UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Stephen G. Burns, Chairman
Kristine L. Svinicki
William C. Ostendorff
Jeff Baran

In the Matter of NUCLEAR INNOVATION NORTH AMERICA LLC (South Texas Project Units 3 and 4)	Docket Nos. 52-012-COL 52-013-COL

CLI-16-02

MEMORANDUM AND ORDER

On November 19, 2015, we held a hearing on the combined license application of Nuclear Innovation North America LLC (NINA) to construct and operate two new nuclear reactors at the South Texas Project site in Matagorda County, Texas.[1] The purpose of the hearing was to consider the sufficiency of the NRC Staff's review of NINA's application. As discussed below, we conclude that the Staff's review has been adequate to support the findings set forth in 10 C.F.R. §§ 52.97(a) and 51.107(a). We authorize issuance of the combined licenses.

[1] *See* In the Matter of Nuclear Innovation North America LLC, Combined Licenses for South Texas Project, Units 3 and 4; Notice of Hearing, 80 Fed. Reg. 61,492 (Oct. 13, 2015) (Notice of Hearing); In the Matter of Nuclear Innovation North America LLC, Combined Licenses for South Texas Project, Units 3 and 4; Notice of Hearing; Correction, 80 Fed. Reg. 69,986 (Nov. 12, 2015); Tr. at 1-225 (attached as Appendix B to Order of the Secretary (Adopting Proposed Transcript Corrections, Admitting Post-Hearing Exhibits, and Closing the Record of the Proceeding) (Dec. 21, 2015) (unpublished)).

I. BACKGROUND

A. Proposed Action

NINA seeks to build two Advanced Boiling Water Reactors (ABWRs) at the South Texas Project site in Matagorda County, Texas. Two units are currently operating at the site: Unit 1 began operation in 1988, and Unit 2 began operation in 1989. NINA's predecessor, South Texas Project Nuclear Operating Company (STPNOC), submitted a combined license application for Units 3 and 4 in September 2007.[2] The Staff accepted the application for review shortly thereafter.[3] NINA became the lead applicant for STP Units 3 and 4, with STPNOC remaining as the proposed operator, in January 2011.[4]

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[2] The Staff published a hearing notice on December 27, 2007, but later withdrew that notice. *See* South Texas Project Nuclear Operating Company; Notice of Hearing and Opportunity To Petition for Leave To Intervene on a Combined License for the South Texas Project Units 3 and 4, 72 Fed. Reg. 73,381 (Dec. 27, 2007); Letter from David Matthews, Office of New Reactors, NRC, to Mark McBurnett, STPNOC (Jan. 30, 2008) (ADAMS accession no. ML080230721) (suspending review of certain portions of the combined license application pursuant to STPNOC's request); *South Texas Project Nuclear Operating Co.* (South Texas Project Units 3 and 4) Order (Feb. 13, 2008) (unpublished) (withdrawing the hearing notice). The hearing notice was re-published early the next year. South Texas Project Nuclear Operating Company Application for the South Texas Project Units 3 and 4; Notice of Order, Hearing, and Opportunity To Petition for Leave To Intervene, 74 Fed. Reg. 7934 (Feb. 20, 2009).

[3] South Texas Project Nuclear Operating Company; Acceptance for Docketing of an Application for Combined License for South Texas Project Units 3 and 4, 72 Fed. Reg. 68,597 (Dec. 5, 2007).

[4] The applicants are NINA; STPNOC; City Public Service Board of the City of San Antonio, Texas; NINA Texas 3 LLC; and NINA Texas 4 LLC. *See* Ex. NRC-001, "The Staff's Statement in Support of the Uncontested Hearing for Issuance of Combined Licenses for the South Texas Project, Units 3 and 4," Commission Paper SECY-15-0123 (Sept. 30, 2015), at 2 (Staff Information Paper) (citing Letter from Mark McBurnett, STPNOC, to NRC Document Control Desk (Jan. 19, 2011) (ML110250369)).

Consistent with 10 C.F.R. § 52.73, NINA's application references the ABWR standard design certification, which was adopted as a final rule in May 1997.[5] Subsequently, the agency issued an amendment to the ABWR design certification rule to comply with the NRC's aircraft impact assessment regulations.[6] Currently, the NRC is reviewing a renewal application for the ABWR design certification submitted by GE Hitachi Nuclear Energy; the STP combined license application does not reference this renewal application.[7]

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[5] *See* 10 C.F.R. pt. 52, app. A; Standard Design Certification for the U.S. Advanced Boiling Water Reactor Design, 62 Fed. Reg. 25,800 (May 12, 1997).

