will remind you all that you are
13 under the oath that you took just a few minutes ago.
14 You may assume that the Commission is familiar with the
15 prehearing filings that have been made in the
16 proceeding, and I would ask the panelists to introduce
17 themselves, beginning with Mr. Koehl.

18 MR. KOEHL: Yes. Good morning, everyone.
19 I'm Dennis Koehl. I'm the president and chief
20 executive officer for South Texas Project Nuclear
21 Operating Company.

22 MR. McBURNETT: Mark McBurnett, the chief
23 executive officer for Nuclear Innovation North America
24 or NINA.

25 MR. HEAD: I'm Scott Head, Manager of

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1 Regulatory Affairs for Nuclear Innovation North
2 America.

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

5 MR. McBURNETT: Thank you. If we can
6 start our first slide.

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

9 MR. McBURNETT: Okay. Is that coming
10 through?

11 CHAIRMAN BURNS: That's great, thanks.

12 MR. McBURNETT: Thank you. The next
13 slide, please. I guess I'd like to say good morning.
14 We're pleased to be here this morning following
15 completion of the review of our application for
16 combined license, and having satisfied the NRC
17 requirements for obtaining a license.

18 I would like to start with introducing a
19 few of the guests I have here today that are not on our
20 witness list. Behind me is the Matagorda County Judge
21 Nate McDonald. He's the elected chief executive for
22 Matagorda County. In that role, he also serves as the
23 county emergency management director. The South Texas
24 Project is in Matagorda County, as well as its entire
25 ten mile emergency planning zone.

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1 Also here, Larry Blalock, representing the
2 City Public Service Board of San Antonio. Larry is
3 also on the CPS representative on the member of the STP
4 Nuclear Operating Company board. John Reagan is here.
5 He's the NRG member of the NINA Board of Directors, as
6 well as the NINA Board Chairman. He's also the
7 chairman of the STP Nuclear Operating Company Board of
8 Directors.

9 I have Itaru Kaneko, who's Toshiba's
10 alternate member of the NINA Board of Directors. The
11 NINA staff that's with me today has all been with the
12 project essentially in some capacity since the
13 beginning. I worked at South Texas project for 30
14 years before the taking the role of NINA chief
15 executive.

16 Scott Head with me is NINA's Regulatory
17 Affairs manager. Scott and I worked on the original
18 feasibility study for these units. He is a current
19 employee of STP Nuclear Operating Company. He has more
20 than 35 years' experience with the South Texas Project.

21 Steve Thomas is NINA's engineering
22 manager. He started his career in the nuclear Navy and
23 is a current STP Nuclear Operating Company employee
24 with more than 40 years in the nuclear industry.

25 Bill Mookhoek is our licensing supervisor.

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1 He started his career in the nuclear Navy, and spent
2 29 years at the South Texas Project, where his many
3 roles included being a licensed senior reactor operator
4 and a shift supervisor.

5 Our quality assurance manager, Marion
6 Smith, also began his career in the nuclear Navy. He
7 spent over 27 years at South Texas Project, and was
8 responsible for drafting the original initial quality
9 program for STP Units 3 and 4 in 2006, and has continued
10 in a lead role in our Quality organization throughout
11 the project.

12 Additionally here is our environmental
13 team. It includes Russ Kiesling, who worked for us in
14 the drafting on the original environmental report and
15 Peggy Travis, who is the current STP Nuclear Operating
16 Company environmental supervisor. Peggy has over 30
17 years' experience at STP, and Dennis already introduced
18 himself.

19 The South Texas Project is located about
20 80 miles southwest of Houston. STP Units 1 and 2 are
21 owned by NRG, City Public Service of San Antonio and
22 the City of Austin. NINA is owned by -- I mean South
23 Texas Units 3 and 4 are owned by NINA and the City Public
24 Service Board of San Antonio.

25 The STP Nuclear Operating Company is the

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1 operating licensee for STP Units 1 and 2, and has
2 operated the units since 1997, and will be the operating
3 licensee for STP Units 3 and 4. In 2006 and based on
4 favorable market conditions in Texas for new baseload
5 generation, and considering the incentives of the
6 Energy Policy Act of 2005, NRG requested the STP Nuclear
7 Operating Company to initiate activities to construct
8 new units.

9 We focused our attention on options that
10 had the most overall predictability with licensing and
11 construction. These criteria led us to the selection
12 of the Advanced Boiling Water Reactor or ABWR
13 technology, as it had a design certified by NRC. ABWRs
14 were in operation and under construction in Japan.

15 The operating ABWRs have good records.
16 The supply chain was well-established, and the need for
17 first of a kind engineering would be limited. STP
18 Nuclear Operating Company filed the application in 2007
19 for combined licenses to construct and operate two
20 ABWRs, with a combined capacity of approximately 2,700
21 megawatts at the South Texas Project site, and it was
22 accepted for NRC review.

23 Long lead materials were ordered and City
24 Public Service Board of San Antonio joined the project.
25 In 2008, NINA was formed by NRG and Toshiba to develop

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1 STP Units 3 and 4. Also the decision was made to use
2 an alternate vendor to supply the ABWR.

3 The decision was driven by Toshiba's
4 willingness to invest in the project and the fact that
5 a Japanese participant would facilitate our ability to
6 obtain part of the financing from Japan. This decision
7 was not taken lightly. Extensive due diligence and
8 qualification assessments were performed by STP
9 Nuclear Operating Company, with support from a number
10 of highly experienced industry consultants.

11 NRC closely followed our activities and
12 performed their own independent inspection. A revised
13 combined license application was filed in September
14 2008, to account for the hiring of Toshiba as a vendor.

15 In 2009, an engineering, procurement and
16 construction contract, commonly called an EPC
17 contract, was signed with Toshiba America Nuclear
18 Energy. In early 2010, NINA and City Public Service
19 reached an agreement on future participation that set
20 City Public Service's ownership at 7-5/8ths percent and
21 NINA's ownership at 92 and 3/8ths percent.

22 In 2010, Tokyo Electric Power or TEPCO
23 committed to invest in the project, and to share their
24 experience operating boiling water reactors and
25 specifically Advanced Boiling Water Reactors. Also,

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1 a decision was made to restructure the project, such
2 that STP Nuclear Operating Company would remain focused
3 on their core business of operating nuclear units, and
4 NINA would staff and focus on managing the EPC contract
5 and construction of the new units.

6 Thus, NINA took the project lead for the
7 construction period, and STP Nuclear Operating Company
8 will take the lead starting with the authorization to
9 load fuel. The project team, which had been assembled
10 by STP Nuclear Operating Company in 2006 remained
11 essentially intact and did not change appreciably with
12 this transition.

13 In this concept, all operational programs
14 development and implementation prior to fuel load,
15 including initial operator training and initial
16 operating staff development will be handled by STP
17 Nuclear Operating Company for NINA.

18 As a consequence of the events at
19 Fukushima, TEPCO was no longer able to participate in
20 the project, and the NINA Board of Directors decided
21 to suspend engineering procurement and construction
22 activities, to focus on obtaining the combined license
23 and supporting the DOE loan guarantee.

24 Since 2011, we have proceeded to complete
25 the licensing review, arriving at the point of

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1 mandatory hearings today. Texas continues to have a
2 significant need for new generation resources, and we
3 believe these units are essential to address those
4 needs.

5 We have an active business development
6 effort in progress, which will be substantially aided
7 by the issuance of combined licenses. Dennis, would
8 you like to make some remarks?

9 MR. KOEHL: Yeah sure. Thank you, Mark.
10 Good morning again everyone. South Texas Project
11 Nuclear Operating Company has been supporting NINA as
12 part of this licensing process, and it is looking
13 forward to the opportunity to apply our experience and
14 capability to operate the new units.

15 The programs, processes, procedures and
16 staff that will be necessary to operate these plants
17 will be put in place by South Texas Nuclear Operating
18 Company, including all the training of those
19 individuals. This company was formed, like Mark said,
20 by the owners to operate the units that were at the South
21 Texas Project in 1997, and you know, since that time,
22 the company has demonstrated a sound and successful
23 track record of safely operating STP Units 1 and 2.

24 Some of you have been to the South Texas
25 Project, and seen for yourself the pride and dedication

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1 of the workforce in carrying out their duties and
2 ensuring health and safety to the public in the
3 Matagorda County and neighboring counties.

4 With that, you also saw what an excellent
5 location the site is for nuclear units. We pride
6 ourselves on being good corporate citizens in Matagorda
7 County. Our employees are significant contributors to
8 their communities, serving in leadership roles for the
9 city, school districts, navigational districts,
10 Chamber of Commerce and working with many of the local
11 charities.

12 I personally serve on the Matagorda County
13 United Ways Board, and also serve on Texas A&M's
14 Advisory Board for Engineering Experiment Station.
15 The company has an outstanding local and state support,
16 and is well-recognized in Matagorda County as a good
17 neighbor. I look forward to answering questions today
18 and with that, I'll turn the presentation over to Scott.

19 MR. HEAD: Thank you, Dennis. This
20 morning I would like to go over the history of the
21 development of the Advanced Boiling Water Reactor and
22 cover some interesting aspects of the STP 3 and 4
23 application.

24 Next slide, please. This slide shows the
25 first ABWRs, Tokyo Electric Power's Kashiwazaki-Kariwa

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1 Units 6 and 7. Sponsored by TEPCO, the ABWR design was
2 developed jointly by GE, Toshiba and Hitachi. The
3 evolutionary design incorporates a number of changes
4 and improvements to previous boiling water reactor
5 designs.

6 For example, the ABWR uses reactor
7 internal pumps instead of external recirculation
8 pumps, which addresses many of the challenges of
9 recirculation systems in previous designs. The change
10 results in a design that has no external recirculation
11 piping, and as a result there are no large piping
12 penetrations to the reactor vessel below the active
13 core.

14 This significantly reduces the impact of
15 a loss of coolant accident scenario. The ABWR also
16 utilizes a digital control room, and the design is based
17 on the use of modular construction. K6 began operating
18 in 1996. There are currently four operational ABWRs
19 in Japan, with three others under construction.

20 Parallel with much of the work going on in
21 Japan, GE submitted an application using the Part 52
22 process for the ABWR. It was reviewed by the NRC and
23 resulted in the ABWR certified design being approved
24 in May 1997. The design was amended in 2010 to comply
25 with the aircraft impact rule.

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1 The certified design includes several
2 enhancements to incorporate PRA insights and provide
3 additional mitigation capabilities. I'd like to
4 discuss a couple of these now.

5 The first one I would like to note is the
6 combustion turbine generator. This machine provides
7 a source of electric power independent and diverse from
8 the emergency diesel generators. It has a seven day
9 source of fuel. Its inclusion in the certified design
10 represents the significant perspective that the
11 industry and the NRC had gleaned in the 90's, regarding
12 the need to be able to mitigate station blackout events.

13 Another important aspect of the certified
14 design is the inclusion of the AC independent water
15 addition system. This is an installed diesel-powered
16 fire pump that is hard-piped to one of the residual heat
17 removal trains. This feature, together with the
18 containment overpressure protection system provides
19 the capability to ensure core cooling and containment
20 heat removal and an extended loss of AC power event.

21 In the safety evaluation report for this
22 certified design, the NRC stated that the staff
23 believes that the AC independent water addition system
24 is the most important system for helping to prevent
25 severe accidents.

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1 The safety evaluation report also states
2 that the combustion turbine generator, in combination
3 with the AC independent water addition, virtually
4 eliminates station blackout as a consideration.

5 In addition to the digital control room,
6 the certified design includes the use of a hard-wire
7 analog indication and controls for one safety train,
8 that provides diversity and protects against common
9 mode failure.

10 Next slide, please. As Mark noted
11 earlier, the ABWR certified design was selected to be
12 the basis for the STP 3 and 4 application in 2006. Our
13 application was submitted in September of 2007
14 referencing the certified design, and revised in 2010
15 to include reference to the amendment addressing the
16 aircraft impact rule.

17 Our application is based on building two
18 new units at the site of the existing STP Units 1 and
19 2. This selection offers a number of significant
20 advantages.

21 The site is large and includes ample space
22 for construction of the new units. The main cooling
23 reservoir was originally sized for four units, so the
24 source of cooling water is readily available.

25 The infrastructure is in place. This

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1 includes road, rail and barge access. No new
2 transmission corridors will be required for the new
3 units. The surrounding area has a very low population
4 density, and there are already currently existing
5 state, county and site emergency plans. As noted
6 before, we have very strong community support not only
7 for the existing units, but for building the future
8 Units 3 and 4.

9 STP Nuclear Operating Company has many
10 years of successful operation of Units 1 and 2. We
11 strongly believe that this is an excellent site for
12 construction of new nuclear power.

13 Next slide, please. Our goal from the
14 inception of the project has been to build the certified
15 design. However, it has been necessary and
16 appropriate to propose departures which focus on
17 improving safety and reliability, regulatory changes,
18 operating experience, site-specific issues and the
19 evolution of technology since 1997.

20 An example of one of the design changes
21 incorporated to enhance safety and reliability is the
22 use of an improved reactor core isolation cooling pump,
23 which requires no external services to operate. The
24 bearings are water lubricated by a pump fluid, and the
25 self-contained mechanical governor provides rapid

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1 start-up with no overshoot.

2 A supply of steam and a source of water are
3 all that are necessary to run the machine. The simple,
4 robust design is less affected by environmental
5 conditions, and eliminates many of the failure modes
6 experienced with the other designs.

7 Here you see a picture of Steve Thomas, our
8 Engineering manager, examining one of these pumps at
9 the manufacturer's facility in Scotland. Another
10 departure involved updating the rad waste processing
11 systems to utilize modern, mobile technology and
12 eliminate obsolete equipment and processes. This
13 change also provides ample storage capacity.

14 The emergency core system suction
15 strainers have been upgraded to provide a design
16 methodology and performance characteristics
17 consistent with current industry standards.
18 Associated with this departure, the project has
19 committed to eliminate from containment, to the extent
20 possible, any materials which could create a post-LOCA
21 challenge to the strainers or the fuel.

22 Several categories of changes to the
23 safety-related I&C architecture were made to be
24 consistent with current digital technology. However,
25 the fundamental functional attributes have been

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1 maintained.

2 Several departures were made from Tier 1
3 for site parameters. For example, the drybulb and
4 wetbulb temperatures were increased to reflect the
5 semi-tropical climate at the South Texas Project.

6 Most significantly, one of the features
7 unique to the South Texas Project is the 7,000 acre
8 above grade main cooling reservoir. The presumed
9 failure of the reservoir embankment defines the site
10 design basis flood, which changed from one foot below
11 grade in the ABWR certified design to six feet above
12 grade in our application.

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

19 The Unit 3 and 4 reactor buildings will be
20 located almost a half mile north of the main cooling
21 reservoir, and the actual water elevation on the north
22 end of the reservoir is relatively shallow,
23 approximately 20 feet deep. To the right or the east
24 of the site that blue line there is the Colorado River.

25 It is the makeup source for the reservoir,

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1 which is filled from a pumping station located on the
2 river. Towards the bottom of the picture you see the
3 Gulf of Mexico. The site is approximately 15 miles
4 from the nearest of the Barrier Islands.

5 To determine design basis flood evaluation
6 for STP 3 and 4 we did a number of analyses. Our tsunami
7 analyses concluded that with a very conservatively
8 generated tsunami, that the water level does not
9 approach the site. Our storm surge analysis shows that
10 while the water level does approach the site, it does
11 not reach site grade.

12 We analyzed upstream dam failures by
13 assuming a cascading set of failures of all the relevant
14 dams on the Colorado River Basin, all of which are over
15 300 river miles away. The flood level from this
16 scenario would just reach the site grade if wave and
17 wind action are considered.

18 A probable maximum precipitation event
19 does flood the site to about 2-1/2 feet above site
20 grade, and the main cooling reservoir embankment breach
21 ends up defining the design basis flood elevation at
22 the site. Water levels for this scenario will be about
23 4-1/2 feet above average grade for the power block area,
24 and we will discuss this scenario in more detail in
25 Safety Panel 3.

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1 The next topic I'd like to discuss is our
2 selection of Toshiba as the alternate vendor. Next
3 slide please. Toshiba has extensive nuclear experience
4 in the Japanese fleet. The conceptual design,
5 fundamental design and common engineering for the first
6 ABWRs were developed by a team composed of GE, Toshiba
7 and Hitachi.

8 This ABWR team completed the detail
9 implementation engineering for Kashiwazaki-Kariwa
10 Units 6 and 7. The majority of the detailed
11 engineering was performed by Toshiba and Hitachi, based
12 on the common engineering developed jointly by the
13 three companies.

14 Subsequent to the Kashiwazaki-Kariwa
15 Units 6 and 7 projects, Toshiba was also the prime
16 contractor for another ABWR, Hamaoka Unit 5. In order
17 to confirm that Toshiba was qualified to provide the
18 certified design, in early 2008 the EPC team performed
19 what was called the Toshiba Capabilities Assessment
20 Project, known as TCAP.

21 In parallel, our project team assembled a
22 group of senior employees and outside industry experts
23 to independently oversee and evaluate the TCAP effort.
24 Both teams went to Isogo, Japan to review Toshiba's
25 ability to independently perform the design

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1 engineering and project management functions required
2 to license and build the certified ABWR in the United
3 States.

4 In the end, we were impressed with
5 Toshiba's first hand experience, extensive
6 documentation and working knowledge of the ABWR
7 technology. Based on the details evaluations
8 performed, we concluded that Toshiba engineering,
9 procurement and construction team, which included
10 their U.S. partners Westinghouse and Sargent & Lundy,
11 had the technical qualifications and capability to
12 provide the certified ABWR design for STP 3 and 4.
13 Mark.

14 MR. McBURNETT: When we started this
15 project in 2006, we were impressed with the ABWR.
16 Since then, our detailed studies of the design and
17 visits to existing units in Japan have only reinforced
18 our initial assessment of the robustness of the design.

19 Even before we studied the events at
20 Fukushima, we recognized that the ABWR certified design
21 had already included multiple and diverse capabilities
22 for mitigation of severe accidents, including extended
23 loss of AC power.

24 During the development of the STP
25 application, external events such as floods,

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1 earthquakes and hurricanes were extensively evaluated
2 using the latest methodologies.

3 Even though the safety-related equipment
4 at STP 3 and 4 will be protected from such events, we
5 embraced the industry lessons learned, incorporated
6 enhancements and upgrades, and developed a sound FLEX
7 strategy.

8 The STP site is an excellent location for
9 new nuclear units. The addition of STP 3 and 4 has
10 strong community support and will have low
11 environmental impact. Our EPC team, including
12 Toshiba, Westinghouse and Sargent & Lundy has extensive
13 nuclear design and construction experience, and our
14 operator, STP Nuclear Operating Company, has many years
15 experience safely operating STP 1 and 2.

16 We believe that new generation is
17 important to the energy mix in a carbon-constrained
18 environment. While we are not sure when the market
19 will support starting these units, we are certain that
20 they need to be built.

21 The issuance of the combined licenses for
22 STP 3 and 4 will facilitate our ability to secure
23 financing for this critically important project. The
24 NRC staff has conducted a rigorous review of our
25 application. Additionally, our application has been

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1 subject to independent review by the Advisory Committee
2 on Reactor Safeguards.

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

8 CHAIRMAN BURNS: Again, thank you for your
9 testimony and for this, the overview presentations,
10 we'll have the questioning after each panel and in terms
11 of the order, I'll begin with the questioning this
12 morning.

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

18 But as you note in your testimony, the
19 evolution of the design had begun really with the units
20 that were built in Japan, and there are areas in which
21 you needed to rely on the operating experience of
22 Japanese ABWR units.

23 Can you maybe give -- describe a little
24 more, in terms of the extent to which you were able to
25 leverage Japanese nuclear industry's experience with

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1 the ABWR in the development of the combined license
2 application, and was that done primarily through
3 Toshiba or were there other ways that operating
4 experience was able to be integrated into your
5 application?

6 MR. HEAD: Yes, we had opportunities to
7 incorporate operating experiences, you know,
8 throughout the project. As we maybe not directly
9 operating experience, but certainly the use of modules
10 was incredibly important in our decision process. For
11 all of us that constructed plants in the 80's, that was
12 very important for us with respect to future
13 construction.

14 As we mentioned, there was a digital
15 control room, and certainly one of the earlier digital
16 control rooms. A team from the United States went over
17 and interviewed a lot of the operators that had been
18 involved with the first operating plants, and got their
19 feedback on how things worked and any improvements that
20 are necessary.

21 We have the report on that. That's
22 something that we'll incorporate into our thinking as
23 we move forward with the design of the digital control
24 room.

25 A very important operating experience with

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1 respect to the licensing process is the steam dryers.
2 We used the operating experience as a crucial point with
3 respect to the licensing process, because they had been
4 operated for many years, and were extensively
5 inspected.

6 So we could confirm that maybe some of the
7 operating experience issues that had happened in this
8 country were not -- those dryers were not subject to
9 those issues. So that was very important.

10 Then maybe just, you know, the real-time
11 operating experience that we had was the ability to send
12 our operating staff over and work with them at their
13 simulators in their plants and begin to understand the
14 operational aspects and bring that back.

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

19 MR. KOEHL: And Mr. Chairman, if I can just
20 add, we are from the standpoint of the U.S. industry,
21 South Texas Project Nuclear Operating Company is very
22 much engaged with both Scana and Southern of lessons
23 learned that come out there, where that will come up
24 in our NSIAC meetings or different meetings that happen
25 in the industry.

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1 But we also, after Fukushima, there was
2 roughly 11 CNOs that partnered with CNOs in Japan for
3 the associated utilities there. South Texas Project
4 is partnering with J-Power, who is actually building
5 an ABWR at the Oma station. We've had several face to
6 face meetings and teleconferences. We do have a
7 meeting scheduled next March to physically be at the
8 site.

9 Now their construction is on hold right
10 now, but we plan to leverage those lessons learned from
11 them, and they are incorporating some changes in their
12 design as they move forward.

13 CHAIRMAN BURNS: Okay, thanks.

14 MR. McBURNETT: I would just to add to
15 clarify on Scott's comments, of the working with the
16 Japanese utilities, Tokyo Electric Power Company and
17 their operators, and from there we also had five members
18 of the Tokyo Electric Power Company staff were
19 co-located with us in Bay City, as we were working
20 through the development, prior to their unfortunately
21 having to leave it in 2011.

22 But prior to that, they were working side
23 by side with us and helping us to address and
24 incorporate lessons.

25 CHAIRMAN BURNS: Okay. Thanks for those

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1 remarks. Commissioner Svinicki.

2 COMMISSIONER SVINICKI: Good morning. I
3 thank the applicant witnesses for the overview
4 presentation, and I would like to recognize and
5 acknowledge the public officials and community
6 representatives that you've brought here today. I
7 have had the opportunity to visit STP 1 and 2, also to
8 visit Kashiwazaki 6 and 7 years before the Fukushima
9 event.

10 So I would say that engaging -- during my
11 visit, I also engaged with members of the Chamber of
12 Commerce, with some students who are undertaking
13 vocational training in the community, that would equip
14 them to perhaps be employed in the nuclear industry.

15 I did find that as a community, it seemed
16 to be an extremely educated and informed community, in
17 terms of being your neighbors and your hosts for having
18 a nuclear power plant. So I know that that is an
19 outgrowth of the extensive amount of outreach and
20 education that you do on STP 1 and 2.

21 So again, I acknowledge their presence
22 here today and their involvement in certain capacities
23 in public roles related to the site.

24 The site, as I understand it, was
25 originally planned for four units. So that is relevant

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1 to the staff's review, in terms of certain existing
2 infrastructure that is functionally to be connected to
3 3 and 4 if they're licensed.

4 I was interested if you could give some
5 sense of it's a very long planning horizon to undertake
6 the application and licensing, and then potentially in
7 the future the construction of these new nuclear units.
8 What has been the overall economic forecast in terms
9 of the community's growth, and I know that you've
10 testified that although you don't know at what time it
11 will be necessary to start construction of these units
12 if they're licensed, you predict that they will be
13 needed.

14 Can you talk a little bit about the
15 longer-range kind of economic forecasts for the region?

16 MR. MCBURNETT: Well, it's interesting.
17 When we start looking at Matagorda County, it's
18 actually located fairly remotely. It's far enough
19 away from Houston that it's outside the growth. It's
20 really far enough away from all the other major
21 population centers in the state, that it really hasn't
22 seen much change in population numbers.

23 When we started looking at developing the
24 application, we looked at the environmental reports for
25 Units 1 and 2 done back in the 1970's. The county

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1 population is essentially the same. The industries in
2 the county were essentially the same, except for the
3 addition of STP 1 and 2.

4 We've seen the strong positive impacts
5 provided by that into the community. As far as the
6 early forecasts for --

7 MR. HEAD: I'd say the environmental
8 report notes there will obviously be, you know, a growth
9 of individuals involved with construction, and that's
10 temporary, and then you know, the ABWR will have a staff
11 of 800 or 900 people. As we've seen, you know, 60-70
12 percent of many of those will actually live in the Bay
13 City area, based on what we've seen at 1 and 2.

14 So there will be some impact, and the
15 environmental report notes that the impact with respect
16 to -- the economic impact with respect to the Bay City
17 and Matagorda County is large and positive.

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

25 There's, I believe, 92 that are

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1 improvements in safety, reliability or technology
2 evolution. Something not discussed in the testimony
3 though is the overall strategic orientation or approach
4 to the taking of departures. I assume that it is
5 beneficial to take the minimum number that is
6 necessary.

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

14 MR. McBURNETT: I'll start that and then
15 let Scott wrap it up. When we began, our focus was on
16 building the certified design, and we really did intend
17 minimal number of departures, but also recognized that
18 we had to take some site-specific ones, for example.

19 We also didn't want to miss out on
20 important changes that we should make to improve the
21 design, to improve the safety, to improve reliability.
22 So we took a very hard look as we went to adding and
23 selecting what we wanted to add to it.

24 COMMISSIONER SVINICKI: And I note that
25 it's relevant. You mentioned site-specific. I note

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1 also in your testimony that of the 275 departures, 246
2 are standard and would be expected to apply to
3 subsequent COLAs. Meaning so again, I drew a
4 conclusion from that that given the original
5 certification of this design was, you know, gosh going
6 on 20 years ago now, that there were evolutionary --
7 there were technology issues and other improvements
8 that it was simply prudent to take as departures.

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

12 COMMISSIONER SVINICKI: Mr. Head, did you
13 want to add.

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

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

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1 activities.

2 So both we and the staff gave the tech specs
3 a very hard scrub, and what we noted is that, and this
4 may be an artifact of the way tech specs were built in
5 the 90's, but there were a number of occasions where
6 the tech spec and the bases were not exactly aligned.

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

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

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

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

25 CHAIRMAN BURNS: Thank you.

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1 Commissioner Ostendorff.

2 COMMISSIONER OSTENDORFF: Thank you,
3 Chairman. Thank you all for your presentations and for
4 being here. I appreciate, especially as Commissioner
5 Svinicki noted, the presence of Matagorda County
6 leaders and officials. That's very impressive to see
7 that group come up here.

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

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

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

25 MR. HEAD: Want me to do that one? Yes

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1 sir. You know, the design is about 40 percent
2 complete, detailed design, and so we still have other
3 -- we still have more work to go. But you know, and
4 so as we encounter things that might, you know, might
5 need to be adjusted or dealt otherwise, then we would,
6 you know, take the appropriate action at that point in
7 time.

8 So you know, we have more work to do and
9 we'll, you know, we'll follow the appropriate process
10 as we move forward with that.

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

13 MR. HEAD: Yes.

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

19 MR. McBURNETT: It has underscored the
20 criticality of having the design essentially --
21 engineering essentially complete before starting
22 construction, is probably one of the biggest lessons
23 learned that I've heard in my communications with those
24 folks.

25 MR. KOEHL: The other piece that's really

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1 important is the supply chain for the feed of the
2 equipment. We're also working with several vendors in
3 the industry right now, to look at how we can better
4 that supply, because some of the delays have been
5 related to not having the supplies show up when they're
6 needed for each and every one of the modules.

7 COMMISSIONER OSTENDORFF: On that point,
8 are there any particular supply chain sources that are
9 not currently available anyplace in the world, that
10 you've had to develop from scratch?

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

17 COMMISSIONER OSTENDORFF: Okay. Thank
18 you all. Thank you Chairman.

19 CHAIRMAN BURNS: Thank you.
20 Commissioner Baran.

21 COMMISSIONER BARAN: Thank you all for
22 being here and for your presentation. This is our
23 first mandatory hearing since Fermi Unit 3, and it's
24 the first one involving the Advanced Boiling Water
25 Reactor design. I thought Fermi 3 was really -- went

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1 very smoothly, found it very valuable and I anticipate
2 that today will just as helpful to us. So no pressure,
3 but --

4 (Laughter.)

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

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

22 MR. MCBURNETT: Would you say that last
23 piece again?

24 COMMISSIONER BARAN: It's just the
25 nuclear sector's different than other sectors, and

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1 maybe you'd have investors that are familiar with that
2 sector. But generally, when you're out looking for
3 investors, how do we make sure that they understand?

4 This is, you know, it's a plant that's
5 going to involve capital expenditure up front, but
6 ongoing investments over time, to make sure it's
7 operating safely.

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

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

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

25 COMMISSIONER BARAN: Thank you. I'll

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1 stop there for now.

2 CHAIRMAN BURNS: All right, thank you very
3 much. We'll now have the staff overview panel. So
4 I'll ask -- we can roll on, as Commissioner Svinicki
5 said.

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

12 MR. AKSTULEWICZ: My name is Frank
13 Akstulewicz. I'm the Division Director in the
14 Division of New Reactor Licensing.

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

17 MS. UHLE: Jennifer Uhle, Director of the
18 Office of New Reactors.

19 MR. DELLIGATTI: Mark Delligatti, Deputy
20 Director, Division of New Reactor Licensing, Office of
21 New Reactors.

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

24 MS. UHLE: Good morning Chairman and
25 Commissioners. Our team today that you have seen

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1 standing up and taking the oath is definitely pleased
2 to address the Commission today at this mandatory
3 hearing.

4 Gary Holahan is the deputy director of the
5 office. As you know, Frank Akstulewicz is the division
6 -- is the director of the Division for New Reactor
7 Licensing, and Mark Delligatti is the deputy director
8 for the Division of New Reactor Licensing.

9 The team here today will present the
10 results of the staff's review of the application for
11 the combined license for the South Texas Project, Units
12 3 and 4, proposed to be located at the existing South
13 Texas Project site in Matagorda County, Texas.

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

20 They document the results of a coordinated
21 effort of scientists, engineers, attorneys and
22 administrative professionals from multiple offices
23 within the agency, as well as efforts of other
24 government agencies and those of our consultants.

25 On this panel, Gary will provide brief

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1 remarks pertaining to the review, to preface the more
2 detailed remarks that will be provided by the staff.
3 Mr. Akstulewicz and Mr. Delligatti will briefly
4 describe the staff evaluation for the South Texas
5 Project 3 and 4 application.

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

12 The staff completed its review of the
13 combined operating license -- excuse me, combined
14 license application in September of 2015.
15 Pre-application activities began in 2006.

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

22 Since then, the staff has focused
23 approximately 157,000 hours on the safety and
24 environmental reviews. This effort has involved well
25 over 100 scientists, engineers, lawyers and technical

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1 specialists. During this time, the staff conducted
2 over 150 public meetings and conference calls in
3 support of the review.

4 The applicant responded to over 1,700
5 staff questions, of which 1,500 were associated with
6 the safety review and 200 with the environmental
7 review. In addition, the staff considered more than
8 380 comments on the draft environmental impact
9 statements.

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

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

24 In addition, the Region IV office
25 supported the environmental meetings in the community

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1 near the site. The U.S. Army Corps of Engineers,
2 Galveston District and the Department of Homeland
3 Security also contributed to the NRC review.

4 The final safety evaluation report,
5 environmental impact statement and our statement in
6 support of the hearing provide what the staff considers
7 to be an adequate basis for making the necessary
8 regulatory findings. We look forward to responding to
9 your questions at this hearing. So I'll turn the
10 presentation over to Gary Holahan.

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

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

23 On September 24th, 2007, representatives
24 of the South Texas Project Nuclear Operating Company
25 delivered an application, their application dated

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1 September 20th, 2007 for the combined license to
2 construct and operate two ABWRs at the existing South
3 Texas site.

4 Following some high level reorganization,
5 Nuclear Innovation North America or NINA, as you've
6 heard already called today, became the applicant in
7 2011. So NINA would be licensed to construct STP 3 and
8 4, while South Texas Project Nuclear Operating Company,
9 would be licensed to operate the units.

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

17 The ABWR design was originally certified
18 in 1997 based on the staff evaluation in 1995. The
19 final aircraft impact assessment amendments to the
20 certification was published, as you heard earlier, in
21 2011.

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

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1 resolved within the scope of the original
2 certification.

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

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

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

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1 regulatory changes in the intervening years.

2 These, as well as the site-specific
3 requirements, have led the applicant to take the
4 relatively large number of departures from the
5 certified design.

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

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

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

22 So following STP's decision to use the
23 alternate vendor, the staff embarked on an extensive,
24 almost year-long inspection, evaluation and other
25 activities that resulted in the staff determination

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1 that Toshiba was qualified and could in fact supply the
2 U.S. certified ABWR.

3 I'd now like to turn the presentation over
4 to Frank Akstulewicz.

5 MR. AKSTULEWICZ: Thank you, Gary. Good
6 morning Chairman and Commissioners. Can I have Slide
7 8 please? In accordance with 10 C.F.R. 52.87, the
8 Advisory Committee on Reactor Safeguards examined the
9 staff's safety review of the STP 3 and 4 combined
10 license application.

11 The applicant and staff supported 20 ABWR
12 subcommittee meetings specifically related to the STP
13 application and its safety evaluation. The staff
14 presented the results of its review of the STP 3 and
15 4 combined license application to the full ACRS on
16 February 5th, 2015.

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

22 The ACRS report also identified four
23 recommendations regarding turbine missile analysis,
24 turbine valve testing, standard review plan acceptance
25 criteria on materials testing, and fire hazards

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1 analysis.

2 The first two of these recommendations
3 were specific to the STP review, and will be addressed
4 through the completion of a COL information item, while
5 the other two were generic in nature and are being
6 pursued by the staff, as detailed in our specific
7 response to the ACRS.

8 Next slide, please. The staff's response
9 to the ACRS report can be found in a letter dated April
10 2nd, 2015. After completing its response to the ACRS,
11 the staff issued the STP 3 and 4 final safety evaluation
12 report in September of this year.

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

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

25 I will summarize the staff's bases

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1 supporting each of the findings. First, the
2 applicable standards and requirements of the Atomic
3 Energy Act and the Commission's regulations have been
4 met. The staff reviewed and evaluated the application
5 against the applicable criteria in 10 C.F.R.

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

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

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

24 As the SECY paper states, the staff
25 believes that its review, as documented in its final

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1 safety evaluation report, and the final environment
2 statement, the inspections tests, analyses and
3 inspection criteria or ITAAC and the license conditions
4 provide the necessary assurances that the unit will be
5 constructed and operated as required.

6 Fourth, the applicants are technically and
7 financially qualified to engage in the activities
8 authorized. The technical and financial
9 qualifications of the applicants are summarized in the
10 SECY paper, and documented in detail in Chapters 1 and
11 17 of the final safety evaluation report.

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

17 Next slide, please. Fifth, the issuance
18 of the COLs will not be inimical to the common defense
19 and security or the public health and safety. The
20 specific bases for an inimicality finding have been
21 provided in the staff's SECY paper.

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

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1 overview of the staff's environmental review.

2 MR. DELLIGATTI: Thank you. Next slide,
3 please. As Gary indicated earlier, I am the deputy
4 director of the Division of New Reactor Licensing in
5 the Office of New Reactors.

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

11 I will also discuss the regulatory
12 findings that need to be made before licenses can be
13 granted. The staff prepared an EIS for the STP Units
14 3 and 4 combined license application in accordance with
15 the National Environmental Policy Act of 1969 and the
16 requirements of 10 C.F.R. Part 51.

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

22 The U.S. Army Corps of Engineers,
23 Galveston District, fully participated with the staff
24 as a cooperating agency in preparing the STP Units 3
25 and 4 EIS, under the terms of an updated memorandum of

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1 understanding between the NRC and the Corps for the
2 review of nuclear power plant applications.

3 As a member of the Environmental Review
4 team, the Corps staff participated in site visits,
5 consultations with other agencies and development of
6 the draft EIS and final EIS. We did invite them to join
7 us here today, but they were unable to be here.

8 Next slide, please. The NRC began the
9 environmental review process for the STP Units 3 and
10 4 combined license application by publishing a notice
11 of intent to prepare an EIS and conduct scoping in the
12 *Federal Register* on December 21st, 2007.

13 Two scoping meetings were held to obtain
14 public input on the scope of the environmental review.
15 These were held in Bay City, Texas on February 5th,
16 2008. The staff reviewed the comments received during
17 the scoping process, and responses were developed for
18 each comment.

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

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1 Specifically, the staff consulted with the
2 U.S. Fish and Wildlife Service, National Marine
3 Fisheries Service, federally-recognized Indian
4 tribes, the Texas State Historic Preservation Office
5 and other agencies as required by the Endangered
6 Species Act, National Historic Preservation Act and
7 other statutes.

8 The draft EIS was issued in March 2010. A
9 75-day comment period for the draft EIS began on March
10 26th, 2010, the date of publication of the U.S.
11 Environmental Protection Agency notice of
12 availability.

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

19 The staff developed responses to comments
20 received on the draft EIS, and provided these responses
21 in Appendix E of the final EIS.

22 Next slide, please. On February 24th,
23 2011, the staff published the final EIS as NUREG-1937.
24 As stated in the final EIS, the staff's recommendation
25 related to the environmental aspects of the proposed

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1 action is that the COLs should be issued.

2 The staff based its recommendation on the
3 STP Units 3 and 4 COL application environmental report;
4 the consultation with federal, state, tribal and local
5 agencies; the staff's own independent review; the
6 staff's consideration of comments that were received
7 during the public scoping process; the staff's
8 consideration of comments on the draft EIS; and the
9 assessment summarized in the EIS, including the
10 potential mitigation measures identified in the
11 environmental report and in the EIS.

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

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

25 The staff believes that the scope of the

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1 environmental review, the methods used to conduct the
2 review and the conclusions reached in the EIS are
3 sufficient to support a positive determination
4 regarding these findings.

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

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

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

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1 resources that would be involved in the proposed action
2 should it be implemented.

3 As supported by correspondence presented
4 in Appendix F to the EIS, the staff concludes that the
5 requirements of NEPA Section 102(2)(c) was fulfilled
6 by consulting with and obtaining comments from other
7 federal agencies with jurisdiction by law or special
8 expertise.

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

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

22 For the second and third findings, which
23 appear on this slide and the next, Chapter 10 of the
24 EIS provides the staff's cost-benefit assessment,
25 which considered conflicting factors such as the need

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1 for power as well as reasonable alternatives to the
2 proposed action.

3 Next slide, please. Based on that staff
4 analysis, the staff concluded that the building and
5 operation of the proposed STP Units 3 and 4 would have
6 accrued benefits that would be expected to outweigh the
7 economic, environmental and social costs.

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

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

19 MS. UHLE: Thank you, Mark. So during
20 this hearing, the staff will be presenting information
21 on the issues listed on this table. Safety Panel 1 will
22 discuss how the staff analyzed departures and
23 exemptions, including the exemption from the financial
24 qualification regulations.

25 Safety Panel 2 will discuss the mitigating

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1 strategies for beyond design basis external events, as
2 well as the Byron open phase issue associated with
3 Bulletin 2012-01.

4 Safety Panel 3 will discuss the design
5 basis flood for the South Texas Project site, and the
6 staff's review of the qualifications of Toshiba as an
7 alternate vendor for the certified ABWR design.

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

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

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

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1 This is going to become amusing over the
2 course of the day, and by the afternoon, I'm not going
3 to have much to say because I'm not going to have any
4 time left and I've consumed half my time to make this
5 comment about it.

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

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

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

22 Although Commissioner Baran complimented
23 the utility of these mandatory hearings, my only
24 nagging concern about them is that they might leave an
25 impression to people who are tuning into the webcast

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1 or will look at this later that, you know, is that all
2 there is?

3 The safety evaluation report and
4 environmental impact statement up on a table in my
5 office are approximately two feet high when stacked
6 together. This is, you know, the testimony.
7 Pre-filed questions in advance of the hearing were
8 submitted to the staff and the applicant, and I reviewed
9 a lot of very high quality NRC work product.

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

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

25 At least I need somebody to move me off that

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1 presumption. I'm going to stick with it, and I think
2 I have a good sense that on my wager on that, I would
3 prevail. In addition to these staff's review,
4 however, there are also bodies such as the Advisory
5 Committee on Reactor Safeguards. Gary talked a lot
6 about that.

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

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

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

24 The staff has agreed that the issue should
25 be evaluated generically, and explained why no

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1 further action was needed in dispositioning the ACRS'
2 recommendation. But can Gary or some other staff
3 witness address the fact? Although this is going to
4 be addressed generically, is there a specific
5 implication for this particular COL and if so, is that
6 dispositioned to the staff's satisfaction?

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

18 COMMISSIONER SVINICKI: You did have
19 another Staff witness.

20 MR. HOLAHAN: No, experts go away.

21 (Laughter.)

22 MR. HOLAHAN: I just want to finish the
23 thought that this design has perhaps less of a generic
24 concern for the digital aspects because its analog is
25 a -- its backup system is an analog system, so that

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1 provides some extra added protection.

2 COMMISSIONER SVINICKI: Okay. And if you
3 wanted to add, but could you identify --

4 CHAIRMAN BURNS: Identify yourself and
5 confirm that --

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

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

24 (Laughter.)

25 COMMISSIONER SVINICKI: I'll get quiet.

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1 Thank you.

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

4 (Laughter.)

5 CHAIRMAN BURNS: Commissioner Ostendorff.

6 COMMISSIONER OSTENDORFF: I feel compelled
7 to address Commissioner Svinicki's comment.

8 (Laughter.)

9 COMMISSIONER OSTENDORFF: As a submarine
10 sailor for 26 years, I know there's others in the
11 audience here --

12 (Laughter.)

13 COMMISSIONER SVINICKI: It's just a
14 literary flourish. It's not an insult in any way.

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

23 COMMISSIONER SVINICKI: That's correct.

24 COMMISSIONER OSTENDORFF: Very good. So
25 long as that's kind of sorted out, we can proceed. I

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1 want to add my thanks to that of others to the Staff
2 for their very professional work and I think this is
3 one of these times when you kind of sit up proud to be
4 associated as a Commissioner with the NRC Staff who's
5 so capably worked on this for many years. I know I'm
6 very proud, as I know my colleagues are here to my right.
7 So I just thank from the bottom of my heart the NRC Staff
8 for a very professional effort. And I think this is
9 a real significant achievement.

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

19 MR. HOLAHAN: Yes. So one of the unique
20 aspects of Part 52, it actually explicitly requires
21 applicants to address operating experience as part of
22 their application. As opposed to the earlier uses of
23 Part 52, this one actually has direct operating
24 experience with the ABWRs in Japan. I've been to both
25 the ABWRs operating and under construction in Japan and

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1 they are interesting and impressive activities. So
2 there is an opportunity not just to look at things that
3 might have gone wrong, because, in fact, the operating
4 experience in Japan has been extraordinarily good.