[6] *See* U.S. Advanced Boiling Water Reactor Aircraft Impact Design Certification Amendment, 76 Fed. Reg. 78,096 (Dec. 16, 2011). STPNOC was the applicant for this amendment. Ex. NRC-001, Staff Information Paper, at 3. The reference ABWR Design Control Document is Revision 4 of the ABWR Design Control Document submitted by General Electric Nuclear Energy (GE) in March 1997, as codified in 10 C.F.R. Part 52, Appendix A, and as modified by the September 2010 STP application to amend the ABWR Design Certification Rule. Ex. STP-002, *Applicants' Pre-Filed Testimony of Scott M. Head for the Mandatory Hearing on Uncontested Issues for South Texas Project Units 3 and 4*, at 14 (Nov. 12, 2015) (NINA Pre-filed Testimony) (citing "ABWR Design Control Document," Rev. 4 (Mar. 1997) (ML11126A129)).

[7] While the ABWR renewal application does not directly affect the combined license application for STP Units 3 and 4, GE Hitachi Nuclear Energy recently discovered an issue that is relevant to the STP combined license application. In January 2016, GE Hitachi informed the Staff of an inconsistency between Tier 1 and Tier 2 information in the ABWR certified design related to the Containment Overpressure Protection System (COPS), which is a subsystem of the non-safety related Atmospheric Control System. Letter from Michael Spencer, NRC Staff, to the Commission (Jan. 19, 2016) (Staff Notification). GE Hitachi informed the Staff that "during the process of confirming the detailed design of the COPS pipe diameter in an ABWR under construction, it was determined that the [Tier 1] required minimum capacity COPS flow rate . . . could not be achieved with the current Tier 2 design information." *Id.,* Attachment 1, at 1. As a result, GE Hitachi proposed changes to Tier 2 information that would increase the diameter of the COPS piping and the rupture disk size to maintain the flow rate required by Tier 1. *Id.*

As the Staff noted, where there is a conflict between Tier 1 and Tier 2 of a Design Control Document, Tier 1 controls. 10 C.F.R. pt. 51, app. A, § III.C; Staff Notification Letter, Attachment 1, at 2. "Thus, the constructed plant must satisfy the Tier 1 COPS flow rate notwithstanding the Tier 2 pipe and rupture disk sizes." Staff Notification Letter, Attachment 1, at 2. Further, the Staff noted that a licensee must confirm that the Tier 1 COPS flow rate requirement is met in the

Issues resolved in the ABWR design certification rulemaking or the contested portion of this combined license proceeding are closed and will not be revisited here; however, a brief discussion of these matters is included to provide context for today's decision. We also provide a brief history of this proceeding.

Over the past eight years, the Staff has spent approximately 157,000 hours on the safety and environmental reviews for the application to determine whether it complies with the Atomic Energy Act of 1954, as amended (AEA), the National Environmental Policy Act of 1969 (NEPA), and the NRC's regulations.[8] During this time, the Staff conducted more than 150 public meetings and conference calls, and NINA responded to over 1,700 questions from the Staff.[9] In addition, the Staff considered approximately 380 comments on the draft environmental impact statement.[10]

The Office of New Reactors led the NRC's review, with support from the Office of Nuclear Security and Incident Response, the Office of Nuclear Material Safety and Safeguards, the Office of Nuclear Reactor Regulation, the Office of the General Counsel, and NRC Regions I

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as-built design to complete inspections, tests, analyses, and acceptance criteria (ITAAC) 2.14.6-04. *Id.* If NINA were to change any Tier 2 information with respect to the COPS design, such changes would be subject to the change process in Part 52, Appendix A. *Id.*; 10 C.F.R. pt. 52, app. A, § VII.B. In the Staff's view, this inconsistency does not impact the issuance of combined licenses for STP Units 3 and 4 because it has low safety significance, the existing Tier 1 requirement for the flow rate controls, an ITAAC requires confirmation that the detailed as-built design meets the Tier 1 flow rate, and a process for changing Tier 2 information exists. Staff Notification, Attachment 1, at 2. We agree with the Staff's assessment.

[8] Tr. at 53 (Dr. Uhle).

[9] *Id.* at 54 (Dr. Uhle); Ex. NRC-001, Staff Information Paper, at 4.