5 I think the Staff and presumably the
6 Applicant has had the opportunity to also understand
7 the lessons of good operation and construction as well.
8 In Japan, there is considerably more experience with
9 modular construction, for example, and that is a much
10 more mature activity and I would expect to see a more
11 mature level of modular construction and experience in
12 that area than perhaps we've seen for the AP1000, for
13 example. So the Staff is aware both of event-type
14 experience and construction-type experience and we do
15 learn from that as part of our review.

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

24 COMMISSIONER OSTENDORFF: Thank you for
25 your responses. I think that's a really important

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

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

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

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1 reconstituting our full knowledge and maybe doing some
2 knowledge management for staff that wasn't immediately
3 available. But Frank, can you add?

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

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

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

24 (Laughter.)

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

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1 Okay.

2 MR. HOLAHAN: More than ten.

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

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

11 COMMISSIONER OSTENDORFF: Thank you.

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

13 COMMISSIONER OSTENDORFF: Please.

14 MR. HOLAHAN: -- characterize it? When I
15 think about the departures as a whole, I don't think
16 of them as subtractions or degrading to design in any
17 way. If anything, they are enhancements and
18 modernizations and taking advantage of technology
19 changes. So they are, process wise, they may be a
20 little complicated and hard to deal with. But in terms
21 of nuclear safety, I think they're actually 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 that
2 will be implemented as part of the overall security
3 process. The second element is that the Applicants are
4 all U.S.-based companies. So, that doesn't involve
5 any specific concerns with respect to foreign ownership
6 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 might
12 note that the Committee on Foreign Investment in the
13 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
25 all 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 with
7 actual construction of a certified design here. One
8 of the things, and this is really probably more a
9 generic question than it is really one pertaining to
10 this 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 here,
21 recognizing -- as I say, the other interesting part of
22 this is not only that this is a facility that has been
23 constructed, but it's the initial generation of Design
24 Certifications under Part 52 and here 15 years later,
25 as is contemplated under the Rule, we're looking at it

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1 to integrate it into a COL.

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

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1 turn to Gary to maybe provide some more insights into
2 the 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 now,
11 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 Agency
16 and there's an inherent challenge between how do you
17 streamline, yet capture the fundamental information.
18 When you hear these many thousands of hours that go into
19 a review, you feel good about you're making the right
20 decision. But that's also a lot of resources and how
21 do you come up with the right balance of I've done enough
22 and I've documented well enough for the future staff
23 to understand what decisions were made and how they were
24 made? So it is a challenge.

25 I think the documentation of this review

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

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

22 MR. HOLAHAN: I'm going to say something,
23 and see if Frank gives you the same answer. It might
24 have been a challenge for the Applicant, but for the
25 Staff, the basic requirements, the Certification and

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

8 MR. AKSTULEWICZ: I agree with Gary.

9 CHAIRMAN BURNS: All right. Thank --

10 (Laughter.)

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

18 (Whereupon, the above-entitled matter
19 went off the record at 10:57 a.m. and resumed at 11:07
20 a.m.)

21 CHAIRMAN BURNS: Well, welcome back and
22 we'll begin this session with Safety Panel 1.
23 Actually, we'll hear Safety Panel 1 this morning and
24 then adjourn until our afternoon session. In this part
25 of the proceeding and in the remaining Panels, we'll

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1 hear the testimony from both the Applicant and from the
2 Staff and after hearing that testimony, we'll turn to
3 Commission questions. Again, we'll remind the
4 witnesses on each Panel, Staff and the Applicant, that
5 they remain under oath and that they should assume we
6 are familiar with their pre-hearing filings.

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

17 MR. MCBURNETT: Mark McBurnett.

18 MR. HEAD: Scott Head.

19 CHAIRMAN BURNS: Okay. And then the Staff
20 witnesses.

21 MR. TAI: Tom Tai.

22 MR. TURTIL: Richard Turtil.

23 MR. TANEJA: Dinesh Taneja.

24 CHAIRMAN BURNS: Okay. Thank you very
25 much. And so we'll start then with the Applicant's

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1 testimony.

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

15 In response to this Generic Policy Issue,
16 the Executive Director of Operations sent SECY 13-0124
17 to the Commission in November 2013 and the Commission
18 provided direction to the Staff in April 2014 to engage
19 in a rule-making to amend 10 CFR Part 50 regarding
20 financial qualifications. The content of this
21 rule-making or the intent of this rule-making is to
22 conform reactor financial qualification requirements
23 to 10 CFR Part 70 standards. The Staff was to consider
24 using exemptions to address existing cases, such as
25 NINA's application, while the rule-making moved

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1 forward. The Staff issued a draft regulatory basis for
2 the rule change this year.

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

11 Our financial capacity plan shows that
12 NINA's management team has the capacity to obtain the
13 necessary financing. For example, NINA has negotiated
14 a detailed loan guarantee with the Department of Energy
15 that was scheduled for approval in March 2011, when the
16 Fukushima accident caused the process to be put on hold.
17 NINA also negotiated and obtained support letters for
18 loans from the Japan Bank of International Cooperation,
19 which is also known as JBIC. Furthermore, NINA has
20 been managing the engineering, procurement, and
21 construction contract for STP, which to date has
22 involved an expenditure of over \$1 billion.

23 NINA's parent companies, NRG and Toshiba,
24 also have the capacity. NINA's majority owner, NRG,
25 owns and operates more than 52,000 megawatts of

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1 electric capacity. Toshiba is one of the world's
2 leading energy and infrastructure companies. Both NRG
3 and Toshiba have experience with the financing of large
4 energy projects. Prior to the start of construction,
5 NINA expects to obtain funding through project
6 financing using a combination of loans under the DOE
7 loan guarantee program and loans from JBIC and other
8 sources, as well as equity.

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

19 CHAIRMAN BURNS: Does that conclude the
20 Applicant's testimony?

21 MR. HEAD: Yes.

22 CHAIRMAN BURNS: Thank you. Then to the
23 Staff.

24 MR. TAI: Good morning, Chairman and
25 Commissioners. My name is Tom Tai, I'm the Lead

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1 Project Manager of the STP Units 3 and 4 COL Application
2 Review. Our presentation for this Panel will provide
3 an overview of the exemptions and departures of this
4 Application and discuss two examples in more detail.
5 Next slide, please. With me at table are Richard
6 Turttil, who will describe the financial qualification
7 exemption request, and Dinesh Taneja, who will discuss
8 the Staff's review of the significant departure. Next
9 slide, please.

10 This Application has 275 departures from
11 the ABWR DCD. There are four types of departures, Tier
12 1, Tier 2*, Tier 2, and departures from Technical
13 Specifications. Tier 1, Tier 2*, and Tech Spec
14 departures require NRC approval. Tier 2 departures
15 generally do not. Next slide, please. Tier 1
16 departures are plant specific changes to Tier 1
17 information in the Certified ABWR Design. There are
18 17 of these in this Application. Technical
19 Specification departures are plant specific changes to
20 the ABWR Technical Specifications and Basis. Tier 1
21 and Technical Specification departures require an
22 exemption. Next slide, please.

23 Tier 2* departures are departures from
24 Tier 2* information in the DCD. They require NRC
25 approval, but do not require an exemption. Examples

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

12 For this Application, the Applicant
13 identified one Tier 2 departure requiring prior NRC
14 approval and had 130 that did not require prior NRC
15 approval. This represents about half of the total
16 number of departures of this Application. Next slide,
17 please. Although Tier 2 departures may not require NRC
18 approval, the Staff ensured that the Applicant
19 developed a process to evaluate these departures
20 against the change process criteria. In addition, the
21 Staff had to understand the proposed designs such that
22 we could agree that it was reasonable for the Applicant
23 to conclude that no prior NRC approval is required.

24 For some departures, the Staff conducted
25 QA inspections to ensure that the change process was

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1 in place and that it was applied appropriately. For
2 some departures, the Staff issued Requests for
3 Additional Information asking the Applicant to provide
4 information on how some of these criteria were met.
5 Next slide, please. In addition to the departures, the
6 Applicant also submitted two requests for exemption
7 from the regulations that are relevant to the COL
8 Application.

9 The first exemption request is for an
10 exemption from the requirements in 10 CFR Part 70 and
11 74, for Special Nuclear Material control and
12 accounting. The purpose of this exemption request is
13 to apply the same requirements to STP as are applied
14 to existing nuclear power plants that were licensed
15 under Part 50. The same exemption request has been
16 granted to other Part 52 COL applicants. The second
17 exemption request is on financial qualification. Next
18 slide, please.

19 As stated earlier, we are providing
20 additional discussion on one of the exemptions and one
21 of the significant departures. Richard Turtill will
22 now discuss the financial qualification exemption.
23 Richard will be followed by Mr. Dinesh Taneja, our
24 technical reviewer on instrumentation and control, who
25 will discuss our review of the Tier 1 departure on

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1 instrumentation and control. Next slide, please.

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

12 Merchant plants have had more difficulty
13 meeting these requirements because they cannot rely on
14 rate recovery like utility applicants can. With over
15 90 percent of the electricity produced by STP 3 and 4
16 to be sold in deregulated markets, the STP Units are
17 considered merchant plants. I will now discuss the
18 challenges faced by the Applicant and how those
19 challenges were overcome. Next slide, please.

20 Based on the review of the Application and
21 responses to Requests for Additional Information, the
22 Staff was unable to determine that NINA could meet the
23 current financial qualification requirements. In
24 2012, NINA raised concerns about financial
25 requirements for merchant plants. NINA stated that it

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1 is difficult, if not impossible, for merchant plant
2 applicants to secure project funding to meet current
3 requirements and requested Commission action to
4 address the issue.

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

22 In spring of 2014, the Staff began
23 developing a draft regulatory basis in response to the
24 Commission tasking and in April of 2015, held a public
25 meeting to discuss the draft regulatory basis. The

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1 document was published for comment in June and the
2 comment period closed in August of 2015. Commenters
3 with positions on the new standards either supported
4 the standards or proposed that requirements be further
5 reduced or entirely rescinded. None of the comments
6 advocated for standards more strict than those in the
7 draft regulatory basis. Moreover, none undermined the
8 basis for the Applicant's Request for an Exemption from
9 the NRC's financial qualification requirements.
10 Accordingly, Staff concluded that exemption requests
11 that meet the standards proposed in the draft
12 regulatory basis will anticipate the outcome of the
13 rule-making. Next slide, please.

14 As part of the draft regulatory basis,
15 Staff proposed that an applicant submit a financial
16 capacity plan in combination with a cost estimate to
17 demonstrate the applicant appears to be financially
18 qualified. Consistent with the Commission's SRM, an
19 applicant's financial capacity reflects the
20 applicant's level of understanding of the size and
21 scope of the project, including the level of capacity
22 necessary to undertake the project and the
23 organizational resources, experience, skills, and
24 expertise required to obtain proper financing and
25 ultimately to finance the project. Financial capacity

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1 is not a predictive tool that ensures that the applicant
2 will in fact obtain financing, but it does support
3 Staff's review and ultimate determination that an
4 applicant appears to be financially qualified. Next
5 slide, please.

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

21 Finally, Staff approved of license
22 conditions that will ensure that NINA has adequate
23 funding to undertake both construction and operations.
24 These license conditions must be met prior to
25 construction and operations, respectively. This is

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1 consistent with the Commission direction in the SRM.
2 Next slide, please. In summary, Staff concluded that
3 NINA meets the proposed standards in the draft
4 regulatory basis for construction financial
5 qualifications and for its portion of operational
6 financial qualifications.

7 Thus, Staff concluded that NINA appears to
8 be financially qualified. NINA also satisfies the
9 requirements for an exemption as discussed in the SECY
10 Paper. As required by regulations, the Staff is
11 consulting with the Commission on the Staff's finding
12 that special circumstances exist because it is in the
13 public interest to grant the exemption. Specifically,
14 the Staff has determined that the current detailed Part
15 50 standards go beyond the NRC's mandate of ensuring
16 safety and have become an unnecessary impediment to
17 licensing. The proposed new standard removes this
18 unnecessary impediment while still ensuring the
19 protection of public health and safety. That
20 concludes my presentation. Dinesh Taneja will now
21 discuss the instrumentation and controls departure.

22 MR. TANEJA: Thank you, Richard. Good
23 morning. My name is Dinesh Taneja and I am the Lead
24 Reviewer of STP Units 3 and 4 Instrumentation and
25 Control, or I&C, Design. The I&C departure is one of

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1 the more significant departures and is described here
2 as an example of impact of departures and how the Staff
3 addressed them. The Applicant's selection of digital
4 I&C platforms for Units 3 and 4 resulted in changes to
5 safety-related I&C architecture. One of the more
6 significant changes from the Certified Design due to
7 selection of digital I&C platforms was to data
8 communication architecture and technology.

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

19 For the engineered safety features logic
20 and control system, the Applicant selected the Common
21 Q platform, which has been generically reviewed by the
22 Staff through a Topical Report and is used in other new
23 reactor designs, such as the AP1000. The reactor trip
24 and isolation system uses programmable logic
25 technology supplied by Toshiba and is used in several

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1 Japanese nuclear power plants. The use of different
2 platforms enhances the I&C system's protection against
3 common cause failure. Next slide, please.

4 The Staff's review of this departure was
5 based on current regulatory requirements and the
6 guidance in Standard Review Plan. In particular, the
7 modified design was primarily evaluated against 10 CFR
8 50.55a(h), which incorporates by reference IEEE
9 Standard 603-1991, whereas the certified ABWR design
10 complies with the older IEEE Standard 279-1971. The
11 IEEE Standard 603 and the current guidance better
12 address new I&C systems, including the use of digital
13 technology.

14 In addition, digital I&C Interim Staff
15 Guidance was used to evaluate this departure. These
16 Interim Staff Guidance positions were developed to
17 address potential licensing issues that could arise
18 with the use of modern I&C technology and designs.
19 This review involved a number of public meetings, ACRS
20 briefings, and Requests for Additional Information.
21 The Applicant addressed all of the Staff's safety
22 questions and adequately captured the modified digital
23 I&C design in the FSAR. The I&C departures were
24 determined to meet applicable regulations and the Staff
25 found the changes to enhance overall safety of the I&C

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1 design for STP Units 3 and 4. This concludes our
2 presentation.

3 CHAIRMAN BURNS: Thank you very much. And
4 we'll begin the questioning with Commissioner
5 Ostendorff.

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

22 Dinesh, I'd like to ask you a question on
23 the I&C side of the house here. I know that you
24 identified this area, I believe, I think the phrase was
25 the most significant departure. That doesn't surprise

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1 me given the dynamic, evolving nature of I&C issues as
2 technology continues to develop in this area. I wanted
3 to maybe -- I'm going to use my time on this one and
4 ask you two questions on Slide 16 and 17.

5 MR. TANEJA: Okay.

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

10 MR. TANEJA: The design that was certified
11 was based on a dual-ring communication architecture,
12 which was common between the safety-related modules
13 within a division. So, for example, the ESFAS and the
14 reactor trip system shared the communication network
15 within a division. So if there was -- so there was that
16 dependence on that communication architecture.
17 Whereas the proposed design under the STP Units 3 and
18 4, it is more point-to-point data communication, where
19 the modules communicate from one module to the next
20 module. And there is -- susceptibility to signal
21 failure is minimized basically. Or the failures that
22 are resulting from the signal failure would be limited.

23 COMMISSIONER OSTENDORFF: With respect to
24 the ring bus that you mentioned, was the design that
25 you and your team reviewed, is that the same design

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1 that's being used in Japan now for ABWRs or is there
2 a delta between the Japanese configuration and what you
3 were reviewing?

4 MR. TANEJA: Well, it's kind of similar to
5 what we looked at AP1000 design, because it's using the
6 Common Q platform for the ECCS system, for the ESFAS.
7 And so it's very, very similar to what we did for AP1000.

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

13 MR. TANEJA: Well, the Certified Design, we
14 had reliance on a data communication network which
15 supported all of the safety functions within a
16 division. So if you had a loss of data communication
17 capabilities within a division, you would have to rely
18 on the redundant divisions to perform the safety
19 function. So we could not count on that division's
20 availability. The enhancement to the design in STP
21 Unit 3 and 4, we have to have multiple failures to lose
22 a division now. So enhancement is that a single
23 failure may be -- I may lose limited functionality in
24 safety division. That's really where the enhancement
25 comes in.

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1 COMMISSIONER OSTENDORFF: Okay. Now, I
2 believe that you mentioned the use of Interim Staff
3 Guidance in this area.

4 MR. TANEJA: Right.

5 COMMISSIONER OSTENDORFF: Were there any
6 challenges in developing that Guidance or kind of
7 getting to a regulatory perspective on --

8 MR. TANEJA: Well, those Guidance were
9 developed just in time --

10 COMMISSIONER OSTENDORFF: Yes.

11 MR. TANEJA: -- before we received the
12 Application. So we used those Guidance to really
13 assist us in reviewing the Application and raising the
14 issues in the area of digital I&C.

15 COMMISSIONER OSTENDORFF: So were those --
16 just help me out here a minute, on the Guidance itself,
17 is that Guidance specific to the ABWR design?

18 MR. TANEJA: No, they are specific to the
19 digital I&C. These are Interim Staff Guidance that
20 were developed back in, I think, 2006 time frame. They
21 were developed with the anticipation that all these
22 digital technologies that are coming in, our existing
23 Guidance may not be adequate to address some of these
24 technologies.

25 COMMISSIONER OSTENDORFF: Does that

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1 Guidance provide some flexibility for evolutionary
2 developments on the vendor side of the house?

3 MR. TANEJA: Well, that's Interim Staff
4 Guidance, so we anticipate that as we mature, that we
5 would have to look at those Guidance and come up with
6 more durable Guidance in that area.

7 COMMISSIONER OSTENDORFF: Okay. Thank you
8 very much. Thank you all.

9 CHAIRMAN BURNS: Commissioner Baran.

10 COMMISSIONER BARAN: Thanks. The
11 Commission asked several pre-hearing questions on the
12 digital instrumentation and controls issues. And I
13 wanted to follow up on a couple of those. Dinesh,
14 Pre-hearing Questions 37 and 38 asked about specific
15 ITAAC to ensure that the I&C system is built as
16 designed. In response to these questions, the
17 Application and Staff in some cases listed different
18 ITAAC as addressing this issue. Do you have thoughts
19 about this? Why are we getting kind of different
20 answers about what ITAAC apply? Are the ITAAC in this
21 area specific enough as written?

22 MR. TANEJA: Well, this is -- during our
23 review, this was one of the areas that we really
24 questioned in depth. And in result of that questioning
25 of the Applicant, they provided a supplemental section

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1 in the FSAR, it's Subsection 7-DS, which is a STP
2 specific section. So that section specifically was
3 done to provide the mapping of the Design Acceptance
4 Criteria, DAC, and ITAAC to the design principles.

5 So that section describes all design
6 principles and then it maps it to which DAC and ITAAC
7 would be used to verify that acceptability of that
8 design. And there's specifically a Table 7 DS-1, in
9 that section. So when we answered your question, we
10 basically used what was in the FSAR identified to verify
11 those specific design features what the questions were
12 for. So whereas Applicant may have picked just one or
13 two of those.

14 COMMISSIONER BARAN: Okay. Thanks for
15 that clarification. Pre-hearing Question 38 focused
16 on the 70 percent central processing unit load
17 restriction. Based on the Applicant and Staff
18 responses to that question, it appears that there's no
19 ITAAC specifically testing to ensure that the as-built
20 engineered safety features logic and control system
21 meets the 70 percent load restriction. Should the
22 Commission include acceptance criteria in an ITAAC to
23 specifically address the 70 percent restriction?

24 MR. TANEJA: Well, that is a very design
25 specific load restriction. It is only applicable to

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1 the Common Q platform because of the nature of its
2 design. And so the Topical Report that we reviewed on
3 that design actually has in the Topical Report a
4 requirement to limit the loading to 70 percent if a
5 licensee was to use that platform. So the Topical
6 Report has that limitation and the Applicant in the FSAR
7 commits to designing in compliance with that Topical
8 Report that we reviewed.

9 COMMISSIONER BARAN: Okay. So you think --

10 MR. TANEJA: So that's where the 70 percent
11 load restriction -- so the primary requirement is
12 deterministic performance. That it is
13 deterministically performing the safety function
14 reliably and predictably. Now, different
15 technologies may not have that limitation, whereas
16 Common Q does. For it to perform deterministically,
17 we need to have it loaded less than 70 percent.

18 COMMISSIONER BARAN: Okay. Thank you. I
19 have one more question. This may fall in the category
20 of a demonstration that we actually read these
21 materials. Tom, the Applicant took a Tier 1 departure
22 to eliminate the flammability control system from the
23 design. In response to Pre-hearing Question 13, the
24 Staff indicated that the Applicant used Revision 3 of
25 the relevant Reg Guide, which is 1.97. But the Final

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1 Safety Evaluation Report references Revision 4 as the
2 one that was used by the Staff for its review. Can you
3 just clarify for us whether the Staff used Revision 3
4 or 4 in its review?

5 MR. TAI: Yes. I think I can ask our
6 containment branch folks to help out with this answer
7 with more detail.

8 COMMISSIONER SVINICKI: Don't all run up
9 there at once.

10 (Laughter.)

11 MR. TANEJA: I can speak to this.

12 MR. TAI: Dinesh can start it then.

13 MR. TANEJA: The ABWR Design Certification
14 is based on Reg Guide 1.97 Revision 3. The Applicant
15 did not take departure from compliance with Reg Guide
16 1.97 Revision 3. The Revision 4 really is requiring
17 the new reactor applicants to do a performance-based
18 identification of the instruments required for
19 post-accident monitoring, whereas the Revision 3 is a
20 predefined list that we have in Rev 3 of the Reg Guide
21 1.97. So the area that they took departure was that
22 just specific item within the Revision 3 of Reg Guide
23 1.97 Rev 3, not departing and complying with the 4.
24 They did not do that.

25 COMMISSIONER BARAN: Okay. Thank you.

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1 CHAIRMAN BURNS: Okay. Thank you,
2 Commissioner. I have a couple questions. One for the
3 Applicant. And it deals with a question in a sense that
4 Mr. Holahan pointed to in terms of in a sense a knowledge
5 management problem or challenge, I should say, for the
6 NRC as we do the Design Certification as we move
7 forward. The interesting -- and the question I have
8 for you, it relates to the Commission must make a
9 finding that an applicant for a combined license is
10 technically qualified to engage in the activities
11 authorized, which includes the construction and
12 operation of the proposed units.

13 In the circumstance that we have here in
14 terms of the Application that you're proceeding with
15 the Application to obtain the COL, deferring ultimate
16 decisions, as you're able to do, with respect
17 ultimately whether or not to take advantage of the COL
18 and proceed with the project. So, this decision might
19 play out for a number of years. So my question comes
20 back in a sense to this knowledge management issue, what
21 do you do in terms of knowledge management to ensure
22 that in effect you remain technically qualified to
23 carry out the project if and when you decide to proceed
24 with construction?

25 MR. MCBURNETT: Whereas NINA is owned by NRG

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1 and Toshiba, Toshiba being the vendor/supplier, has a
2 vast resource of knowledge and one thing that always
3 impresses me when I work with their staff is they're
4 much younger.

5 (Laughter.)

6 MR. MCBURNETT: And only aside, and they're
7 currently engaged in building ABWRs and maintaining
8 ABWRs, so that knowledge is ongoing is under
9 development there. Of course, I have an EPC contract
10 with them. And within the NINA staff, we work to ensure
11 that our documents and records trails and everything
12 are well compiled and sortable and searchable and
13 findable for future going forward. And to the extent
14 practical, I'll work to retain the expertise we've had
15 here.

16 And, in fact, as we work through the years,
17 we back in 2010, we had over 100 people in the project.
18 We developed that team from 2006 and we're bringing in
19 various expertise and developing that to the extent
20 practical. And, again, I've maintained contact with
21 various individuals that have worked for us. In fact,
22 I have contractual relationships with a number of them
23 where there is specific expertise that I may need to
24 draw on that I don't need to retain on staff because
25 I don't have work for them unless something comes up.

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1 So we work to do that. And what we'll do going forward,
2 we'll reestablish that process, drawing again on
3 STPNOC, the industry, various contractors, BWR
4 operators, to reconstruct that and take the information
5 we've compiled forward.

6 CHAIRMAN BURNS: Okay. Thank you. And
7 for the Staff, my question relates to the exemption
8 related to financial qualification requirements. I
9 think Mr. Turttil gave a good explanation of where we
10 are or where the Staff is in terms of current
11 requirements, the nature of the exemption request, and
12 the circumstances the Staff believes supports it. One
13 thing just to carry that perhaps a little bit further,
14 given as you described the Commission had initiated a
15 rulemaking, I take it, without prejudicing the outcome
16 of the rulemaking as it may come to the Commission and
17 as the Staff may evaluate comments and prepare a
18 proposed final rule, I take it that you don't see coming
19 down the path any significant deviations from the
20 proposed rule or other circumstances that might cloud
21 your discussion or evaluation of the exemption request?
22 Am I correct?

23 MR. TURTIL: You are correct. We received
24 a small handful of comments, none really presented any
25 either positions or comments that would jeopardize

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1 Staff's current -- the direction of the SRM or Staff's
2 working at this point or its efforts on this. That is
3 correct.

4 CHAIRMAN BURNS: Okay. Thank you.
5 Commissioner Svinicki.

6 COMMISSIONER SVINICKI: I thank both the
7 Applicant Panel and the Staff witnesses for their
8 presentations. I don't have any questions for the
9 Applicant witnesses on this topic. For the Staff
10 witnesses, Dr. Uhle, in her presentation in the Staff's
11 Overview Panel, stated, departures added to the
12 complexity of the Staff's review. But in light of both
13 departures and exemptions, were there any areas where
14 the Staff feels that the quality or completeness of
15 information or the issues at play cause you to have any
16 reservations or concerns about your recommendation
17 that the Commission authorize issuance of these
18 licenses? Are there any remaining -- and are you aware
19 of any other Staff witnesses that feel that there are
20 -- well, I guess there may be unresolved issues, but
21 are there also regulatory processes through DAC and
22 ITAAC and other things to resolve those as we move
23 forward?

24 MR. TAI: No, we don't think so. We haven't
25 seen any indications that the quality has been

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1 degraded. I mean, the departures, we did a very
2 extensive review and the Applicant has been very
3 responsive to give us all the information, so is the
4 exemption request. Any other issues that came up such
5 as Part 21 evaluations or industry reporting, we get
6 on it and they respond to it very quickly. So we're
7 pretty satisfied with the results so far.

8 COMMISSIONER SVINICKI: Okay. Thank you.

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

13 COMMISSIONER SVINICKI: Okay. Thank you.
14 Dinesh, did you want to speak to that? Okay.

15 MR. TANEJA: I mean, I was involved in the
16 review of this design from the initial submission. And
17 so the focus was to really review the departures because
18 the IBR part was incorporated by reference --

19 COMMISSIONER SVINICKI: Yes.

20 MR. TANEJA: -- in the Certified Design.
21 So our focus was -- so there was an extensive effort
22 that went into reviewing the departures. So Tier 1,
23 specifically where the NRC had to approve them, and then
24 we -- but I personally went out and audited the Tier
25 2 departures and their procedures on how they did that.

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1 So I was actually at Bay City looking at how they did
2 Tier 2 departures personally.

3 COMMISSIONER SVINICKI: Based on that, I
4 might ask you a broader question about our regulatory
5 framework. It's not dispositive to the findings that
6 we're making as a result of today's hearing, but based
7 on the experience you have on being with this review
8 and these issues, and particularly because you were
9 working in the area of instrumentation and control, the
10 nature of having Certified Designs and then
11 incorporation into COLs is to, of course, give finality
12 to the issues resolved in the certification, therefore
13 the COL Application does not need to have a review of
14 all those issues.

15 So we're focused very much today on
16 departures, that's a natural outgrowth of having this
17 incorporation, and so you're going to have some limited
18 set of things where a departure is taken. I think it
19 was Chairman Burns though who mentioned the prolonged
20 duration that may be between the Agency's review and
21 certification of a design and its subsequent
22 incorporation in a COL. Did you feel that the
23 processes available to you in this case in terms of
24 Requests for Additional Information and the way that
25 we've structured COL reviews, is that adequate going

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1 forward?

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

10 MR. TANEJA: The existing framework, the
11 process worked for us in reviewing the STP Units 3 and
12 4 design. But we did take a lot of Lessons Learned from
13 this review. And for looking at the future reviews,
14 for these small modular reactors for example, we
15 updated the Design Specific Review Plan Chapter 7,
16 which is the I&C area, specifically, where we took the
17 Lessons Learned and we feel that we can now have a design
18 certified at an architecture level without getting into
19 the specificities where we potentially eliminate
20 departures and allow for the detail design to be
21 developed as part of the COL process, construction
22 process.

23 COMMISSIONER SVINICKI: Okay. Thank you.

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

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1 COMMISSIONER SVINICKI: Well, I appreciate
2 that. The Commission may be contemplating a meeting
3 specifically to drill down on digital I&C issues. You
4 may be back at this witness table. So --

5 (Laughter.)

6 COMMISSIONER SVINICKI: -- you can start
7 thinking about that now. Thank you, Mr. Chairman.

8 CHAIRMAN BURNS: Well, thank you again to
9 our Panels, both the first Overview Panels, as well as
10 the participants in Safety Panel 1. We will take our
11 break now. We will resume the proceedings at 1:30 this
12 afternoon and that will give you lots of time to think
13 about answers to some of these questions. Thank you
14 again and we'll see you at 1:30.

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

18 CHAIRMAN BURNS: And, we'll resume our
19 hearing on the South Texas 3 and 4 Application for a
20 Combined License.

21 The second -- this is Safety Panel Number
22 2, the second of the three that we will have on safety
23 issues.

24 And, I'll, in a moment, ask our witnesses
25 to introduce themselves. I remind them, again, that

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1 you're under oath.

2 As we did for the last panel of the morning,
3 we'll have the presentations -- testimony from the
4 Applicant and then from the staff and then open it up
5 to questions from the Commission.

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

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

10 MR. HEAD: Scott Head.

11 MR. MOOKHOEK: Bill Mookhoek, I'm the
12 Licensing Supervisor for NINA.

13 CHAIRMAN BURNS: Okay. And, I'll ask the
14 staff witnesses to identify themselves.

15 MR. TAI: Tom Tai.

16 MR. NOLAN: Ryan Nolan.

17 MS. RAY: Sheila Ray.

18 CHAIRMAN BURNS: Okay. And, we'll begin
19 with the -- we'll start with the Applicant's panel and
20 their testimony. Please proceed.

21 MR. HEAD: In this panel, we're going to
22 discuss mitigating strategies and the open phase issue.

23 Next slide, please?

24 With respect to mitigating strategies for
25 the type of accident that occurred at Fukushima, STP

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1 3 and 4 would initially rely upon its combustion turbine
2 generators to preclude an extended loss of AC power.

3 Nevertheless, consistent with NRC
4 endorsed guidance which assumed that any installed AC
5 sources are unavailable, the ABWR can support a Phase
6 1 coping duration of at least 36 hours using other
7 permanently installed plant equipment, specifically,
8 the reactor core isolation cooling, the AC independent
9 water addition system, containment overpressure
10 protection system and the remote shutdown system.

11 By employing proper load management, the
12 Train A batteries can supply all necessary loads
13 including lighting and instrumentation for over 40
14 hours.

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

19 STP 3 and 4 does, in fact, have portable
20 equipment including diesel powered pumps, power
21 supplies, hoses and fittings and portable diesel
22 generators, this portable onsite equipment provides
23 additional defense in depth.

24 This straightforward approach of our FLEX
25 strategy is possible because the ABWR certified design

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1 provides defense in depth with installed equipment to
2 mitigate loss of power events.

3 The next topic I would like to cover is the
4 open phase issue.

5 Next slide, please?

6 The Byron open phase event occurred in
7 January 2012. In response to the event, the industry
8 and the operating fleet are developing, testing and
9 implementing new technology to address the issue.

10 The time frame for completion of all
11 activities, including developing the new designs,
12 installation and testing and declaring the new systems
13 functional will extend, in some cases, out to 2017.

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

19 To resolve this schedule issue and meet the
20 NRC staff's expectation for STP 3 and 4, NINA proposed
21 a non-safety related detection and alarm scheme and a
22 safety related actuation and protection design.

23 We will install non-safety related open
24 phase detection equipment on the high side of the main
25 and reserve auxiliary transformers, provide an alarm

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1 in the main control room in the event of an open phase
2 condition.

3 Our approach for actuation employs
4 currently available safety related negative phase
5 sequence relays on the engineered safety feature buses
6 to detect conditions potentially harmful to the
7 engineered safety featured equipment.

8 These relays will open the feeder breakers
9 and de-energize the affected bus. The existing under
10 voltage relays will then start the emergency diesel
11 generators and sequence the equipment on to the bus.

12 The negative phase sequence relays are
13 included in the technical specifications and will be
14 tested regularly.

15 We believe our approach summarized here
16 resolves the open phase issue.

17 That concludes our remarks.

18 CHAIRMAN BURNS: Thank you.

19 Staff?

20 MR. TAI: Good afternoon, this is Safety
21 Panel Number 2. Our presenters are Ryan Nolan from our
22 Plant System Branch and Sheila Ray from our Electrical
23 Branch.

24 Next slide, please?

25 Ryan and Sheila will present STP's

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1 mitigation strategies for beyond design basis events.
2 And Sheila will present NRC Bulletin 2012-01 design
3 vulnerability and electric power systems.

4 Next slide, please?

5 MR. NOLAN: Good afternoon. My name is
6 Ryan Nolan and, after some brief background
7 information, my portion of the presentation will focus
8 on the systems review performed by the staff on how STP
9 Units 3 and 4 address Fukushima Near Term Task Force
10 Recommendation 4.2, mitigation strategies for beyond
11 design basis external events.

12 In SECY-12-0025, the staff provided the
13 Commission with proposed orders requiring mitigation
14 strategies for beyond design basis external events to
15 be issued to all power reactor licensees and holders
16 of construction permits.

17 In the paper, the staff indicated that for
18 new reactors that are currently under active staff
19 review, the staff plans to ensure that the Commission
20 approved Fukushima recommended actions are addressed
21 prior to licensing.

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

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1 The strategies must ensure that the
2 reactor core and spent fuel pool are adequately cooled
3 and containment function is maintained.

4 The strategies are to be developed using
5 a three phase approach, an initial phase using
6 installed equipment, a transition phase using onsite
7 portable equipment and consumables to sustain coping
8 capability until resources can be brought in from
9 offsite and a final phase of indefinite sustainment
10 using offsite resources.

11 In 2012, the NRC issued Interim Staff
12 Guidance JLD-ISG-2012-01 which provided the guidance
13 for the staff review of the STP 3 and 4 mitigation
14 strategies.

15 Next slide, please?

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

20 The Applicant states that Phase 1, or
21 initial phase mitigation, is accomplished using the
22 permanently installed plant equipment which provides
23 36-hour coping capability without the use of AC power
24 or water sources external to the system.

25 Due to this extended coping capability, no

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1 Phase 2 strategy is needed because adequate time is
2 available to bring in offsite equipment and resources,
3 if needed.

4 Therefore, there will be a direct
5 transition from Phase 1 to Phase 3. The Phase 3, or
6 final phase mitigation, will use offsite resources to
7 support the continued use of installed plant equipment
8 to maintain key safety functions beyond 36 hours.

9 Next slide, please?

10 Core cooling in Phase 1 is accomplished by
11 the safety related reactor core isolation cooling, or
12 RCIC system, for 36 hours.

13 Core cooling in Phase 3 is accomplished by
14 the protected permanently installed AC independent
15 water addition system. Heat removed from the core is
16 transferred through the suppression pool and then to
17 containment.

18 The containment will heat up and
19 pressurize and the containment overpressure protection
20 system will automatically actuate at approximately 20
21 hours into the event in order to maintain containment
22 structural integrity.

23 During Phase 1, spent fuel pool cooling is
24 accomplished by passive means. The water in spent fuel
25 pool provides the cooling of the fuel and the pool has

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1 sufficient inventory to maintain stored fuel in a
2 submerged and cooled condition.

3 After 36 hours, the AC independent water
4 addition system is used to make up water, as necessary,
5 in order to maintain the water level.

6 Next slide, please?

7 To support core and spent fuel pool
8 cooling, sufficient water sources were identified. In
9 Phase 1, RCIC uses water from the suppression pool in
10 the condensate storage tank.

11 Beyond 36 hours, the AC independent water
12 addition system uses water from the fire water storage
13 tanks for core and spent fuel pool cooling. Once the
14 water in the fire water storage tanks is depleted at
15 around 72 hours, operators will shift the AC
16 independent water addition system pump suction to the
17 ultimate heat sink.

18 Instead of normal access to the ultimate
19 heat sink, the STP 3 and 4 design utilizes a permanently
20 installed piping connection for the system to access
21 water from the ultimate heat sink basin.

22 In addition, after 36 hours, operators
23 will need to transfer diesel fuel from the protected
24 seismic Category 1 fuel oil storage tanks to support
25 the use of the water addition system.

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

5 MS. RAY: Thank you, Ryan.

6 For Phase 1 only the safety related 125
7 volt DC station batteries are available. Each of the
8 four divisions has its own 125 volt battery.

9 Load shedding is an established industry
10 practice to extend the time during which the battery
11 supply DC power before needing to be recharged.

12 The staff confirmed that the battery has
13 adequate capacity to power the loads for 36 hours via
14 audits of the battery sizing analyses.

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

18 Also, the staff verified that the safety
19 related systems electrically isolated from the FLEX
20 equipment via disconnect switches and circuit
21 breakers.

22 Next slide, please?

23 The STP 3 and 4 mitigation strategies
24 provide core cooling, containment, and spent fuel pool
25 cooling capability as discussed in SECY-12-0025 and

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1 order EA-12-049.

2 The staff proposed a license condition
3 that requires the licensee at least one year prior to
4 completion of the last ITAAC to finalize the
5 development of strategies and guidance to be used for
6 mitigation and to specify implementation details.

7 This includes procedures, training,
8 acquisition, staging or installing of equipment and
9 consumables, configuration controls and provisions for
10 maintenance and testing.

11 The required strategies and guidance shall
12 be fully implemented before fuel load.

13 This concludes today's presentation on
14 mitigation strategies and now, I will address STP's
15 technical solution to open phase conditions.

16 Next slide, please?

17 At Byron Nuclear Generating Station, as
18 well as several other plants, open phase conditions
19 transpired in the offsite power sources.

20 Open phase conditions occur when one or
21 more of the three phases is lost. Bulletin 2012-01 was
22 issued in July of 2012 after the event at Byron. The
23 regulatory basis includes GDC 17 and 10 CFR
24 50.55a(h)(3).

25 Next slide, please?

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1 The failure to design the electric power
2 systems protection scheme to sense a loss of phase event
3 has three potential consequences. These include
4 unbalanced voltages at the safety related buses,
5 tripping of safety related equipment and the
6 unavailability of the onsite electric power system.

7 This situation could result in the onsite
8 or the offsite electric power systems being unable to
9 perform their intended safety functions. Thus, the
10 potential common cause failure event would prevent the
11 supply of electric power to the safety related buses
12 with sufficient capacity and capability to prevent
13 functioning of SSCs important to safety.

14 Since a degraded offsite power source
15 could potentially damage both trains of the emergency
16 core cooling system, the protection scheme must
17 automatically initiate isolation of the degraded
18 offsite power source and transfer the safety buses to
19 the emergency power source.

20 Bulletin 2012-01 was issued to notify
21 plants of the design vulnerability and the potential
22 impact on safety related equipment.

23 Next slide, please?

24 To address the vulnerability, reactor
25 designs with active safety systems including STP should

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1 have the following in place.

2 First, detection of an offsite power
3 system open phase circuit condition on the high voltage
4 side of the transformers under all loading and
5 operating configurations.

6 Second, alarm in the Main Control Room.

7 And, third, automatic mitigation and
8 response to the event.

9 These steps help ensure that AC power with
10 adequate capacity and capability is available to safety
11 related equipment to meet their intended safety
12 function.

13 Next slide, please?

14 STP is the first new reactor design COL
15 Applicant with active safety systems to resolve the
16 open phase issue. STP's technical solution is a scheme
17 to detect, alarm and automatically respond to open
18 phase conditions on credited offsite power circuits.

19 Next slide, please?

20 The information provided by the Applicant
21 was sufficient because the technical solution provides
22 features for detection and alarm as well as
23 automatically protecting safety related equipment.

24 Staff determined that the technical
25 solution prevents safety related or non-safety related

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1 loads from exceeding their ratings which would damage
2 the equipment.

3 To address implementation of this
4 solution, the Applicant has added ITAAC and technical
5 specification surveillance requirements as well as
6 committed to develop procedures and training.

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

9 This concludes the staff's presentation.

10 CHAIRMAN BURNS: Okay, thank you very
11 much.

12 And, we'll begin this afternoon's
13 questions with Commissioner Baran.

14 COMMISSIONER BARAN: Thanks. Thank you
15 for your presentations.

16 I'd like to ask some questions about a few
17 of the post-Fukushima safety issues starting with
18 containment.

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

24 But, the staff paper with proposed plans
25 for resolving open Tier II and III items doesn't

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1 specifically discussion ABWR in its preliminary
2 analysis of Part 52 containments.

3 Did the staff perform an evaluation of the
4 ABWR as part of this Tier III item and do you think this
5 analysis is necessary for the Commission to make the
6 required safety findings for STP?

7 MR. TAI: We have staff to give us some
8 detail.

9 CHAIRMAN BURNS: Would you state your name
10 for the record and your position and --

11 MR. ASHLEY: My name is Clint Ashley. I
12 have been sworn in as a witness and I represent the
13 Containment Branch.

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

16 COMMISSIONER BARAN: Sure. It's a little
17 of a compound question.

18 The first part of it is, did the staff
19 perform an evaluation of the ABWR containment as part
20 of this Tier III item? And then, I guess depend how
21 the answer to that question, do you think this analysis
22 is necessary for the Commission to make the required
23 safety findings for Units 3 and 4?

24 MR. ASHLEY: I think for other containment
25 designs with respect to events, ABWR or South Texas

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1 Project Units 3 and 4 does have the severe accident
2 capable vent.

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

6 ABWR or South Texas Project does have that
7 severe accident design feature already built in to the
8 design of the plant. So, in effect, it does address
9 it I believe.

10 COMMISSIONER BARAN: Okay. Thank you.

11 For the license condition regarding
12 post-Fukushima mitigating strategies, can you tell us
13 a little bit more about what needs to be done to satisfy
14 the license condition? For example, what do you expect
15 to see in the integrated plan that's required by the
16 license condition?

17 MR. TAI: The license conditions for the
18 Fukushima 4.2 requires the licensee, prospective
19 licensee, to take care of procedures, program staffing
20 requirements and purchase of equipment and staging of
21 equipment.