[10] Ex. NRC-005-R, *NRC Staff Responses to Commission Pre-Hearing Questions* (Oct. 29, 2015), Attachment: Staff Responses to Commission Pre-Hearing Questions, at 42 (Staff Answers to Pre-Hearing Questions).

and IV.[11] In its environmental review, the Staff worked closely with the U.S. Army Corps of Engineers, a cooperating agency.[12] Other federal agencies, including the U.S. Department of Homeland Security, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service, also contributed to the Staff's review of NINA's application.[13] In addition, the Staff consulted with state, local, and tribal organizations concerning a variety of issues, including issues arising under the National Historic Preservation Act.[14] The Advisory Committee on Reactor Safeguards (ACRS), a committee of technical experts advising the Commission, provided an independent assessment of the safety aspects of the application.[15]

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[11] Tr. at 53-54 (Dr. Uhle).

[12] *See id.* at 63-64 (Mr. Delligatti).

[13] *See* Ex. NRC-001, Staff Information Paper, at 5; Tr. at 65 (Mr. Delligatti).

[14] Tr. at 64-65 (Mr. Delligatti).

[15] AEA § 182b., 42 U.S.C. § 2232(b); 10 C.F.R. §§ 1.13, 52.87; *see* Letter from John Stetkar, Chairman, ACRS, to Stephen Burns, Chairman, NRC (Feb. 19, 2015) (ML15039A006) (ACRS Letter). The ACRS concluded that "[t]here is reasonable assurance that STP Units 3 and 4 can be built and operated without undue risk to the health and safety of the public" and recommended that the combined license application "be approved following its final revision." *Id.* at 1. It also found that "[t]here is reasonable assurance that the ABWR design and the STP Units 3 and 4 site satisfy" NRC requirements that were imposed as part of the agency's lessons learned from the March 11, 2011 Fukushima Dai-ichi accident. *Id.* at 2. The ACRS identified two issues that the Staff should address "with the issuance" of the combined licenses. *Id.* These issues related to NINA's turbine missile analysis: (1) "The final plant-specific turbine missile [analysis] should explicitly evaluate each turbine control and protection system including the turbine speed sensors, all component failure modes, all required support systems and the measured material toughness properties for the STP Units 3 and 4 monoblock rotors"; and (2) "Rather than imposing a requirement for weekly testing of turbine valves until the turbine missile analysis is submitted, the staff should incorporate a risk-informed analysis to determine the appropriate test frequency." *Id.* The Staff agreed that these two issues would be addressed upon applicant submittal and NRC Staff approval, of a plant-specific turbine missile analysis. Letter from Mark Satorius, EDO, NRC, to John Stetkar, Chairman, ACRS (Apr. 2, 2015), at 2 (ML15072A109) (Staff Response to ACRS); Ex. NRC-001, Staff Information Paper, at 11-12. The ACRS also identified two generic issues that relate to (1) acceptance criteria in NUREG-0800, the Standard Review Plan, for Charpy V-notch energy and fracture appearance transition

NINA did not pursue an early site permit for STP Units 3 and 4.[16] Therefore, all relevant site characteristics, including site geology, hydrology, seismology, and man-made hazards, as well as the potential environmental impacts of the project, were considered as part of the Staff's combined license review and are within the scope of our decision today.

B. Review Standards

The AEA, section 189a., requires that we hold a hearing on each application to construct a nuclear power plant, regardless of whether an interested member of the public requests a hearing on the application.[17] Our Notice of Hearing for the "uncontested" or "mandatory" portion of this proceeding outlines the standards for our review.[18] On the safety side, we must determine whether:

(1) the applicable standards and requirements of the AEA and the Commission's regulations have been met;

(2) any required notifications to other agencies or bodies have been duly made;

(3) there is reasonable assurance that the facility will be constructed and will operate in conformity with the license, the provisions of the AEA, and the Commission's regulations;

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temperature, and (2) "fire-induced spurious actuations that may result from heat or fire damage to digital instrumentation and control signal cabinets, when external connections to those cabinets are made via fiber optic cables." ACRS Letter at 2; Staff Response to ACRS at 2-3. As to the Standard Review Plan issue, the Staff indicated that NINA's assessment of this issue was acceptable, but that it would consider developing specific guidance in the next revision of the SRP. Ex. NRC-001, Staff Information Paper, at 12. As to the fire hazard issue, the Staff noted that the STP 3 and 4 design is adequate, but as a generic matter, the Staff continues to work with stakeholders and committed to update the ACRS in the future. *Id.*

[16] Ex. STP-002, NINA Pre-filed Testimony, at 4. *See generally* 10 C.F.R. pt. 52 subpt. A (describing the process for obtaining an early site permit).

[17] AEA § 189a., 42 U.S.C. § 2239(a).

[18] *See* Notice of Hearing, 80 Fed. Reg. at 61,493.

(4) the applicant is technically and financially qualified to engage in the activities authorized by the license; and

(5) issuance of the license will not be inimical to the common defense and security or to the health and safety of the public.[19]

On the environmental side, we must:

(1) determine whether the requirements of NEPA section 102(2)(A), (C), and (E), and the applicable regulations in 10 C.F.R. Part 51 (the NRC regulations implementing NEPA), have been met;

(2) independently consider the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken;

(3) determine, after weighing the environmental, economic, technical, and other benefits against environmental and other costs, and considering reasonable alternatives, whether the combined licenses should be issued, denied, or appropriately conditioned to protect environmental values; and

(4) determine whether the NEPA review conducted by the NRC Staff has been adequate.[20]

We do not review NINA's application *de novo*; rather, we consider the sufficiency of the Staff's review of the application—that is, whether the Staff's review was sufficient to support the required findings.[21]

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[19] 10 C.F.R. § 52.97(a).

[20] *Id.* § 51.107(a).

[21] *See, e.g.*, *DTE Electric Co.* (Fermi Nuclear Power Plant, Unit 3), CLI-15-13, 81 NRC 555, 560-61 (2015).

C. Contested Proceeding

After the Staff docketed the combined license application for STP Units 3 and 4, it provided interested persons an opportunity to challenge the application in a contested proceeding, in accordance with AEA section 189a.[22] A group of organizations and individuals filed an intervention petition opposing the application.[23] The Atomic Safety and Licensing Board granted the initial hearing request of Sustainable Energy and Economic Development Coalition (SEED Coalition), the South Texas Association for Responsible Energy, and Public Citizen (collectively, Intervenors) and admitted five environmental contentions in 2009.[24] While the Board was considering the initial petition, the Intervenors submitted seven new contentions challenging the completeness of the information contained in the application's Mitigative

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[22] *See supra* note 2.

[23] *Petition for Intervention and Request for Hearing* (Apr. 21, 2009).

[24] The Board ruled on the initial petition in two decisions. In LBP-09-21, 70 NRC 581, 638 (2009), the Board admitted one contention relating to the impacts that a severe accident at one of the units would have on the other three. The same decision rejected eighteen proposed contentions and deferred ruling on nine proposed contentions to a later order. *Id*. STPNOC sought an extension to appeal LBP-09-21; we denied that request on the ground that the appeal had not yet come due: where the Board had ruled only partially on the initial intervention petition, the appeal right under 10 C.F.R. § 2.311 did not accrue until the Board had ruled on the entire petition. CLI-09-18, 70 NRC 859 (2009). In LBP-09-25, 70 NRC 867, 896-97 (2009), the Board admitted four of the remaining contentions and rejected the remaining five proposed contentions. The four contentions admitted in LBP-09-25 related to the impacts of increased radiological discharges to the shared main cooling reservoir, the potential increase of tritium in the groundwater, the effects of seepage from the main cooling reservoir to the groundwater, and the effects of increased groundwater withdrawal due to operation of two additional units. *Id.* at 896.

Strategies Report.[25] In January 2010, the Board rejected all of the mitigative strategies contentions.[26]

In July 2010, the Board admitted a new contention, based on a supplement to STPNOC's environmental report, challenging the applicant's analysis of cost-beneficial severe accident mitigation design alternatives (SAMDAs).[27] In that contention, designated CL-2, the Intervenors argued that STPNOC had underestimated the costs of replacement power should an accident at one unit necessitate the shutdown of the other units on the site.[28] In the same decision, the Board ruled that STPNOC's November 2009 environmental report supplement had cured the previous deficiencies forming the bases of the five contentions admitted in LBP-09-21 and LBP-09-25 and granted STPNOC's motion for summary disposition relating to those contentions.[29]

In February 2011, the Board admitted a new contention, based on the Staff's draft environmental impact statement (DEIS) and designated DEIS-1-G, in which the Intervenors argued that the Staff's need for power analysis was incomplete because it failed to consider reduced demand resulting from energy efficiency.[30] In the same ruling, the Board rejected five

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[25] *Intervenors' Contentions Regarding Applicant's Submittal Under 10 C.F.R. § 52.80 and 10 C.F.R. § 50.54(hh)(2) and Request for Subpart G Hearing* (Aug. 14, 2009) (non-public).

[26] LBP-10-2, 71 NRC 190 (2010).

[27] LBP-10-14, 72 NRC 101, 127-29 (2010); *see also* Memorandum and Order (Ruling on Motion for Reconsideration of Contention CL-2) (Aug. 10, 2010) (unpublished).

[28] LBP-10-14, 72 NRC at 122-29.

[29] *Id*. at 147.