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

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1 MR. TAI: At this stage of the
2 Application, it's not feasible for them to talk about
3 procedures and staffing because none of the system has
4 been finished, detailed design hasn't been finished and
5 other operating procedures has not been established
6 either.

7 And, as far as staging, same thing. The
8 buildings are not built yet.

9 COMMISSIONER BARAN: Okay. And so, as
10 licensees and the staff continue to make progress
11 addressing post-Fukushima safety enhancements, at a
12 more general level, do you expect that future COL
13 Applicants will be completing more of these activities
14 as part of initial licensing rather than as under
15 license conditions?

16 MR. TAI: If we were to talk about another
17 ABWR and S-COL Applicant, perhaps. I think for the
18 design side of this preparation, STP provided a pretty
19 mature design already. But, all the other license
20 conditions that we would impose on them, again,
21 procedures and programs, those are kind of items that
22 we require afterwards anyway.

23 COMMISSIONER BARAN: Okay.

24 MR. TAI: But, the license condition, we
25 do have that leverage to make sure they get it done.

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

5 This is different from the current active
6 plant designs which generally rely on portable
7 equipment stored onsite to address a wide variety of
8 potential initiating events for at least some period
9 of that time.

10 Does the staff view permanently installed
11 plant equipment as providing a safety benefit as
12 compared to portable equipment?

13 MR. NOLAN: Yes.

14 COMMISSIONER BARAN: Can you tell us a
15 little bit why?

16 MR. NOLAN: The reason that a Phase 2 or
17 a transition phase is specified in the order was
18 because, like you mentioned, a lot of operating plants
19 could only in Phase 1 only operate on permanently
20 installed equipment for approximately six to eight
21 hours. And, therefore, they would need some sort of
22 portable onsite equipment to get them to that Phase 3.

23 NEI 12-06, which is the guidance,
24 specifies that the combination of Phase 1 plus Phase
25 2 should be a minimum of 24 hours. And, in the staff

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1 safety evaluation, we conclude that the STP 3 and 4
2 Phase 1 coping of 36 hours using permanently installed
3 equipment sufficiently addresses both the initial and
4 the transition phase specified in the order.

5 And, more importantly, provides the same
6 key safety functions specified in the order.

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

9 COMMISSIONER BARAN: Okay. And, what
10 factors did the staff assess for Phase 1 plant equipment
11 to ensure installed equipment survivability in the
12 event of an extended loss of AC power due to beyond
13 design basis accident?

14 MR. NOLAN: And so, what we did is we
15 reviewed the equipment against the guidance of NEI
16 12-06 and ensured that it is designed to meet all the
17 applicable hazards that are specified in the guidance.

18 We reviewed the FSAR, did a thorough review
19 of the FLEX integrated plan. We issued RAIs. We
20 performed audits of the calculations for core spent
21 fuel pool cooling and containment.

22 COMMISSIONER BARAN: Okay. How will the
23 AC independent water addition system which is relied
24 on for Phase 3 indefinite cooling be protected from
25 beyond design basis initiating events?

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1 MR. NOLAN: The building is located in a
2 robust structure and is designed against all applicable
3 hazards. It's designed against the site specific SSC
4 and flood protected, missile protected.

5 COMMISSIONER BARAN: Okay. And, I have a
6 question for the Applicant which I'll just scoot over
7 a little bit.

8 Where is the industry in developing SAMGs
9 for ABWRs?

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

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

13 MR. THOMAS: Yes, as members of the
14 Boiling Water Reactor Owners Group, we're aware of the
15 development of that. Currently, the industry has
16 issued revisions for the EPG SAMGs which is currently
17 being implemented by the fleet at this time.

18 The Owners Group is also working on ABWR
19 specific EPG SAMGs which should be issued, I think,
20 sometime next year.

21 COMMISSIONER BARAN: Okay, thank you.

22 This is probably a question for Tom. In
23 pre-hearing questions 49 and 50, the staff and the
24 Applicant provided different responses regarding who
25 developed the license conditions regarding physical

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1 security and cybersecurity and whether those license
2 conditions are necessary.

3 Can you clarify the purpose of the license
4 conditions and whether the staff views them as
5 necessary?

6 MR. TAI: These license conditions, to ask
7 the Applicant to provide the strategy, the written
8 strategy eight months before they implement the
9 strategy, we don't necessarily ask the same question
10 to the other COL Applicant.

11 At the time, we did but we didn't think we
12 imposed any unnecessary burden because that's an extra
13 step for them to proceed before implementation anyway.

14 So, when they have this particular written
15 strategy available, we will have a chance to look at
16 it if we want to.

17 COMMISSIONER BARAN: Okay. Does the
18 Applicant want to add anything to that discussion?

19 MR. HEAD: Could you repeat the question?

20 COMMISSIONER BARAN: Well, so we get our
21 responses to the written questions and there were
22 questions about physical security and cybersecurity
23 license conditions.

24 And, it was a little bit of a, you know,
25 kind of cross finger pointing about who came up with

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1 the idea of putting these license conditions in and
2 whether they were necessary.

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

5 MR. HEAD: Well, I believe maybe we are
6 more closely pointing in the same direction. We
7 believe the license conditions were, you know, expected
8 by the SECY. There's a SECY document that we thought
9 we were fulfilling that expectation.

10 The actual crafting of the wording of the
11 license condition may be a little bit different than
12 what we thought it would be, but it's still acceptable
13 to us.

14 COMMISSIONER BARAN: Okay, thank you.

15 Thanks, Mr. Chairman.

16 CHAIRMAN BURNS: Thank you, Commissioner.

17 There was a comment, I think it may have
18 been Ms. Ray who discussed that, but if I'm wrong,
19 whoever did, please jump in, but there was an indication
20 that one aspect of the mitigating strategy would be
21 submitted a year before the last ITAAC. I wanted to
22 make sure I understood what I was hearing. It was you,
23 right? Okay.

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

25 CHAIRMAN BURNS: Okay, okay. So, I'm not

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1 confused.

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

6 And, the reason for that --

7 CHAIRMAN BURNS: A plan is for -- describe
8 for me again what the plan covers?

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

10 CHAIRMAN BURNS: Oh, the FLEX plan, okay.

11 MR. NOLAN: And the timing of it allows us
12 to inspect it and then it needs to be the overall plan
13 including procedures, guidance, training,
14 maintenance, testing, those sorts of things are fully
15 implemented before initial fuel load.

16 CHAIRMAN BURNS: Right. Okay. So the
17 idea of this one year before the last ITAAC standing,
18 I guess, is to allow a period of review?

19 MR. NOLAN: Yes, and it's consistent with
20 the previous COL.

21 CHAIRMAN BURNS: Okay, okay. All right,
22 thanks.

23 One of the things we talked about -- you
24 talked about in terms of this open phase issue is that
25 STP is really the first Part 52 active reactor design

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1 COL Applicant to address this and provide a resolution
2 to it.

3 Where do you see other COL Applicants? Do
4 you see them employing similar solutions? Can the
5 site-specific ITAAC developed for STP potentially be
6 used in other Applications?

7 MS. RAY: So, your first part of the
8 question on whether other COLs could use this solution,
9 yes. However, STP is using a safety related solution
10 for their safety buses.

11 CHAIRMAN BURNS: Okay.

12 MS. RAY: And other COLs may choose to use
13 a non-safety related solution. That is an option.

14 And, on the second part of your question
15 on whether a similar ITAAC could be used for subsequent
16 COLS, yes.

17 CHAIRMAN BURNS: But, again, it may depend
18 on whether they're treating it as safety related or
19 otherwise?

20 MS. RAY: Correct. It will depend
21 specifically on the solution.

22 CHAIRMAN BURNS: Okay, good. Let me see,
23 I think that's it for me.

24 Commissioner Svinicki?

25 COMMISSIONER SVINICKI: I thank everyone

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1 for their presentations.

2 I think my colleagues have covered a lot
3 of the topics already. Perhaps just one question for
4 the staff panel, mitigating strategies order and the
5 implementation of FLEX is occurring across the
6 operating reactors in the United States right now. Did
7 you monitor the implementation of those activities?
8 And, if so, were there any lessons learned or things
9 that you drew into addressing these issues for the STP
10 Application?

11 MR. NOLAN: STP takes a pretty unique
12 approach because they are in the design phase, they can
13 do things that operating plants that have existing SSCs
14 maybe they can't modify. And so, I don't recall any
15 specific lessons learned because they have an
16 opportunity where, like for example, the CST is,
17 they're designing it -- South Texas 3 and 4 is designing
18 it to meet the site specific SSC and be protected
19 against the hazards, where that's not necessarily an
20 option for a current reactor.

21 COMMISSIONER SVINICKI: Okay, thank you.
22 Thank you, Chairman.

23 CHAIRMAN BURNS: Thank you.

24 Commissioner Ostendorff?

25 COMMISSIONER OSTENDORFF: Thank you for

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1 our briefs.

2 My first question is for NINA. With
3 respect to the mitigating strategies and the 36-hour
4 coping time, was that factor originally part of the
5 capabilities of the ABWR or was there some design change
6 required in order to meet that 36-hour coping?

7 MR. HEAD: Yes, 36 hours was a crucial
8 aspect and it, obviously, depends on battery supply.
9 And, it was not an initial part of it but the capability
10 was there.

11 So, but to give you a more complete answer,
12 I'm going to ask Bill Mookhoek to give a little
13 additional background on how we got there.

14 MR. MOOKHOEK: Actually, we developed the
15 36-hour space.

16 CHAIRMAN BURNS: Can you make sure that
17 your button is on and pull the mic a little bit closer
18 to you, please?

19 MR. MOOKHOEK: So, we developed the 36
20 hours based on the time it would take to get the Phase
21 3 equipment to the site. We actually have
22 significantly more battery capacity than we need to
23 satisfy the 36 hours.

24 Per the offsite agreements, from the time
25 we make the phone call, we can have the offsite

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1 equipment at the staging area within 24 hours. That
2 gives us six hours to get it to the site from likely
3 Bay City area and then another six hours to hook it up
4 and get it operational.

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

7 COMMISSIONER OSTENDORFF: And, do you --
8 would you rely on Phase 3 for the regional response
9 center out in Phoenix to ship that equipment to you?

10 MR. MOOKHOEK: I believe ours is Memphis.

11 COMMISSIONER OSTENDORFF: Memphis?

12 MR. MOOKHOEK: Yes, sir.

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

15 MR. MOOKHOEK: Yes, sir. And, the
16 480-volt 1,500 kw diesels are going to be fairly
17 standard in those regional response centers and the
18 connections will be standardized as well.

19 COMMISSIONER OSTENDORFF: Okay, thank
20 you.

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

24 I was just in Byron last Thursday
25 afternoon, so I had a refresher on the 2012 incident

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1 so the timing was good. And I was looking at the
2 negative phase sequence relays which I'm not familiar
3 with. Is that something that the NRC staff had prior
4 experience with?

5 MS. RAY: So, we reviewed the negative
6 sequence relays and in, basically, they can detect
7 unbalanced conditions. So, it's not -- they do detect
8 open phase conditions, but they also detect other
9 faults.

10 We have some experience with them but we
11 did review the simulations that the STP did to ensure
12 that the relay actuates and actually protects the
13 safety related equipment.

14 COMMISSIONER OSTENDORFF: Do you know
15 whether or not any other existing commercial plant in
16 the United States has these negative phase sequence
17 relays?

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

21 COMMISSIONER OSTENDORFF: I think Jake
22 was looking for an opportunity to come to the podium,
23 this is good.

24 MR. ZIMMERMAN: Jake Zimmerman,
25 Electrical Engineering Branch, Division of

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1 Engineering, NRR and I have been sworn in.

2 There are currently no plants, operating
3 plants, among the fleet that have the negative sequence
4 relays installed the way that STP is going to.

5 There is a design -- there are five
6 solutions that are being considered by the industry,
7 one of which is that similar design and it's in various
8 stages right now of development and then
9 implementation.

10 And, they will be going through a series
11 of testing before it actually would go live and actuate.
12 It will have the detection and the alarm in place, but
13 the mitigation won't be in place until they've actually
14 tested it.

15 For example, Byron tested it for
16 approximately a year, their solution, before it went
17 live and it's one of only two plants in the U.S. right
18 now that it's currently live, where, if it detects that
19 particular situation with an open phase, it will
20 actuate to disconnect the offsite power and the diesels
21 will start and load the emergency buses.

22 COMMISSIONER OSTENDORFF: At the risk of
23 asking a dangerous question, I'll ask it anyway, high
24 level, how does this thing operate?

25 MR. ZIMMERMAN: Well, basically, what

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1 will happen is on the high side of the main transformer,
2 for this particular solution, they will pick up if there
3 is a loss of phase.

4 What it will do then is it will isolate the
5 offsite power source which then will allow the relays
6 on the emergency buses to pick up that loss of voltage
7 and detect the unbalanced conditions.

8 In the case of South Texas, theirs is a
9 little bit -- it's more sensitive and so, it will pick
10 up under all of the accident -- all of the loading and
11 operating conditions, but, again, the system has to be
12 more fully developed but that's basically the concept
13 and I defer to Sheila for more details on that if you
14 want.

15 COMMISSIONER OSTENDORFF: Okay. Do you
16 have anything you want to add?

17 MS. RAY: I don't have anything further to
18 add.

19 COMMISSIONER OSTENDORFF: Okay. All
20 right, thank you all.

21 CHAIRMAN BURNS: Okay, just for -- Mr.
22 Zimmerman, will you please confirm that you took the
23 oath this morning?

24 MR. ZIMMERMAN: Yes, I did.

25 CHAIRMAN BURNS: All right, thank you.

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

4 MR. HEAD: Yes, sir.

5 CHAIRMAN BURNS: So, we'll excuse the --
6 and at least one of staff witnesses is the same.

7 Okay, we'll proceed with the third safety
8 panel here. I remind the witnesses on the panel that
9 they remain under oath.

10 Again, I think we can dispense with the
11 introduction of the Applicant's witnesses, they are the
12 same as the -- on the second panel, Mr. Thomas, Mr. Head
13 and Mr. Mookhoek.

14 And, for the staff, Mr. Tai will continue,
15 but I'd ask the other -- our other two witnesses to
16 introduce themselves.

17 Dr. Jones?

18 MR. JONES: Henry Jones.

19 MR. MCINTYRE: Richard McIntyre.

20 CHAIRMAN BURNS: Okay. And, from there,
21 we will proceed with the Applicant's testimony on the
22 new panel.

23 MR. HEAD: Yes, if I could, could we make
24 a comment regarding the negative phase sequence relays?
25 And, if not now, then we can certainly do it at the

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1 closing? But, we just want to make a quick comment.

2 CHAIRMAN BURNS: Why don't we do it now
3 while it's still fresh?

4 MR. HEAD: Steve, will you please?

5 MR. THOMAS: Yes, we just wanted to point
6 out that the reason that we selected these relays for
7 this Application is they are commonly used throughout
8 the industry for motor protection purposes to detect
9 unbalanced phase conditions to protect motors. They
10 are available under Appendix B quality programs as
11 well.

12 So, this is primarily the reason why we
13 chose this is they are used frequently in these types
14 of applications. What's unique in this application is
15 we're using it to detect bus conditions, not just motor
16 conditions.

17 COMMISSIONER OSTENDORFF: Can I respond
18 to that?

19 CHAIRMAN BURNS: Yes, Commissioner?

20 COMMISSIONER OSTENDORFF: And I
21 appreciate the clarification. I just had not come
22 across them in the context of this open phase problem
23 solving. So, I appreciate the fact that you tell us
24 where --

25 MR. THOMAS: They are being used by some

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1 other utilities as well.

2 COMMISSIONER OSTENDORFF: Yes, that's
3 helpful to know. Thank you.

4 MR. THOMAS: Thank you.

5 MR. HEAD: Thank you for that opportunity.

6 CHAIRMAN BURNS: Okay, you're welcome.
7 And please proceed.

8 MR. HEAD: Okay. The hypothetical
9 embankment failure of the main cooling reservoir
10 defines the design basis flood for the site.
11 Therefore, we think it's important to focus on this
12 topic in this session.

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

15 Next slide, please?

16 In this picture, you see Units 1 and 2 as
17 well as the north embankment of the reservoir. Units
18 3 and 4 will be located in the right portion of the
19 picture.

20 Several events are assumed to
21 simultaneously occur in order to create the worst case
22 scenario for the design basis flood.

23 First, the analysis assumes the breach
24 develops at a specific location in the 12.4 mile long
25 embankment directly opposite each of the units. The

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1 failure mechanism assumed is due to uncontrolled
2 seepage through or under the embankment resulting in
3 the removal of material to the point that a breach is
4 initiated. We assumed that the seepage is undetected
5 and progresses rapidly to failure.

6 The resulting flood elevation depends on
7 the flow rate out of the breach which, in turn, depends
8 on the sizes of the breach and the height of the water
9 in the reservoir.

10 To calculate the flood level, we used
11 empirical equations developed based on studies of
12 previous embankment failures. Those empirical
13 equations utilized the height of the water contained
14 volume, height of water and contained volume in the
15 reservoir to determine the maximum breach width and
16 maximum flow rate as well as time to failure.

17 To ensure conservatism, we further assume
18 that the breach width grew at a much faster rate than
19 the empirical equation predicts. And, we assume that
20 the starting height of the reservoir level was almost
21 two feet higher than the maximum operating level.

22 These assumptions produce a flow rate
23 about twice what the empirical equations predict and
24 result in a flood elevation at the power block of about
25 4.8 feet above grade.

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1 For additional margin, this value was then
2 increased to six feet above grade.

3 We then validated these results using an
4 industry recognized computer model. This model
5 incorporates hydrodynamic principles, soil
6 properties, erosion effects to determine the breach
7 flow rate over time.

8 This modeling effort confirmed that the
9 empirical model results and our design basis flood
10 elevation are conservative.

11 Given all the conservatisms in our
12 analysis, we believe that a realistic flood elevation
13 resulting from a breach of the main cooling reservoir
14 embankment will be much less severe than the elevation
15 predicted by the design basis analysis.

16 Next slide, please?

17 The next topics for this panel is a
18 discussion of the alternate vendor. We believe we've
19 covered that topic adequately in our opening remarks
20 so we have nothing new to add except to note that we
21 worked with our colleagues from Toshiba and their
22 partners for over seven years in licensing and design
23 related work.

24 During that time, we have reaffirmed our
25 conclusion that Toshiba can supply the ABWR certified

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1 design for STP 3 and 4.

2 That concludes our remarks.

3 CHAIRMAN BURNS: Thank you.

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

6 MR. TAI: Yes. This is Safety Panel
7 Number 3. Our presenters are Dr. Henry Jones from our
8 meteorology and oceanography branch and Richard
9 McIntyre from the mechanical vendor inspection branch.

10 Next slide, please?

11 Dr. Henry Jones will discuss the design
12 basis flood for the STP site and Mr. Richard McIntyre
13 will present the staff's review of the qualification
14 of Toshiba as the alternate vendor for the certified
15 ABWR design.

16 Next slide, please?

17 DR. JONES: I am Henry Jones, Dr. Henry
18 Jones. I am a hydrologist, oceanographer and
19 meteorologist in the Office of New Reactors and the lead
20 hydrologist for the South Texas Project Hydrology
21 Safety Review.

22 We'll begin with an overview of the site
23 setting showing the primary surface water feature on
24 the site which is the main cooling reservoir, or MCR
25 for short.

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

4 Today's topic is the design basis flood
5 which is the flood caused by a combination of postulated
6 events that result in the most severe hazard for safety
7 related structures, systems and components.

8 Next slide, please?

9 The staff conducted a safety review using
10 several potential flooding scenarios. Based on the
11 staff's analysis, the peak flood level or design basis
12 flood or postulated MCR breach was established at an
13 elevation of 40 feet mean sea level or, if you look at
14 the level at zero at a 34 grade, it's six feet above
15 the plant grade.

16 Staff notes that establish an existing MCR
17 operation and maintenance and requirements include
18 embankment inspections, groundwater level monitoring
19 along the embankments which make the postulated
20 embankment breach an unlikely event.

21 However, for purposes of the safety
22 review, the staff considered the event a worst case
23 flooding scenario.

24 Next slide, please?

25 This is an aerial view of the site looking

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1 southward towards the Texas Gulf Coast. From the STP
2 site in the north to the south end, the MCR length is
3 approximately 3.5 miles. The MCR is a 7,000 acre above
4 ground non-safety related surface water impoundment
5 used as normal cooling water source for the two
6 operating units and it would also be used for the two
7 proposed units.

8 Next slide, please?

9 Here are the results of the STP analysis
10 and collectively shown for your perspective. Water
11 levels from the design basis flood of the MCR embankment
12 breach are six feet above plant grade. The flooding
13 levels of the MCR breach local intense precipitation
14 and dam failure are all above the plant grade while the
15 flooding levels for storm surge, streams and rivers and
16 tsunami are all below the plant grade.

17 For comparison, the highest recorded storm
18 surge in the United States was the result of Hurricane
19 Katrina as measured on the Mississippi Gulf Coast and
20 the STP site is 15 miles inland from the Gulf Coast.

21 Next slide, please?

22 The NRC staff analyzed the implications of
23 the STP design basis flood being approximately six feet
24 above the grade of the power block. The Applicant
25 stated that all safety related facilities below 40 feet

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1 mean sea level in the power block are water tight.

2 Further, the Applicant stated that all
3 water tight doors and hatches will be opened outward
4 and these water tight doors will normally be closed in
5 a closed position under administrative controls.

6 Lastly, all ventilation openings are
7 located above 40 feet mean sea level. The NRC staff
8 concluded that this configuration is acceptable.

9 Staff notes that in a matter of hours water
10 from the postulated design basis flood event would
11 receded from the site.

12 Next slide, please?

13 During the review, an NRC staff member
14 raised concerns about the design basis flood analysis.
15 The nonconcurring individual asserted that the NRC
16 staff's MCR breach flood analysis was not conservative,
17 that the NRC staff's hurricane storm surge analysis was
18 not conservative and that the safety evaluation report
19 inappropriately identified the maximum groundwater
20 level which should be established in relation to the
21 design basis flood.

22 Next slide, please?

23 The NRC solicited independent expert
24 reviewers for dam breach and probable maximum hurricane
25 storm surge related and related issues from the

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1 University of Maryland, the Corps of Engineers, the
2 Bureau of Reclamation, Virginia Tech, Taylor
3 Engineering Research Institute and the University of
4 North Carolina.

5 An independent review panel and the ACRS
6 concluded that all of the technical issues were
7 resolved correctly by the NRC staff for the MCR breach
8 and the hurricane storm surge analysis.

9 With respect to groundwater, no external
10 review was solicited as the maximum groundwater level
11 is a design control document site parameter and is not
12 associated with the design flood basis event.

13 That concludes my presentation.

14 Richard McIntyre will be presenting the
15 alternative vendor qualification.

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

17 NINA, the COL Applicant, announced its
18 intention to change the ABWR design plant vendor from
19 GE-Hitachi to Toshiba. NINA awarded the engineering
20 procurement and construction, or EPC, contract to
21 Toshiba to supply an ABWR design for STP 3 and 4.

22 As holder of the EPC contract, Toshiba
23 assumed the duties normally assigned to the plant
24 vendor and the entity that originally obtained the
25 design certification.

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1 Because Toshiba is not the entity that
2 originally obtained the design certification, it's
3 referred to as an alternate vendor.

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

8 The due diligence effort was intended to
9 assess areas where, in the Applicant's opinion, Toshiba
10 may not have the direct experience necessary to support
11 the certified ABWR design as required by 10 CFR Part
12 52.73(a).

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

16 Next slide, please?

17 The NRC staff conducted a vendor
18 inspection at Toshiba's Isogo Nuclear Engineering
19 Center in Yokohama, Japan. The purpose of this
20 inspection was to independently assess the basis upon
21 which the Applicant determined that Toshiba's capable
22 of providing the certified ABWR design for STP 3 and
23 4 and to confirm the Applicant's conclusion in the DDR.

24 This effort constituted part of the
25 staff's independent assessment of Toshiba's ability to

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1 provide the U.S. certified ABWR design to STP 3 and 4.

2 The NRC staff looked at Toshiba's
3 qualifications as an alternate vendor and checked to
4 determine whether Toshiba had access to engineering
5 documents that are design basis documents for U.S.
6 ABWRs.

7 In cases where a document may not be
8 readily available, the staff looked at Toshiba's
9 ability to develop the needed document independently.

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

14 The staff inspected Toshiba's QA program
15 implementation related to areas such as design control,
16 procurement document control and corrective action.

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

21 Next slide, please?

22 The staff also inspected Toshiba's
23 policies and procedures for developing and
24 implementing the STP 3 and 4 initial plant test program,
25 examined Toshiba's design control processes for

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1 digital instrumentation and control systems and
2 evaluated its ability to perform licensing containment
3 safety analysis.

4 The inspection did not identify any issues
5 in these areas.

6 Next slide, please?

7 The Applicant submitted a due diligence
8 report providing an assessment of Toshiba's
9 qualifications to provide the ABWR design. Toshiba
10 had considerable experience in the design and
11 construction of nuclear power plants and has supplied
12 major portions of the international design of ABWRs
13 currently in operation.

14 The U.S. ABWR design certification safety
15 evaluation report describes the relationship between
16 GE and it's technical associates including Toshiba.

17 The staff reviewed the due diligence
18 report and examined various technical documents for
19 regulatory actions. This review examined areas where
20 Toshiba may not have the experience to support the U.S.
21 certified design.

22 Examples include design documentation,
23 ongoing technical development, licensing support and
24 the development and implementation of a supply chain.

25 Examples of technical review included the

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1 pressure-temperature limits report, inspection of the
2 containment safety analysis and audit of the
3 hydrodynamic load analysis.

4 Next slide, please?

5 The NRC staff concluded that Toshiba's
6 programs are consistent with Appendix B to 10 CFR Part
7 50 and with 10 CFR Part 21 and that Toshiba has both
8 the technical ability and access to technical
9 documentation necessary to provide a design for the
10 U.S. certified ABWR.

11 Based on the areas reviewed during the
12 inspection, the NRC inspectors were able to
13 independently confirm that the Applicant's due
14 diligence review adequately demonstrate that Toshiba
15 is qualified to supply the ABWR certified design as
16 required by 10 CFR 52.73(a).

17 This concludes our presentation.

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

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

23 With respect to the first conclusion,
24 Toshiba's programs are consistent with the
25 requirements of Appendix B to Part 50 and Part 21, it

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1 seems to me that that's really not something that's
2 dependent upon their reliance on or implementation of
3 a particular design certification.

4 They would need to be that, in effect, the
5 Applicant, meaning South Texas or NINA, is responsible
6 overall for the Appendix B program? I want to be sure
7 --

8 MR. MCINTYRE: Correct.

9 CHAIRMAN BURNS: -- that's correct.

10 MR. MCINTYRE: Correct, right.

11 CHAIRMAN BURNS: And then, from tiering
12 off of that, there are vendors primary, secondary,
13 tertiary to the extent that they need to basically
14 provide -- are subject to a nuclear grade quality
15 assurance program they would have to do.

16 So, what I'm trying to understand, that's
17 really -- I'm trying to say, is that really an outcome
18 of Toshiba's ability to implement the design or is that
19 something really that Toshiba independently would need
20 to meet?

21 MR. MCINTYRE: I think it's both. They do
22 have to meet, obviously, they have to meet -- implement
23 an Appendix B program. But, what our inspection did
24 is reviewed an implementation of their program in areas
25 such as design control, like one of the areas we looked

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1 at was digital I&C systems. We looked at initial test
2 program and containment analysis.

3 So, we took a snapshot of certain
4 activities related to those specific technical areas
5 under the Toshiba QA program.

6 Now, you're right, STP already has ongoing
7 qualification of Toshiba as an Appendix B Part 21
8 supplier.

9 CHAIRMAN BURNS: And, I guess maybe to
10 make -- to focus a little bit more, is that part of
11 looking at the Toshiba program, is that also in the
12 context of the ability -- I take it's in the context
13 of the ability to implement that particular design
14 which is not their proprietary design, is that what
15 you're saying?

16 MR. MCINTYRE: Yes.

17 CHAIRMAN BURNS: Okay.

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

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1 CHAIRMAN BURNS: Okay. All right, thank
2 you.

3 One of the areas, regarding the
4 requirements for long term recirculation following a
5 LOCA, NINA described how it addressed NRC guidance
6 related to various aspects of design and operation of
7 the ECCS system, Emergency Core Cooling System
8 Strainers, in response to pre-hearing question 34.

9 And this is actually directed toward NINA,
10 excuse me, that wasn't clear.

11 In NINA's -- or part of the evaluation the
12 effect of debris passing through the strainers on
13 downstream components, NINA committed to have a future
14 downstream test on fuel that it will use in the initial
15 cycle of operation following -- to be performed 18
16 months after or 18 months prior to operation.

17 How is that documented or how is that
18 commitment documented in the Application or in the
19 Combined -- or the draft Combined License and how would
20 the results be communicated to the NRC?

21 MR. HEAD: There is a specific section in
22 Chapter 6 with the details of how that was to unfold
23 -- exist and then it's captured in a license condition.

24 CHAIRMAN BURNS: Okay, good.

25 For the -- one other question I had I think

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1 for the staff here, again, we're talking about, Dr.
2 Jones, talking about the main cooling reservoir as the
3 controlling event for establishing the design basis
4 flood level for the site.

5 And, we talked about -- you talked about
6 in your testimony that the assurance, the staff looking
7 into the assurance that the closure of certain water
8 tight doors during a breach of the reservoir, it's an
9 important risk insight.

10 Can you describe what controls are in place
11 to ensure closure of the water tight doors in the event
12 of a flooding event and are there license conditions,
13 ITAAC or other commitments cited in the staff's SER
14 related to this issue?

15 DR. JONES: I would have to refer to --

16 MR. TAI: That is a review that we did
17 under the PRA group. And, if I may ask Marie to help
18 us to give you a lot more detail?

19 CHAIRMAN BURNS: Okay. And, again, when
20 you come forward, state your name, your position and
21 confirm that you've been put under oath.

22 MS. POHIDA: Good afternoon. I'm Marie
23 Pohida and I'm a Senior PRA Reviewer in the Office of
24 New Reactors. And I have been sworn in.

25 CHAIRMAN BURNS: Okay, thank you.

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1 MS. POHIDA: Okay, could you please repeat
2 the question for me?

3 CHAIRMAN BURNS: Okay. The question is,
4 what are the controls again just relates to the flooding
5 event from the breach of the reservoir, what controls
6 are in place to ensure closure of these water tight
7 doors during a flooding event? Are there license
8 conditions, other controls that would apply to this?

9 MS. POHIDA: Thank you.

10 The water tight door status, it's
11 documented in the FSAR in Section 2.4S.10 for flooding
12 protection requirements. And, if there were to be
13 proposed change to these administrative controls, they
14 would be covered by 10 CFR 50.59, changes, tests and
15 experiments.

16 Does that answer your question?

17 CHAIRMAN BURNS: Okay. Thank you, yes.

18 Commissioner Svinicki?

19 COMMISSIONER SVINICKI: Thank you,
20 everyone for your presentations.

21 I have questions on two topics. The first
22 question is, I ask for a response from both the staff
23 and the Applicant.

24 Members of our Commission received
25 directly a Statement of Concern regarding the design

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1 basis flood level for Units 3 and 4 from an NRC staff
2 member on November 12th. This Statement of Concern was
3 served on all the parties for this hearing.

4 My question is, and again, Dr. Jones, you
5 gave as part of your presentation a discussion of the
6 nonconcurrency. These are substantively the same
7 areas covered in the Statement of Concern, but I'm still
8 going to ask that you respond to this question.

9 Have both the staff and the Applicant had
10 an opportunity to review the Statement of Concern?
11 And, if so, does it bring to light or challenge any of
12 the conclusions that you've made?

13 MR. JONES: Yes, Commissioner.
14 Actually, the Statement that you have has added nothing
15 new to the prior NCP. It's all included in the ACRS
16 report and all the documentation for the nonconcurring,
17 that was just a summary of what has been previously
18 submitted back in 2013.

19 Not only did we address it and had open
20 meetings and discussions with the nonconcurring
21 individual and also that the nonconcurring individual
22 also had a presentation at the ACRS meeting with the
23 staff also, a chance to reply.

24 We actually included in the SER, we didn't
25 change our conclusions, they were the same, but we

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1 actually modified it to give more detail to explain our
2 conservatism for the different flooding mechanisms in
3 the SER.

4 So, what we did is we modified our SER to
5 make sure we had detail -- more detail to the staff's
6 analysis.

7 COMMISSIONER SVINICKI: Okay. Scott,
8 before I get to you, could I just have the Applicant
9 confirm that this was served. You had an opportunity
10 to review this Statement of Concern which was I believe
11 served to your counsel and that it did not alter any
12 of the analysis or conclusions that you reached?

13 MR. HEAD: Yes, ma'am, it did not alter our
14 conclusions that we had reached. And, I agree with Dr.
15 Jones's statements.

16 COMMISSIONER SVINICKI: Okay, thank you.

17 Scott, did -- oh, I'm sorry and the
18 Chairman will want you to give your name, your position
19 and confirm that you are --

20 CHAIRMAN BURNS: Your name, position and
21 confirm that you're under oath.

22 MR. FLANDERS: My name's Scott Flanders,
23 Director of the Division of Site Safety and
24 Environmental Analysis in the Office of New Reactors
25 and I have been sworn in.

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1 I agree with all that Dr. Jones said. I
2 would just add that in the material that you received,
3 there were some aspects of it that recast the issue
4 based on response from the expert panels. But, however
5 that recasting of the issues, as Dr. Jones stated, were
6 the same issues that we've already evaluated and we
7 still continue to maintain the same position even after
8 reviewing this most recent information.

9 COMMISSIONER SVINICKI: Okay, thank you.
10 And, I appreciate that, Scott, because I think that's
11 a very important point that it may have been an emphasis
12 or a, you know, a restatement can sometimes bring
13 different points of emphasis to light, so I appreciate
14 it.

15 And that was the purpose of my question was
16 to say, with this articulation of concerns, did it alter
17 conclusions? It appears that it did not.

18 And, I would just like to state that
19 consistent with the Agency's open collaborative work
20 environment and safety culture, I commend the concerned
21 expert who brought these matters forward. The purpose
22 of my question was to make certain that we had looked
23 at them very closely and analyzed them and, Dr. Jones,
24 you've assured me both in your initial presentation and
25 your subsequent assurance that this was evaluated once

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1 again just to make sure that we had covered everything
2 that was raised. So, thank you for that.

3 My second question is only for the
4 Applicant. In approaching the development of the due
5 diligence that you undertook to qualify Toshiba as an
6 alternate vendor, is there any sort of benchmarking or
7 standards for approaching the structure of a due
8 diligence review of this type?

9 Did you -- how did you come to establish
10 the parameters that you've testified that you undertook
11 a very significant due diligence, are there models or
12 benchmarks for structuring a review of this 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 this
21 evaluation, I did approach it initially with some
22 degree of skepticism and we established a team with the
23 EPC team to basically determine the areas that we felt
24 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 great
3 detail. And, I think we came up with about 17 total
4 areas, 17 or 18 areas that we explored with different
5 teams in great detail in the time that we were over
6 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 Toshiba
10 dealt with those issues we presented them with.

11 COMMISSIONER SVINICKI: Okay. So, can I
12 ask that no matter your mind set going in, upon the
13 conclusion of your due diligence review, you were
14 confident in the decision you had made?

15 MR. THOMAS: Yes, absolutely.

16 COMMISSIONER SVINICKI: Okay, thank you.

17 Thank you, Mr. Chairman.

18 CHAIRMAN BURNS: Okay, thank you.

19 Commissioner Ostendorff?

20 COMMISSIONER OSTENDORFF: Thank you for
21 your presentations.

22 I want to kind of pick up with where
23 Commissioner Svinicki left off on the alternate vendor.
24 This is a question for the Applicant.

25 How did you assess the transfer of

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1 information on the ABWR design from General Electric
2 to Toshiba to ensure that all the required background
3 information that was with the original design was
4 appropriately in the hands of the alternate vendor?

5 MR. THOMAS: That would be mine, too.

6 I'm not certain that an actual transfer
7 took place. If we go back to the development of the
8 Kashiwazaki-Kariwa 6 and 7 projects, it was a joint
9 effort and the documentation you're referring to that
10 we looked at in some detail over there was referred to
11 as a common -- a basis of common engineer documents and
12 I forget the total number, it was 800 or 900 documents
13 that form that, the set of common engineering
14 documents.

15 And those were developed jointly. They
16 were owned jointly by all the participants in that.

17 And, as we went through our process to
18 review and examine those documents and to see that they
19 had them there, I know on the particular team that I
20 was involved with, they were able to produce 100 percent
21 of all the references that were cited in the DCD that
22 we requested as well as all of the design basis
23 calculations that we requested.

24 And not only did they show us these
25 documents, but we were able to meet and discuss them

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1 with the engineers that prepared them, which I was very
2 impressed.

3 COMMISSIONER OSTENDORFF: When you say
4 that, let me stop you right there because it leads to
5 my second question, but it's a great set up.

6 Are there any areas of engineering
7 calculation, for instance, on the ABWR design that
8 Toshiba had to go back and redo or that used a different
9 set of engineering assumptions as to how they
10 approached issues that had already been worked on by
11 GE?

12 MR. THOMAS: Yes.

13 COMMISSIONER OSTENDORFF: Were there any
14 significant concerns raised in any of those areas?

15 MR. THOMAS: No, there were no significant
16 concerns raised in that area. I think their competency
17 was demonstrated more than adequately.

18 COMMISSIONER OSTENDORFF: Okay. So, let
19 me shift back to the NRC staff and ask Richard a related
20 question.

21 Did -- nothing is ever seamless when you
22 transfer from one design agent to the other, there's
23 always going to be some, you know, transaction costs
24 to that. Did the NRC staff see any significant, I use
25 the word significant intentionally here, differences

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1 that made the review more difficult for NRC staff?

2 MR. MCINTYRE: No, I don't believe so.
3 And, as I mentioned in responding to Chairman Burns'
4 question earlier, I think we, you know, we tried to
5 concentrate on areas where, as someone mentioned, where
6 there would be soft areas where they would require some
7 additional translating of the design basis from the GE
8 into Toshiba.

9 But, no, we didn't see -- everything that
10 we looked at, we didn't have any findings in those areas
11 and it seemed like a pretty seamless transition.

12 COMMISSIONER OSTENDORFF: Okay. Because
13 I can imagine there would be circumstances where, well,
14 you know, very highly competent engineers may take
15 different approaches to crafting assumptions or, you
16 know, methodologies for a particular issue.

17 MR. MCINTYRE: We didn't see that in the
18 areas that we inspected.

19 COMMISSIONER OSTENDORFF: Did you see
20 anything in that, you know, Tom, and your project
21 manager?

22 MR. TAI: When we participate in the
23 inspection, the NRC inspection, we picked analysis that
24 we consider challenging and important.

25 Our job was to make sure that we agree with

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1 NINA's assessment that Toshiba is a qualified alternate
2 vendor to supply the ABWR design because it is, like
3 you said, there are a lot of analysis being done and
4 some of them are not available to them directly.

5 So, the analysis and review, we were pretty
6 impressed with them. And, but more importantly, we
7 continue with the review of the COL project and Toshiba
8 was continuing to be involved in supplying some of the
9 design.

10 And, they continued to show that they are
11 capable of doing the work. So, there's no transfer
12 document per se if that is the direct question.

13 COMMISSIONER OSTENDORFF: No, no, I just
14 -- I think you've answered the question, I appreciate
15 that.

16 Though I don't have a comment or question
17 for Dr. Jones, I will comment to my colleague,
18 Commissioner Svinicki that Dr. Jones is also a sailor
19 and he and I served together in the faculty at the Naval
20 Academy about 15 years ago. And he was --

21 COMMISSIONER SVINICKI: Oh, if this is
22 going somewhere interesting, but I just want to comment
23 that Dr. Jones appears the model of sobriety in this
24 moment.

25 CHAIRMAN BURNS: I couldn't have sworn him

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1 in.

2 COMMISSIONER OSTENDORFF: I'll attest to
3 that based on personal observation, but also state that
4 Henry was a very highly regarded member of the
5 oceanography faculty when I was serving over there.
6 So, Henry, it's good to see you here.

7 I have no other questions.

8 CHAIRMAN BURNS: Thank you.

9 Commissioner Baran?

10 COMMISSIONER BARAN: Thanks.

11 It seems like my colleague covered a lot
12 of the flooding and alternate vendor issues, so I'll
13 touch on just a few other issues.

14 I wanted to start with a question for NINA.
15 The Application states that the reactor vessel material
16 surveillance program will include four surveillance
17 capsules and that the withdrawal schedule is based on
18 American Society for Testing and Materials Standard
19 E185.

20 But, the Applicant's schedule doesn't
21 appear to match either the three or four capsule
22 withdrawal schedule in that Standard. Can you clarify
23 how many capsules you plan to withdraw during the
24 initial 40-year licensing period, three or four?

25 MR. HEAD: Just let me ask for a

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1 clarification. Did you say for 3 and 4 or three?

2 COMMISSIONER BARAN: I meant three
3 capsules or four capsules, but I can understand why --
4 yes, for either.

5 MR. HEAD: I don't know -- I think it's
6 four. It's four capsules.

7 COMMISSIONER BARAN: It's four capsules?
8 And, it's consistent with the Standard? With the ASTM
9 Standard?

10 MR. HEAD: Yes.

11 COMMISSIONER BARAN: Okay.

12 MR. HEAD: Was there something our
13 response that didn't --

14 COMMISSIONER BARAN: That was just our
15 review of the materials. It wasn't clear it really
16 lined up, so we wanted that clarification. Four
17 capsules and, from your point view, it is consistent
18 with the --

19 MR. THOMAS: It was certainly our intent
20 to be consistent with the Standard.

21 COMMISSIONER BARAN: Okay, thank you.

22 Turn to the staff, I wanted to follow up
23 on pre-hearing question 14 which dealt with the
24 protection of safety related concrete structures from
25 hazards such as explosions.

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1 Under the Reg Guide criteria, a safety
2 related structure has to be able to withstand one psi
3 of pressure. According to the FSAR, an explosion could
4 create pressure on safety related structures of .987
5 psi which is pretty close to the one psi threshold.

6 The staff and Applicant responses stated
7 that there were conservatisms built into the setting
8 of the one psi standard. Can you briefly describe
9 those conservatisms in a little bit more detail and
10 explain why you found the .987 psi to be acceptable?

11 MR. TAI: Yes. I think we looked at that
12 in detail. And, if I may ask my colleague from DSEA,
13 Rao, is he here?

14 COMMISSIONER BARAN: It's good that I
15 built up extra time. I didn't factor in the walking
16 across the room.

17 MR. TAMMARA: I did not take the oath.

18 CHAIRMAN BURNS: Oh, you need to take the
19 oath? Okay. Let me find it.

20 COMMISSIONER BARAN: Now, this definitely
21 shouldn't come off my time.

22 CHAIRMAN BURNS: And, for the staff people
23 who were too quick, this is why we do this -- why I ask
24 those questions. I'm going to do it freelance.

25 CHAIRMAN BURNS: Would you state your

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1 name?