[30] LBP-11-7, 73 NRC 254, 289-94, 314 (2011). The Board rejected the other seven bases proposed to support the contention. *Id.* at 285.

other proposed contentions and denied the Staff's and NINA's motions for summary disposition of Contention CL-2.[31] The Board rejected the Staff's argument that the Commission had resolved all environmental issues regarding SAMDAs in this proceeding by rule (the ABWR design certification) because it found that the STP site characteristics were not bounded by the site parameters in the Technical Support Document for the ABWR and, therefore, that SAMDA issues were not resolved by rule.[32]

The Board held evidentiary hearings on Contentions CL-2 and DEIS-1-G in August 2011 and October 2011, respectively.[33] In December 2011, the Board resolved Contention CL-2 in the Staff's and NINA's favor, finding that NINA and the Staff reasonably accounted for the economic factors raised by the Intervenors and demonstrated that no cost-beneficial SAMDAs exist for the combined license application.[34] Shortly thereafter, the Board resolved Contention DEIS-1-G in the Staff's and NINA's favor, finding that the Final Environmental Impact Statement adequately accounts for reduced demand caused by the adoption of energy-efficient building codes in Texas and demonstrates a need for power from the proposed units.[35]

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[31] *Id*. at 314. The five rejected contentions challenged the DEIS discussion of (1) global warming; (2) comparison of greenhouse gas emissions; (3) greenhouse gas mitigation; (4) climate change; and (5) water needs. *See also Intervenors' Motion for Leave to File New Contentions Based on the Draft Environmental Impact Statement* (May 19, 2010).

[32] LBP-11-7, 73 NRC at 274-76.

[33] LBP-11-38, 74 NRC 817, 821 (2011) (First Partial Initial Decision); LBP-12-5, 75 NRC 227, 233 (2012) (Second Partial Initial Decision).

[34] LBP-11-38, 74 NRC at 821, 860.

[35] LBP-12-5, 75 NRC at 254-55.

The third and final contention to be adjudicated on the merits was Contention FC-1, in which the Intervenors argued that NINA (by that point the lead applicant) was subject to foreign control and domination.[36] Toshiba Corporation, which is the vendor for the project as well as the Japanese "grandparent" corporation of one partner in the joint venture, had agreed to provide all the financing to complete the licensing process after another partner discontinued its financial support of the project.[37] In December 2011, after reviewing NINA's foreign ownership Negation Action Plan and responses to requests for additional information, the Staff concluded that the combined license application did not meet the requirements of 10 C.F.R. § 50.38 related to foreign ownership, control, or domination.[38] In April 2014, after an evidentiary hearing, the Board resolved FC-1 in NINA's favor.[39] The Board found that NINA's ownership and management had been structured to ensure that Toshiba could not influence operations or any

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[36] *See* LBP-11-25, 74 NRC 380 (2011) (admitting the proposed contention); *Intervenors' Motion for Leave to File a New Contention Based on Prohibitions Against Foreign Control* (May 16, 2011).

[37] LBP-14-3, 79 NRC 267, 283-84 (2014) (Third Partial Initial Decision). NINA has overall responsibility for the combined license application and the construction of STP Units 3 and 4 until lead licensee responsibilities are transferred to STPNOC at the operation stage. *Id.* at 283 n.77, 284. At the time of the Board's decision, NRG Energy owned approximately ninety percent of NINA and Toshiba America Nuclear Energy Corporation owned approximately ten percent of NINA. *Id.* at 284. Toshiba America Nuclear Energy Corporation is a wholly-owned subsidiary of Toshiba America, Inc., which, in turn, is a wholly-owned subsidiary of Toshiba Corporation. *Id.*

[38] *Id.* at 274 (citing Letter from David Matthews, Office of New Reactors, NRC to Mark McBurnett, NINA (Dec. 13, 2011), at 1 (ML14028A332)).

[39] *Id.* at 312.

decision relating to safety or security.[40] The Intervenors petitioned for review, with the Staff filing an answer in support of elements of the Intervenors' appeal.[41] We denied review.[42]

Also during the pendency of the contested proceeding, the U.S. Court of Appeals for the District of Columbia Circuit vacated and remanded our 2010 Waste Confidence Decision and Temporary Storage Rule, which for this and other NRC licensing actions served as part of the environmental analysis of the impacts of spent fuel storage after the end of a reactor's license term pending ultimate disposal in a repository.[43] In light of the D.C. Circuit's vacatur and remand of the rule, and in response to a number of suspension petitions filed on multiple dockets (including this one), we held in abeyance the issuance of final licensing decisions for affected matters while we addressed the court's remand.[44] To address the court's remand and provide comprehensive analysis of the environmental impacts of continued storage, we issued a final Continued Storage Rule and supporting Generic Environmental Impact Statement.[45]

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[40] *Id.*

[41] *Intervenors' Petition for Review of Licensing Board Memorandum and Order LBP-14-03* (May 5, 2014); *NRC Staff Answer to Intervenors' Petition for Review of the Licensing Board's Partial Initial Decision on Contention FC-1* (May 30, 2014).