2 MR. TAMMARA: My name is Rao Tammara. I'm
3 the lead reviewer for the hazards evaluation.

4 CHAIRMAN BURNS: Okay. And, do you swear
5 or affirm that the testimony you're about to give is
6 the truth, the whole truth and nothing but the truth?

7 MR. TAMMARA: Yes, I do.

8 CHAIRMAN BURNS: Okay, thank you. You
9 may proceed.

10 MR. TAMMARA: In evaluating the
11 overpressure, we followed the guidance regulatory
12 requirement specified under 1.91, Reg Guide 1.91.

13 In evaluation of that one, the
14 conservatisms on some built in part, we assumed the
15 entire amount of the tank is spilled and the entire
16 amount is available for the explosion which is a more
17 of a bounding case.

18 So, based upon that one we have calculated
19 what would be the minimum distance to get to the one
20 psi overpressure. So, that is in reality, that is a
21 most conservative evaluation.

22 If it was a vapor or whatever it is, still
23 we will consider the entire amount is available, so that
24 is the bounding case.

25 In evaluation of the vapor cloud, we are

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1 instituting the worst meteorology, 95 percentile,
2 assuming one meter per second in F stability which
3 doesn't have the much dispersion. So, therefore, the
4 plume will travel straight, therefore, it will
5 calculate the highest amount without dispersing.

6 So, there are built in conservatisms
7 already in the calculation of one psi distance. In
8 considering the one psi itself is also a very
9 conservatism because at one psi, only the windows will
10 shatter and a minor damage will be occurred.

11 Therefore, they set the limit in Reg Guide
12 1.91 to be a very conservative value. If you screen
13 one psi, the whole building will be intact. So, to
14 damage the concrete structure it should have much more
15 than one psi. So, even though it is .98, even with some
16 uncertainty, if it is a little below one, still concrete
17 structure would not be damaged.

18 So, there are --

19 COMMISSIONER BARAN: Okay, thank you.

20 MR. TAMMARA: -- a lot of levels of
21 conservatisms.

22 COMMISSIONER BARAN: I appreciate that
23 description. Thank you very much.

24 I also wanted to follow up on pre-hearing
25 question 15 regarding the annual tornado strike

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1 frequency for each unit.

2 Can the staff briefly explain how the
3 tornado design basis for the site meets the
4 characteristics of Reg Guide 1.76?

5 MR. TAI: Yes. May I ask Brad Harvey to
6 help us out with this?

7 CHAIRMAN BURNS: And, will you state your
8 name? Have you been sworn?

9 MR. HARVEY: Yes, I have.

10 CHAIRMAN BURNS: Okay, and state your name
11 and your position for the record.

12 MR. HARVEY: My name is Brad Harvey, I'm
13 the Senior Physical Scientist in the Division of Site
14 Safety and Environmental Analysis.

15 CHAIRMAN BURNS: Okay, thank you.

16 MR. HARVEY: Reg Guide 1.76 basically
17 defines tornado wind speeds at a probability of 10^{-7} per
18 year occurrence, so that's really the probability of
19 a structure being struck times, given that the
20 structure has been struck, the wind speed that would
21 a combination of which would be 10^{-7} .

22 So, if you go into the Reg Guide, there are
23 longitude by latitude two degree boxes that give you
24 the design basis wind speed, tornado wind speed for that
25 probability level.

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1 COMMISSIONER BARAN: Okay. Stay there
2 one second just in case you're going to answer this
3 question, too, I'm just guessing.

4 Following up on hearing question or
5 pre-hearing question 25 related to site specific
6 departure for hurricane generated missile protection,
7 did the staff evaluate all the seismic Category 1
8 structures on site under the hurricane loading criteria
9 as specified in the recently revised Reg Guide 1.221?

10 MR. HARVEY: I am probably not the right
11 person to ask.

12 COMMISSIONER BARAN: Okay. Someone else
13 will walk.

14 MR. TAI: The answer is yes. Do you need
15 to elaborate some more or just yes is sufficient?

16 COMMISSIONER BARAN: Even though it's my
17 time, I'll ask the elaboration question and we'll see
18 if you guys can handle it at the table or want someone
19 to come up.

20 How did the staff briefly conclude that the
21 site specific Category 1 structures were adequate to
22 withstand the design basis hurricane load specified in
23 that Reg Guide?

24 MR. TAI: Manas, can you help us giving
25 more detail?

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1 COMMISSIONER BARAN: You guys didn't
2 realize there's a physical fitness element to these
3 proceedings.

4 CHAIRMAN BURNS: Again, state your name
5 for the record and have you been put under oath?

6 MR. CHAKRAVORTY: My name is Manas
7 Chakravorty and I'm in the structural engineering
8 branch and I have been sworn.

9 CHAIRMAN BURNS: Okay, please proceed.

10 MR. CHAKRAVORTY: We have reviewed both
11 the standard plant structures as well as the site
12 specific structures for Reg Guide 1.221 and this has
13 been documented in the SER pertinent sections.

14 And, what we have found basically that
15 those structures were good enough and for site specific
16 structures, we have done the design also. So, they are
17 site specific. We made sure that those structures are
18 adequate.

19 Now, we used basically the guidelines that
20 is in the SRP and regulatory guide to do that and,
21 basically, this structure successfully passed even
22 though the missiles were a little higher than tornado
23 missiles.

24 COMMISSIONER BARAN: Great, thank you
25 very much.

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1 CHAIRMAN BURNS: Okay. Well, thank you
2 all for this panel, for your testimony. That concludes
3 the overview of the safety panels.

4 We're going to take a brief break, about
5 a five minute break and then after the break, we'll
6 proceed with the environmental panel and then the
7 conclusion of our proceedings.

8 (Whereupon, the above-entitled matter
9 went off the record at 2:49 p.m. and resumed at 2:39
10 p.m.)

11 CHAIRMAN BURNS: I will call the
12 proceedings 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, he 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.

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1 CHAIRMAN BURNS: Okay.

2 MR. KIESLING: And, I'm Russell Kiesling,
3 I was the Environmental Lead for NINA.

4 CHAIRMAN 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 CHAIRMAN 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
5 monitoring are well established and will apply across
6 all units on the site.

7 The switchyard at STP currently has nine
8 transmission circuits to connect it to the grid. These
9 nine circuits occupy three corridors and no additional
10 corridors are needed to support operations of the new
11 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 the
10 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 CHAIRMAN 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 proposed
6 site is co-located with existing STP 1 and 2 and would
7 use much of the existing infrastructure.

8 I will discuss an overview of the staff's
9 process, the impacts we identified, and the outcome of
10 the 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 action
21 under NEPA that requires the development and issuance
22 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 and

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1 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 NRC
11 environmental review for STP 3 and 4. Before starting
12 development of the draft EIS, the staff issued a Notice
13 of Intent to conduct scoping and invite public
14 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 Fisheries
22 Service 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 and
7 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 standard
8 of significance for impacts based on the Council on
9 Environmental Quality Guidance in 40 CFR Section 1508.

10 We used the three significance levels of
11 small, moderate and large as defined in 10 CFR Part 51
12 Appendix B. The definitions are reproduced on this
13 slide.

14 This framework for categorizing impacts
15 helps to explain the effects of the project
16 consistently for each of the resource areas analyzed
17 in the EIS.

18 Next slide, please?

19 As detailed in the final EIS, for almost
20 all resource areas, the impacts from building and
21 operating STP 3 and 4 would be small.

22 Next slide, please?

23 There were a limited number of areas where
24 the impacts were greater than small. In the
25 socioeconomic resource area, the staff determined that

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1 impacts would be small to moderate for demography and
2 infrastructure and community services during
3 construction.

4 The potential for a moderate socioeconomic
5 impact is based on the possible adverse effects from
6 construction workers migrating to the region. The
7 percentage of construction workers relocating to the
8 region likely would be small relative to the existing
9 population base except in Matagorda County where the
10 impact could be moderate. These impacts would only
11 apply during the building phase.

12 The staff's evaluation of economic impacts
13 indicate that site development would be beneficial to
14 local economies and, in Matagorda County, beneficial
15 impacts would likely be moderate while impacts
16 elsewhere would be small.

17 Many of the cumulative impacts resulting
18 from building and operation of STP 3 and 4 and past,
19 present and foreseeable future actions are small.

20 Many resource areas are small to moderate
21 or moderate when considering the cumulative impacts.
22 However, building and operating STP 3 and 4 would have
23 only a small incremental contribution to these adverse
24 impacts.

25 Finally, operation and cumulative impacts

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1 on the economy would be small to large and beneficial.

2 Next slide, please?

3 Andy will discuss the alternatives review
4 next.

5 MR. KUGLER: Thank you, Pat.

6 The review team evaluated the no action
7 alternative, alternative energy sources, alternative
8 system designs and alternative sites.

9 In the alternative energy analysis, the
10 review team evaluated options for the generation of
11 baseload Electrical power. For baseload power
12 sources, the review team examined alternative energy
13 sources such as coal or natural gas fueled power
14 generation and the combination of energy sources
15 including natural gas, biomass and wind coupled with
16 conservation and demand side management.

17 The staff evaluated in detail the
18 reasonable alternatives that could meet the project's
19 purpose and need which was to address the need for
20 additional baseload electrical generating capacity
21 within the Electric Reliability Council of Texas, or
22 ERCOT.

23 An alternative was not considered feasible
24 if it could not meet the purpose and need for baseload
25 power. For the alternatives that could meet the

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1 purpose and need, the review team determined that none
2 would be environmentally preferable to the proposed
3 action.

4 Conservation and demand side management
5 plans were also considered independently but were not
6 determined to be capable of meeting the baseload energy
7 supply needs.

8 The review team also evaluated alternative
9 system designs including six alternative heat
10 dissipation systems, and alternative intake, discharge
11 and water supply systems and locations.

12 The alternative system designs were not
13 environmentally preferable for a number of reasons.
14 For example, they would result in hydrologic
15 alterations of water bodies, higher levels of
16 impingement and entrainment or increased land
17 requirements.

18 Next slide, please?

19 In its site selection process, the
20 Applicant identified candidate areas within the ERCOT
21 region based on proximity to such things as
22 transmission corridors and water supply.

23 Next, the Applicant selected parcels of
24 land within the candidate areas that had sufficient
25 space for a nuclear facility and met other screening

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1 criteria such as distance to rail lines and water
2 availability.

3 Thirty-three potential sites were
4 identified. The potential sites were screened further
5 in two steps to identify the candidate sites.

6 The candidate sites were then evaluated
7 using weighting factors to ensure that the alternative
8 sites selected were among the best sites available in
9 the region of interest.

10 In addition to the STP site, the Applicant
11 identified the Red 2, Allens Creek and Trinity 2 sites
12 as alternatives.

13 These three alternative sites were then
14 considered by the review team in its evaluation. The
15 review team compared the impacts of building and
16 operating two new reactors at the STP site and at each
17 alternative site.

18 While there were differences in the
19 impacts to the various resource areas between the STP
20 site and the alternative sites, none of the alternative
21 sites were environmentally preferable to the STP
22 site.

23 That concludes my presentation. Pat will
24 now discuss the outcome of our analysis of new
25 information.

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1 Next slide, please?

2 MS. VOKOUN: Thank you, Andy.

3 The STP 3 and 4 final EIS was published on
4 February 24, 2011. At the time the final EIS was
5 completed the staff's safety review of the Application
6 was still in progress. 10 CFR 51.92 requires the NRC
7 staff to prepare a supplement to a final EIS if there
8 are substantial changes in the proposed action that are
9 relevant to environmental concerns or if there are new
10 and significant circumstances or information relevant
11 to environmental concerns that bear on the proposed
12 action or its impacts.

13 Accordingly, after completion of the STP
14 final EIS, the staff followed its process for
15 consideration of any new information to determine
16 whether a supplement to the EIS might be necessary.

17 In the case of STP 3 and 4, the staff
18 reviewed changes to the project and environmental
19 regulations. As part of this post-final EIS review,
20 the NRC staff conducted an audit of the Applicant's
21 process for identifying and assessing new information
22 in February 2015.

23 The staff performed an analysis of whether
24 information in the continued storage rule would lead
25 to the supplementation of the final EIS as part of its

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1 review.

2 Based on its consideration of new
3 information since the final EIS was published,
4 including the completion of the continued storage rule,
5 the staff found that a supplement to the final EIS was
6 not warranted.

7 Next slide, please?

8 In summary, the environmental impacts for
9 most resource are small. None of the reasonable
10 alternative energy sources, sites or system designs
11 would be environmentally preferable. And new
12 information did not affect these conclusions.

13 Next slide, please?

14 As stated in the final EIS, the staff
15 recommendation related to the environmental aspects of
16 the proposed action is that the COLs should be issued.

17 The information supporting the
18 recommendation comes from the STP 3 and 4 COL
19 Application Environmental Report, consultation with
20 federal, state, Tribal and local agencies, the staff's
21 own independent review, the staff's consideration of
22 comments received during the public scoping process and
23 the comment period on the draft EIS and the assessments
24 summarized in the EIS including the potential
25 mitigation measures identified in the environmental

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1 report and in the EIS.

2 This concludes the presentation.

3 CHAIRMAN BURNS: I want to thank both
4 panels for their presentation. We'll begin
5 questioning with the Commissioner Svinicki.

6 COMMISSIONER SVINICKI: Again, thank you,
7 to both panels, witnesses, for their presentations. I
8 have two questions and I'm going to direct them, both,
9 to the staff witnesses. If the Applicant feels a
10 strong desire to, also, provide an answer, please,
11 chime in. But, I, I think they are appropriately
12 directed to the staff.

13 The first question is, in the staff's view,
14 did the Applicant propose any novel environmental
15 approaches in the environmental proportion of its
16 application for impact assessments related to resource
17 areas in the FEIS, and if there were any novel
18 approaches to the environmental analysis and
19 consideration, how did the staff address any of those
20 approaches? Did you see any novelty in the Applicant's
21 approach to the assessment?

22 MS. VOKOUN: No, we did not.

23 COMMISSIONER SVINICKI: Okay. Thank
24 you. And, the staff has discussed its process for
25 doing a new information assessment. Andrew, you, in

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1 your testimony just now, talked about considerations
2 of ERCOT annual energy forecast to assess the need for
3 power, has the staff reviewed more recent annual
4 forecasts from ERCOT, as part of its new information
5 assessment, and if so, do any more recent forecasts
6 provide a seriously different picture of the need for
7 power in the ERCOT region than the staff evaluated in
8 the FEIS?

9 MS. VOKOUN: We did review updated reports
10 and it did not present a seriously different picture.

11 COMMISSIONER SVINICKI: Okay. Thank
12 you. Thank you, Mr. Chairman.

13 CHAIRMAN BURNS: Thank you.
14 Commissioner Ostendorff.

15 COMMISSIONER OSTENDORFF: Thank you for
16 your briefs. I'm going to start out with the
17 Applicant, first. I've had a chance to go to this South
18 Texas site, a few years back, and I remember seeing this
19 very large main coolant reservoir.

20 I know that we talked to the previous
21 panels about flooding, hurricane, local intense
22 precipitation, a lot of water. I wanted to, kind of,
23 get to the other end of the spectrum. I know that from
24 time to time, you know, droughts can occur and so forth.
25 I know, when they do happen they happen over a long

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1 period of time. I'm just curious if there's any
2 concerns, or any aspects of lack of water from the main
3 coolant reservoir that you want to highlight?

4 MR. HEAD: Yes, sir. We, we used the most
5 recent Texas drought --

6 COMMISSIONER OSTENDORFF: Okay.

7 MR. HEAD: -- to watch it and observe it,
8 in real-time, and we, we looked at that and compared
9 it to our calculations that we did, regarding operating
10 of all four units in context, with our environmental
11 permits that we had for the water, and, and, you know,
12 we've confirmed that we would be able to operate all
13 four units and the conditions that we saw, recently.

14 COMMISSIONER OSTENDORFF: Okay. I'm
15 going to state it to the Applicant, just, this is out
16 of curiosity, not associated with any safety
17 environmental finding, from my standpoint, but is there
18 much shale gas exploration, or is there any around the
19 South Texas site?

20 MR. HEAD: Shale --

21 COMMISSIONER OSTENDORFF: Shale gas,
22 actually, is there much drilling activity for shale
23 gas?

24 MR. HEAD: And, maybe, I'm trying to,
25 maybe, answer a Commission question, are you asking a

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1 fracking question, or just drilling, in general?

2 COMMISSIONER OSTENDORFF: Just drilling
3 in general, I guess.

4 MR. HEAD: There's some in the area, but
5 certainly nothing like the fracking that's going on --

6 COMMISSIONER OSTENDORFF: East, Eastern
7 Texas.

8 MR. HEAD: -- South of San Antonio and the
9 Eagle Ford.

10 COMMISSIONER OSTENDORFF: Okay.

11 MR. HEAD: I mean, that's where the vast
12 majority of the drilling right now, but there are gas
13 wells and oil in the area, but not, nothing like the
14 Eagle Ford.

15 COMMISSIONER OSTENDORFF: Yes. Okay.

16 MR. HEAD: I'm sorry, did that answer your
17 question?

18 COMMISSIONER OSTENDORFF: No, no, it did.
19 I was just curious. I just, you know, couldn't recall.
20 Thank you, very much. I have no further questions.
21 Thank you.

22 CHAIRMAN BURNS: Commissioner Baran.

23 COMMISSIONER BARAN: Thanks. I have a
24 few questions for Staff. And my first question,
25 really, is a follow-up to Commissioner Ostendorff's

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1 question about drought.

2 In response to prehearing questions, the
3 staff and Applicant stated that the environmental
4 impacts from the record-setting recent drought in Texas
5 were bounded by the extreme drought of the 1950s in
6 Texas. So that's, primarily, kind of, a backward
7 looking review at historical droughts. I want to ask,
8 how we consider future changes.

9 The 2014 National Climate Assessment
10 included detailed discussions and projected climate
11 change impacts in different regions of the country.
12 For example, the National Assessment found that large
13 parts of Texas and Oklahoma are projected to see longer
14 dry spells, up to five more days, on average, by
15 mid-century.

16 The National Assessment also stated "the
17 trend toward dry day, more dry days and higher
18 temperatures across the South, will increase the
19 evaporation, decrease water supplies, reduce
20 electricity transmission capacity and increase cooling
21 demands.

22 These changes will add stress to limited
23 water resources and effect management choices, related
24 to irrigation and municipal use and energy generation."

25 How does the staff's analysis of

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1 environmental impacts from Units 3 and 4 take into
2 account the effects of climate change that are expected
3 to occur, during the multi-decade lifetime of the
4 plant?

5 MS. VOKOUN: I'm going to ask Stacey
6 Imboden to come to the mic and answer some questions
7 about that.

8 CHAIRMAN BURNS: Okay, again, identify
9 yourself and your position and would you confirm
10 whether you've been put under oath.

11 MS. IMBODEN: Oh. Stacey Imboden. I'm a
12 Senior Project Manager in NRO's Division of Site and
13 Environmental Analysis, and yes, I've been sworn in.

14 CHAIRMAN BURNS: Okay. Proceed.

15 MS. IMBODEN: The Staff looked at climate
16 change, specifically, climate change impacts, on the
17 resources that are also impacted by the project.
18 Throughout the EIS, we referenced the work of the Global
19 Change Research Program, which you had also mentioned,
20 Commissioner, and for the areas of, like, water
21 quality, evaporation, drought, those would have been
22 referenced in the operational impacts chapter.
23 Perhaps, Mohammad might want to speak more to that,
24 because he looked at that, specifically.

25 MR. HAQUE: Okay.

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1 MS. VOKOUN: Mohammad Haque, do you have
2 anything to add?

3 CHAIRMAN BURNS: Again, state your name,
4 your position, and confirm whether you've been put
5 under oath.

6 MR. HAQUE: My name is Mohammad Haque and
7 I was sworn in this morning. I'm a Senior Hydrologist
8 with the Office of New Reactors.

9 CHAIRMAN BURNS: Okay, please proceed.

10 MR. HAQUE: Basically, you know, I am
11 talking about the drought in this, 2010's drought that
12 was one of the pretty intense drought, however, it is,
13 kind of, difficult to compare one drought with the other
14 drought, because drought severity depends on its
15 intensity and duration. And so different duration
16 droughts have different effects.

17 And if it, say, a short duration drought,
18 it will have more effect on the agriculture users. And
19 if, really, the drought duration is longer, as was in
20 the 50s, which is the drought of the record, it starts
21 impacting the water supply resources, so it has effect
22 on the water supply side of it.

23 In terms of the, I think the climate change
24 in hydrology, as such that we are talking about, we are
25 talking statistically, based on the record that we

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1 have, you know, in this case, the flow record in the,
2 basically, gauge, which is the nearest gauge, and we
3 looked at the flows in the river and on the record that
4 what has been, and that's all we look at.

5 COMMISSIONER BARAN: So let me ask --

6 MR. HAQUE: And the --

7 COMMISSIONER BARAN: -- a follow-up
8 question there. So, so with respect to drought, say,
9 we're looking at the, kind of, worse droughts in recent,
10 or more extended history.

11 We had the recent drought of 2010/2011.
12 There was a 1950s drought. When you look at the
13 expected, kind of, intensity and duration of droughts,
14 is that purely a backward looking analysis, or do you
15 factor in that, if this plant isn't constructed in a
16 few years and, for a few years, and then, it has a
17 40-year lifetime that we're talking about 2050, 2060,
18 potentially, and by that time, there could be
19 significant changes to what would today be, kind of,
20 a more extreme drought, is that factored into the
21 analysis, at all?

22 MR. HAQUE: Yes. Because when we're
23 saying, you know, if, let's look at it in two ways. One
24 is that the drought, meaning that the, the loss of
25 rainfall and that translates into the river flow, so

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1 when we look at the record that gives you certain chance
2 of occurrence, statistically speaking.

3 And so in the 50s' drought was the drought
4 of record, and in our evaluation that, what impact it
5 may have on the water users and the water supply system,
6 we looked at that particular that this is the worst
7 drought that could occur, because that's the historical
8 record. If you will ask that, if any worse than that
9 could occur, yes, it could occur. We don't know, so --

10 COMMISSIONER BARAN: And is that the
11 potential for something worse than the historically
12 worst drought, is that something that's discussed in
13 the EIS, at all? I mean, particular to climate change,
14 not just because it's always possible that something
15 in the future could be worse than the past, but given
16 the significant scientific evidence of the changes
17 we'll see, particular to that region, over the coming
18 decades, is that factored in to the analysis in a
19 concrete way?

20 MR. FLANDERS: Okay.

21 COMMISSIONER BARAN: Hi Scott.

22 MR. HAQUE: Scott would, would comment on
23 that subject.

24 CHAIRMAN BURNS: Scott, just identify
25 yourself, we know you've been sworn in.

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1 MR. FLANDERS: Okay. Scott Flanders,
2 Director of Division Site Safety and Environmental
3 Analysis. I would say, as Mohammad was explaining
4 that, we do consider past information, in terms of
5 looking at a drought.

6 We do consider, as Stacy mentioned, the
7 forecast and all considerations about potential
8 changes, or effects, in climate, climate change. And
9 in our climate change analysis, we do look at the
10 cumulative impacts associated with climate change and
11 factor in the changes in population, changes in
12 potential uses of water, industries in the area, and
13 factor that in to some kind of baseline conditions that
14 we would consider as a part of climate change condition.

15 However, it is somewhat challenging when
16 you're doing that type of evaluation, given the
17 uncertainty around climate change and making those
18 types of predictions, so we have to try to ground it
19 in some level of information that we can rely on, which
20 is, as Mohammad talked about, the past information, as
21 well as forecasting and looking at it from a cumulative
22 impact standpoint.

23 COMMISSIONER BARAN: Okay. Thank you.
24 Thank you, Mr. Chairman.

25 CHAIRMAN BURNS: Okay, thank you. A

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1 couple of questions, I think, primarily, for the Staff,
2 from my standpoint. I understand that the U.S. Army
3 Corps of Engineers was a cooperating agency on our
4 environmental impact statement.

5 How, given that, how do the environmental
6 findings that we make different from the Corps'
7 determination of a least environmentally damaging
8 practical alternative, is this just semantics, merely
9 semantics, or is there a difference in the quality of
10 our finding versus that finding?

11 MS. VOKOUN: There's not a difference in
12 quality, per se, it's just a different measure they are
13 looking at, often, wetlands and waters and they're
14 looking for the least damaging and environmentally
15 preferable. I'm going to let Andy speak to that, a
16 little bit, but it's just a different measure, but it's
17 not worse, or better.

18 CHAIRMAN BURNS: Okay.

19 MR. KUGLER: Yes, I tend to agree with what
20 Pat said. That, there's really, maybe, a bit of a
21 difference in focus. The Corps is very focused on
22 wetlands and waters in the United States, but they do
23 look at other environmental factors, as well.

24 We've looked at it and we've actually
25 talked a lot with the Corps. There are a lot of

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1 similarities, really. They're more similar than
2 different.

3 When you look at the term least
4 environmentally damaging practical alternative, what
5 they're saying is, first it's got to be practical, it's
6 got to be something you can do. And then, you look to
7 see, what is the least environmentally damaging of
8 those?

9 Our process is laid out a little
10 differently, but it's going to lead you, pretty well,
11 to the same place, because what we do is we look for,
12 you know, what, is there a site that has less
13 environmental impact?

14 And, of course, the sites we're looking at,
15 we have to determine are sites they could actually build
16 at, well that's part of the guidance we give the
17 applicants and something we look for, so it has to be
18 a place you could actually build. It has be practical.

19 And then, we're looking to see if there's
20 a site that would be clearly environmentally better,
21 and if there's not, which is what we concluded here,
22 then the proposed site prevails. So in the end, they
23 lead you to the same place. They're really pretty
24 similar.

25 CHAIRMAN BURNS: Okay. Thank you. Just

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1 for a point of information, when you talked about the
2 alternative sites that were looked at, you mentioned
3 Alan's Creek, I presume this is a site that was actually
4 under consideration in the 1970s for a potential site?

5 MR. KUGLER: Yes that's correct. The
6 associated reservoir has never been built --

7 CHAIRMAN BURNS: Okay.

8 MR. KUGLER: -- so they would have to build
9 a reservoir at that location. But it was a site that
10 was considered previously, yes.

11 CHAIRMAN BURNS: Okay. Thanks. With
12 respect to, we had one potential endangered species
13 issues here, a bird species that had been sighted in
14 Matagorda County.

15 The Rufa Red Knot was listed as threatened
16 by U.S. Fish and Wildlife Service earlier this year.
17 Although, I think, in response, maybe have the
18 Applicant confirm, I think, in response to prehearing
19 questions from the Commission, you indicated it had not
20 been seen on the South Texas site, itself, is that
21 correct?

22 MR. HEAD: That's correct.

23 CHAIRMAN BURNS: Yes. As a consequence,
24 you know, I think, the evaluation is a potential for
25 occurrence of the species on site is low, with no

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1 impacts, anticipated during construction, or
2 operation.

3 That's my question to the Staff and,
4 perhaps, the Applicant, what obligations, if any, are
5 there, with respect to, if the bird is seen on the site,
6 is there notification that has to be made to the Fish
7 and Wildlife Service, or what, what are the
8 implications of that? I'll start with the Staff and
9 Applicant may have --

10 MS. VOKOUN: Yes, if it were to be seen,
11 first, I would say that the Rufa Red Knot is a shore
12 bird and its habitat is, the closest is 15 or more miles
13 away, so it's highly unlikely that that would happen
14 and has not been seen, as you mentioned. But there are
15 notification requirements to Fish and Wildlife, as well
16 as, to us, I believe.

17 CHAIRMAN BURNS: Okay.

18 MS. VOKOUN: So --

19 CHAIRMAN BURNS: Do you have anything to
20 add to that, Mr. Head?

21 MR. HEAD: Yes, I think our Appendix B,
22 that came with the license, would require us to report
23 that.

24 CHAIRMAN BURNS: Okay. All right,
25 thanks. Let's see if -- oh, I think that's, that's it

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1 for me. Thanks. So that concludes our, our
2 environmental panel. I think we'll take a very brief
3 break to allow, we're coming to the point of closing
4 statements from the Applicant and the Staff, so we can
5 break briefly here to get the table set for our final
6 speakers, and then we'll proceed with the closing
7 statements.

8 (Whereupon, the foregoing matter went off
9 the record at 3:33 p.m. and went back on the record at
10 3:38 p.m.)

11 CHAIRMAN BURNS: We'll resume. And at
12 this portion of the proceeding, we'll have closing
13 statements. Actually, we'll begin with the Applicant,
14 so we'll do the NRC shuffle one more time here.

15 MR. MCBURNETT: All right.

16 CHAIRMAN BURNS: You feel like Moses back
17 there, right?

18 MR. MCBURNETT: It's hard to see here.
19 All right, all right, very good. I have a just a short
20 couple of comments I wanted to add and really hit,
21 coming back to a question I was asked earlier, about
22 the impacts and the impacts on Texas and I addressed
23 it from a Matagorda County standpoint, but to step back,
24 because we have looked, you know, beyond that, and then
25 what's happening, Texas is growing, the economy is

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1 growing, the electric demand's growing.

2 We look at what the ERCOT, the Energy
3 Reliability Council of Texas, says and they do
4 predictions and publish about once every six months.
5 They're showing an increasing demand of requirement for
6 10,000, about 10,000 new megawatts, in the next ten
7 years.

8 And that does not include any early
9 retirements of plants for, either environmental, or
10 energy policy reasons, particularly, the clean power
11 plan, or, you know, such things. So, you know,
12 clearly, there's a strong demand for new generation
13 coming in Texas.

14 You know, we look at it as NINA, and as our
15 owners, from an energy diversity standpoint, if a fuel
16 supply diversity is a strategy, you know, we didn't
17 predict that in 2006 the gas prices would be where they
18 are today, and we really don't believe that we can
19 predict, accurately, you know, well into the future,
20 it's just that the history doesn't support it.

21 We haven't, the things like the liquefied
22 natural gas export facilities that are all under
23 construction on the Texas coast and we, you know, what's
24 the impact? Well, we know what the EIA tells us, but,
25 you know, we know one thing about future predictions,

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1 they're typically wrong.

2 So having the combined license really
3 gives us the ability to act on, you know, that
4 opportunity when it comes to us. So we look at when
5 we started eight years ago, to start at eight years to
6 get a license and then another five, or six, or so to
7 build it.

8 That's just too long a time horizon,
9 putting us in a position where we already have a COL
10 in hand, then a time horizon for construction and
11 putting it in service is, you know, five to seven-year,
12 is kind of a number that's much more reasonable in
13 planning times.

14 The other, just on impacts, we did, we did
15 do some studies back in the 2010 time frame, this was
16 for marketing purposes, so, you know, consider the
17 source on it, but it's business development and
18 marketing.

19 But we did look at the, you know, what's
20 the impact of building these units in Texas, during
21 construction? A \$15 Billion Dollar incremental
22 spending stimulus impact from construction that's the
23 flow down through the economy of the construction
24 activity, relating to about 90,000 person years of
25 employments.

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1 During construction, about \$500 Million
2 Dollars in state and local revenue generated.
3 Annually, during operation, about \$200 Million Dollars
4 in state and local revenue generated.

5 And, just again, the flow down in permanent
6 jobs, about 8,000. I mean, look at what the impacts
7 are of building one of these projects, it's a big impact
8 on the overall economy of the, of the State. That
9 concludes my remarks.

10 CHAIRMAN BURNS: Okay. Thank you, Mr.
11 McBurnett. Dr. Uhle, do you want to start, or begin
12 the Staff's closing? You know, it probably would be
13 a good idea to introduce yourselves again.

14 DR. UHLE: Okay. Thank you, Chairman.
15 My name is Jennifer Uhle, I'm the Director of the Office
16 of New Reactors. To my right is Gary Holahan, the
17 Deputy Director of the Office, and Frank Akstulewicz,
18 to the right of Gary is the Director of the Division
19 of New Reactor Licensing, and Mark Delligatti, to my
20 left, is the Deputy Director of the Division of New
21 Reactor Licensing.

22 So again, we thank you for the opportunity
23 to speak today. In the Staff's paper to the Commission
24 pertaining to this mandatory hearing and in the Staff's
25 final Safety Analysis Report, or Safety Evaluation

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1 Report and final Environmental Impact Statement and in
2 our presentations to you, during this hearing, we
3 believe we've provided an adequate basis for making the
4 necessary findings set forth in 10 C.F.R. 52.97 and 10
5 C.F.R. 51.107, to support the issuance of the combined
6 licensees for South Texas projects Units 3 and 4.

7 In this hearing today we've described why
8 the Staff's review of the application has been thorough
9 and complete. The review was appropriately focused by
10 finality, accorded to issues within the scope of the
11 ABWR design certification.

12 We discussed the relevant information
13 incorporated, by reference, from the ABWR design and
14 basis information submitted to justify the licensee's
15 deviations and exemptions.

16 The Staff has demonstrated the
17 thoroughness of our review, in part, through its
18 reliance on staff guidance and interactions with the
19 ACRS. The ACRS agrees with the Staff's conclusions
20 that the combined licenses for the South Texas project
21 Units 3 and 4 should be issued.

22 Today, we highlighted certain aspects of
23 our safety review and environmental review. We
24 explained the Staff's conclusion that the Applicant
25 successfully addressed mitigating strategies for

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1 beyond design basis events.

2 We explained how the Staff analyzed
3 departures and exemptions. We explained the Staff's
4 evaluation of the design basis flood for the South Texas
5 project site.

6 We explained the Staff's review of the
7 qualifications of Toshiba, as the alternate vendor for
8 the certified BWR design. We explained how the staff
9 verified that the Applicant addressed the concerns
10 identified with Bulletin 2012-01, or the Byron open
11 phase electrical issue.

12 During the last Staff Expert Panel, we
13 highlighted our process for compliance with the NRC's
14 NEPA Regulations, specified in Part 51, and other
15 applicable environmental statutes, as well as our
16 appropriate interactions with other government
17 agencies and the public.

18 We are similarly confident that, through
19 the ITAAC process, the construction reactor oversight
20 process, inspections of construction activities,
21 inspections of operational programs, and oversight of
22 the transition from construction to operation we will
23 be able to confirm that the plant has been constructed
24 and will operate in conformance with the license, the
25 Atomic Energy Act, and the Commission's regulations.

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1 The Applicant understands the necessity of
2 complying with requirements and also understand what
3 needs to be done, if any noncompliance is discovered,
4 including determining the safety significance of it,
5 determining operability, the extent of condition, and
6 taking prompt, corrective action to restore
7 compliance.

8 In those instances in which we relied on
9 commitments, we've done so in accordance with the
10 Commission's commitment policies and practices. We
11 have verified that there's an established process, by
12 which the licensee maintains commitments and
13 implements changes, and we, of course, oversee those
14 changes, if any are made.

15 The Staff appreciates the opportunity to
16 present to the Commission today the results of our
17 thorough and complete review. And this concludes
18 Staff's presentation.

19 CHAIRMAN BURNS: Okay. Thank you, very
20 much. Before we take any closing remarks from the
21 Commissioners, are there any final questions any of my
22 colleagues have, at this point?

23 (No Response)

24 CHAIRMAN BURNS: Okay. With that, I
25 think we'll begin with Commissioner Ostendorff.

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1 COMMISSIONER OSTENDORFF: Thank you. A
2 couple words of thanks, for the Applicant. NINA, I
3 want to commend you and your team for the hard work,
4 the high quality of your submittal and the professional
5 conduct you demonstrated throughout the entire time
6 you've been dealing with our staff. It's been noted
7 in a very positive way.

8 COMMISSIONER OSTENDORFF: For our staff,
9 I want to thank you, again, for all, and a lot of people
10 here in various offices, obviously, NRO, but lots of
11 other offices across the entire agency, supporting
12 efforts, for the professionalism of your work effort.

13 It's, I think, we were very well prepared
14 for this meeting today. I thank the Staff, I also thank
15 Brooke Clark and OCAA, for their work the last several
16 months, in particular, to get us ready for this, with
17 prehearing questions and the responsiveness from that
18 group. Also, I thank the Advisory Committee on Reactor
19 Safeguards.

20 Obviously, this is a sufficiency hearing.
21 That's what our goal is, not to go through and do a
22 detailed SlideRule analysis of different calculations,
23 but rather to assess the status of our staff's review
24 of the license application and their recommendations.

25 I note that, if I'm correct, I think every

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1 question that was asked today, was answered, either by
2 the Applicant, or by the Staff, and I think that's
3 important to recognize the professionalism on
4 everybody's part. And I think, going forward, the
5 Commission has a very solid foundation upon which to
6 make a decision, so thank you, all.

7 CHAIRMAN BURNS: Okay. Commissioner
8 Baran.

9 COMMISSIONER BARAN: Well I just want to
10 echo Commissioner Ostendorff's thanks to, both, the
11 Staff and the Applicant. Thank you, to the Staff,
12 again, for all of your hard work over many months and
13 years on this, on this review.

14 And from my point of view, at least, I
15 thought the high-level of preparation by, both, the
16 Staff and NINA, for today's hearing was really
17 demonstrated and obvious, throughout the day, so I
18 think it's been a valuable hearing and, thank you.

19 CHAIRMAN BURNS: And I'll, like the
20 comments of my colleagues, add my thanks to OCAA, as
21 well as the Office of the Secretary, for a lot of behind
22 the scenes work to help us and keep me, sort of, on the
23 right track, in terms of conducting the proceeding and,
24 also, providing the background.

25 And, again, to, I think, the Applicant and

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1 to the Staff, for a lot of work. I echo what
2 Commissioner Svinicki said at the beginning of the
3 hearing, that we are taking, sort of, a surface dive
4 here and there into different aspects of the
5 proceeding.

6 But, much work, much documentation really
7 goes into the consideration of application and the
8 evaluation, which we can only, you know, begin to, begin
9 to touch in the hearing today.

10 But, again, that's the purpose of this, is
11 the, as a general overview and a sampling that we can
12 do of areas of interest to us. I'll have some final
13 procedural things to do, but I'll turn to Commissioner
14 Svinicki.

15 COMMISSIONER SVINICKI: Well, when I
16 reflect upon the comments and questions I've asked
17 today and the comments made about comments I've made,
18 I wonder if, perhaps, I should dispel any lingering view
19 that I lack the requisite reverence for the seafaring
20 traditions of the U.S. Navy.

21 I do not. And, again, you know, spending
22 money like a drunken sailor has its roots in history.
23 Sailors, as I understand it, I'm sure that Commissioner
24 Ostendorff is ready to correct me and probably has his
25 microphone on, would receive their wages at sea and had

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1 nothing to spend them on, so when they got into port
2 they, you know, went about, kind of, spending money in
3 a way that the citizens thought, oh they're just
4 spending all their money.

5 So in any event, it's a much, much broader
6 and so I do have great respect for the naval traditions
7 and for all seagoing and seafaring people of the world.

8 (Laughter)

9 COMMISSIONER SVINICKI: I don't know, let
10 me just cover myself and from one side to the other
11 there. I share Commissioner Ostendorff's observation
12 that there wasn't a single topic that was raised and
13 Commissioners are good at finding the topics that are,
14 kind of, strange and only tangentially related.

15 For both, the Applicant and the Staff,
16 there wasn't anything that we raised that there wasn't
17 someone at the ready to come to the, either someone at
18 the table, already, or someone ready to come to the
19 microphone.

20 And, again, I return to my view that, I
21 think there's many things to doubt in life, but the
22 thoroughness and rigor of the review that is done, I
23 reside great confidence in the NRC processes and the
24 people behind them, so today, as I reflect on it, is
25 just a demonstration of why the Staff holds my high

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1 confidence in that way.

2 And to the Applicant, I state that we don't
3 get to today, unless you have similar experts and
4 professional individuals, who support this extremely
5 meticulous and rigorous NRC review, so again,
6 appreciation and commendation for all of the many tens
7 of thousands of hours of work done by the Applicant and
8 the contractor supporting the Applicant.

9 I'll just close by saying I agree with
10 Commissioner Ostendorff that we both have and have
11 added to today a very solid record for the Commission
12 to conclude its deliberations and make a decision.
13 Thank you.

14 CHAIRMAN BURNS: Okay. Thank you,
15 Commissioner. And some brief procedural notes, with
16 respect to the proceeding. There will, we have the
17 possibility, as a Commission, to provide, or ask you,
18 some post-hearing questions.

19 The anticipation is that the Secretary
20 will issue an order with post-hearing questions on, or
21 about, November 30th of this year. If it's on November
22 30th, the deadline for response would be December 7th.

23 There is, also, a transcript being taken,
24 has been taken of the proceedings here today, and we
25 anticipate that an order seeking transcript

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1 corrections, if any, to be issued on, or about, November
2 24th, with a request to reply with any corrections by
3 December 3rd.

4 I note, today, there was no objection to
5 the admission of, either, exhibits and evidence, nor
6 today the testimony of any particular individual, who
7 testified as one of the panels, or who came up in support
8 of, or came in to supplement some of the answers that
9 were provided, so we don't need to deal with resolving
10 objections, in that regard.

11 And finally, when we receive the final
12 submissions, in terms of, particularly, in terms of the
13 post-hearing questions, we will take this matter under
14 advisement and we will expect to issue a final decision
15 promptly, with due regard to the complexity of the
16 issues.

17 Again, we thank you, who are here today,
18 in this room. And those of you, who have monitored the
19 proceedings online, we hope you have found this
20 informative today. And with that, we stand adjourned.

21 (Whereupon, the hearing in the
22 above-entitled matter was concluded at 3:54 p.m.)
23
24
25

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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))

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **ORDER (Adopting Proposed Transcript Corrections, Admitting Post-Hearing Exhibits, and Closing the Record of the Proceeding)** have been served upon the following persons by the Electronic Information Exchange.

U.S. Nuclear Regulatory Commission
Office of Commission Appellate Adjudication
Mail Stop: O-7H4
Washington, DC 20555-0001
E-mail: ocaamail@nrc.gov

U.S. Nuclear Regulatory Commission
Office of the Secretary of the Commission
Mail Stop: O-16C1
Washington, DC 20555-0001
Hearing Docket
E-mail: hearingdocket@nrc.gov

Morgan, Lewis & Bockius, LLP
1111 Pennsylvania Ave., NW
Washington, DC 20004
Counsel for the Applicant
Stephen J. Burdick, Esq.
Steven P. Frantz, Esq.
John E. Matthews, Esq.
Mary Freeze, Assistant
Audrea Salters, Legal Secretary

U.S. Nuclear Regulatory Commission
Office of the General Counsel
Mail Stop - O-15 D21
Washington, DC 20555-0001
Michael Spencer, Esq.
Anthony C. Wilson, Esq.
Susan Vrahoretis, Esq.
Megan Wright, Esq.

E-mail:
sburdick@morganlewis.com
sfrantz@morganlewis.com;
jmatthews@morganlewis.com
mfreeze@morganlewis.com;
asalters@morganlewis.com

E-mail:
michael.spencer@nrc.gov
anthony.wilson@nrc.gov
susan.vrahoretis@nrc.gov
megan.wright@nrc.gov

OGC Mail Center :
OGCMailCenter@nrc.gov

[Original signed by Brian Newell _____]
Office of the Secretary of the Commission

Dated at Rockville, Maryland
this 21st day of December, 2015