[42] CLI-15-7, 81 NRC 481, 499 (2015).

[43] *See New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012). *See generally* Final Rule: Consideration of Environmental Impacts of Temporary Storage of Spent Fuel After Cessation of Reactor Operation, 75 Fed. Reg. 81,032 (Dec. 23, 2010); Waste Confidence Decision Update, 75 Fed. Reg. 81,037 (Dec. 23, 2010).

[44] *Calvert Cliffs 3 Nuclear Project, LLC, and UniStar Nuclear Operating Services, LLC* (Calvert Cliffs Nuclear Power Plant, Unit 3), CLI-12-16, 76 NRC 63, 67-69 (2012); *see Petition to Suspend Final Decisions in All Pending Reactor Licensing Proceedings Pending Completion of Remanded Waste Confidence Proceedings* (June 18, 2012).

[45] *Calvert Cliffs Nuclear Project, LLC, and UniStar Nuclear Operating Services, LLC* (Calvert Cliffs Nuclear Power Plant, Unit 3), CLI-14-8, 80 NRC 71, 77 (2014). *See generally* Final Rule, Continued Storage of Spent Nuclear Fuel, 79 Fed. Reg. 56,238 (Sept. 19, 2014); Generic

Concurrent with this action, we lifted the licensing suspension and dismissed, or directed licensing boards to dismiss, proposed contentions that had been filed with the multi-docket suspension petitions and held in abeyance.[46] The Board dismissed the Intervenors' continued storage contention consistent with our direction and terminated the contested portion of the proceeding.[47]

Separately, the Staff considered whether the Continued Storage Rule and the associated Generic Environmental Impact Statement presented new and significant information such that a supplement to the FEIS was required.[48] The Staff compared the fuel cycle impacts analysis in the FEIS with the analysis in the Generic Environmental Impact Statement for Continued Storage and determined that the information in the Generic Environmental Impact Statement did not present a seriously different picture of the environmental impacts of the proposed action when compared to the impacts that were described in the FEIS.[49] The Staff concluded that the new information related to the impacts of the continued storage of spent fuel

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Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel, 79 Fed. Reg. 56,263 (Sept. 19, 2014); "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel," NUREG-2157, Vols. 1 and 2, (Sept. 2014) (ML14196A105 and ML14196A107). Several groups, including SEED Coalition, have filed a petition for review in the D.C. Circuit challenging the Continued Storage Rule. *New York v. NRC*, Nos. 14-1210, 14-1212, 14-1216, and 14-1217 (consolidated).

[46] *Calvert Cliffs*, CLI-14-8, 80 NRC at 79-81.

[47] LBP-14-14, 80 NRC 144, 145 (2014).

[48] *See* Ex. NRC-005-R, Staff Answers to Pre-Hearing Questions, at 41 (citing Consideration of New Information Regarding the Impacts of the Continued Storage of Spent Fuel for the South Texas Project Electric Generating Station Units 3 and 4 Combined License Application (July 2015) (ML15096A156)).

[49] *Id.*

would not have changed the Staff's conclusions in the FEIS regarding the alternatives or the benefit-cost balance.[50]

SEED Coalition, a party to the contested proceeding, joined a group of petitioners in a multi-docket petition requesting a supplement to the environmental impact statements for a number of applications, including NINA's combined license application for STP Units 3 and 4, to incorporate by reference the analysis in the Generic Environmental Impact Statement for Continued Storage.[51] SEED Coalition also filed a new contention, accompanied by a motion to reopen the record, as a "placeholder" to permit it to challenge the Staff's FEIS for STP Units 3 and 4 assuming that separate challenges to the Continued Storage Rule filed in the D.C. Circuit are successful.[52] We denied the petition to supplement and declined to admit SEED Coalition's "placeholder" contention.[53]

Additionally, SEED Coalition and Public Citizen, together with several other petitioners, raised issues related to the accident at the Fukushima Dai-ichi Nuclear Power Station. In CLI-11-5, the Commission denied petitions filed on multiple dockets to suspend licensing

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[50] *Id.*

[51] *See Petition to Supplement Reactor-Specific Environmental Impact Statements to Incorporate by Reference the Generic Environmental Impact Statement for Continued Spent Fuel Storage* (Jan. 28, 2015).

[52] *SEED Coalition's Motion to Reopen the Record of Combined License Proceeding for South Texas Units 3 and 4 Nuclear Power Plant* (Apr. 24, 2015), at 1-2; *SEED Coalition's Hearing Request and Petition to Intervene in Combined License Proceeding for South Texas Units 3 and 4 Nuclear Power Plant* (Apr. 24, 2015), at 1-3.

[53] *DTE Electric Co.* (Fermi Nuclear Power Plant, Unit 3), CLI-15-10, 81 NRC 535, 544 (2015); *Duke Energy Carolinas, LLC* (William States Lee III Nuclear Station, Units 1 and 2), CLI-15-15, 81 NRC 803, 805 (2015), *appeal docketed*, No. 15-1262 (D.C. Cir. Aug. 7, 2015).

proceedings.[54] In December 2011, the Board rejected a proposed contention arguing that the NRC's Near-Term Task Force Report constituted new and significant information concerning the environmental risks associated with nuclear power plants that should be analyzed in a supplemental DEIS.[55] The Near-Term Task Force Report was prepared by a team of senior NRC employees shortly after the accident to systematically and methodically review the agency's processes and regulations and provide recommendations on whether the agency should make further improvements to its regulatory processes. Relatedly, in February 2014, several petitioners sought to suspend reactor licensing decisions pending the resolution of a petition for rulemaking concerning the environmental impacts of the expedited transfer of spent

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[54] *Union Electric Co. d/b/a Ameren Missouri* (Callaway Plant, Unit 2), CLI-11-5, 74 NRC 141, 175-76 (2011); *see Emergency Petition to Suspend All Pending Reactor Licensing Decisions and Related Rulemaking Decisions Pending Investigation of Lessons Learned from Fukushima Daiichi Nuclear Power Station Accident* (Apr. 14, 2011, corrected Apr. 18, 2011) (ML111091154). The petition was not filed on the *South Texas* docket, although the caption included this case and Public Citizen and SEED Coalition joined in the filing. We resolved the petitions in our supervisory capacity and did not address procedural irregularities. *See Callaway,* CLI-11-5, 74 NRC at 158 & n.65. The NRC also recently denied petitions for rulemaking, filed in multiple dockets. The Petitioners requested that the NRC rescind its regulations that "reach generic conclusions about the environmental impacts of severe reactor and/or spent fuel pool accidents and therefore prohibit considerations of those impacts in reactor licensing proceedings." Environmental Impacts of Severe Reactor and Spent Fuel Pool Accidents; Petition for rulemaking; Denial, 80 Fed. Reg. 48,235, 48,238 (Aug. 12, 2015); *see Rulemaking Petition to Rescind Prohibition Against Consideration of Environmental Impacts of Severe Reactor and Spent Fuel Pool Accidents and Request to Suspend Licensing Decision* (Aug. 11, 2011).

[55] LBP-11-39, 74 NRC 862, 871-72 (2011).

fuel from the spent fuel pool to dry cask storage.[56] In July 2014, we denied the suspension petitions and provided direction on related requests.[57]

D. Uncontested Proceeding

The scope of an uncontested proceeding is defined by the scope of the contested proceeding: all of the safety and environmental issues in NINA's combined license application, except for the contested matters and those previously resolved as part of the ABWR design certification rulemaking, are subject to our review in the uncontested proceeding.[58] Before we held the first mandatory hearings for combined license applications, we directed the Staff to provide us with an information paper on its review of each application concurrent with the completion of its final safety or environmental review document, whichever comes later.[59] The Staff issued the FEIS for STP Units 3 and 4 in February 2011 and the final Safety Evaluation Report (SER) in September 2015, which triggered the start of the uncontested portion of this

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[56] *See Petition to Suspend Reactor Licensing Decisions and Reactor Re-licensing Decisions Pending Completion of Rulemaking Proceeding Regarding Environmental Impacts of High-Density Pool Storage of Spent Fuel and Mitigation Measures* (Feb. 27, 2014).

[57] *See DTE Electric Co.* (Fermi Nuclear Power Plant, Unit 3), CLI-14-7, 80 NRC 1, 10 (2014) (directing the Staff to deny the rulemaking petitioners' collateral request to suspend licensing decisions on all other pending proceedings and directing the Staff to seek Commission approval if it determines that suspension of NRC rules or the environmental assessments considering SAMDAs is necessary). The Staff continues to evaluate the petition for rulemaking concerning the environmental impacts of the expedited transfer of spent fuel from the spent fuel pool to dry cask storage. *See* PRM-51-31, Docket ID NRC-2014-0055 at http://www.nrc.gov/reading-rm/doc-collections/rulemaking-ruleforum/petitions-by-year/2014/.

[58] *See* Notice of Hearing, 80 Fed. Reg. at 61,493.

[59] *See generally* Staff Requirements—SECY-10-0082—Mandatory Hearing Process for Combined License Application Proceedings Under 10 C.F.R. Part 52 (Dec. 23, 2010), at 1-2 (ML103570203). This direction has been memorialized in our procedures. *See* Internal Commission Procedures, ch. IV, "Commission Meetings/Hearings," at IV-13 (June 12, 2012).

proceeding.[60] We received the Staff's information paper on September 30, 2015, shortly after the Staff's issuance of the SER.[61]

1. Pre-Hearing Activities

We issued the Notice of Hearing on October 13, 2015, and set the schedule for the parties—the Staff and NINA—to file their witness lists, as well as for NINA to provide its pre-filed testimony.[62] We also issued a number of questions on safety-related and environmental topics for the Staff and NINA to answer in writing before the hearing.[63] In addition, we invited interested states, local government bodies, and federally-recognized Indian tribes to provide statements of issues or questions for us to consider as part of the uncontested proceeding.[64] We received one response from Matagorda County Judge Nate McDonald, expressing support for the issuance of the combined licenses.[65]

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[60] *See* Ex. NRC-010A and NRC-010B, "Environmental Impact Statement for Combined Licenses (COLs) for South Texas Project Electric Generating Station Units 3 and 4" (Final Report), NUREG-1937, Vols. 1-2 (Feb. 2011) (ML11049A000 and ML11049A001) (FEIS); Ex. NRC-008, "Final Safety Evaluation Report for the South Texas Project Units 3 and 4 Combined License Application" (Sept. 29, 2015) (ML15232A128) (Safety Evaluation Report); Ex. NRC-009, "Final Safety Evaluation Report for the South Texas Project Units 3 and 4 Combined License Application, Chapters with Sensitive Information—Chapter 1, Chapter 3, and Chapter 19, Attachment A (Sept. 29, 2015) (ML15089A104, ML15226A256, ML15132A346) (non-public).

[61] *See* Ex. NRC-001, Staff Information Paper, at 1.

[62] Notice of Hearing, 80 Fed. Reg. at 61,493. The Staff's information paper serves as its pre-filed testimony.

[63] *See* Order (Transmitting Pre-Hearing Questions) (Oct. 16, 2015) (unpublished) (Pre-Hearing Question Order).

[64] Notice of Hearing, 80 Fed. Reg. at 61,493-94.

[65] Letter from Nate McDonald, County Judge, Matagorda County, to Annette Vietti-Cook, Secretary, NRC (Oct. 7, 2015) (ML15280A414); *see also* Tr. at 18 (Mr. McBurnett) (describing Judge McDonald as the elected chief executive for Matagorda County and serving as the county emergency management director in that capacity).

2. The Hearing

The Secretary of the Commission transmitted a scheduling note to NINA and the Staff setting the topics for and the order of presentations at the hearing.[66] In the first panel, witnesses for NINA and the Staff provided an overview of NINA's combined license application and the Staff's review. The next three panels focused on safety-related issues, and the final panel focused on environmental issues.

The Staff made available one hundred witnesses at the hearing, thirteen of whom were scheduled panelists.[67] Ten additional witnesses answered questions on topics relating to their expertise at the hearing. A total of eight witnesses offered testimony on behalf of NINA on panels at the hearing and in pre-filed written testimony.[68]

a. Summary of the Overview Panels

Mark McBurnett, Chief Executive Officer (CEO) of NINA, Dennis Koehl, President/CEO of STPNOC, and Scott Head, Manager of Regulatory Affairs for NINA, represented NINA on the overview panel.[69] Mr. McBurnett provided background on the development of NINA's license application, including the ownership structure for the units, the decision to pursue combined

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[66] Scheduling Note, "Hearing on Combined Licenses for South Texas Project, Units 3 and 4: Section 189a. of the Atomic Energy Act Proceeding (Public Meeting)," (Scheduling Note) (revising the scheduling note issued on November 5, 2015) (ML16014A431).

[67] *See* Tr. at 12-15, 178-79; *NRC Staff Witness List* (Nov. 18, 2015); Scheduling Note at 2-5.

[68] *See Witness List of Nuclear Innovation North America LLC for the Hearing on Uncontested Issues* (Oct. 29, 2015); Tr. at 11; Ex. STP-002, NINA Pre-filed Testimony.

[69] Tr. at 17-18.

licenses, the selection of the ABWR design, and the selection of Toshiba as a vendor.[70] Mr. Head provided additional information on the history of the development of the ABWR, some key aspects of the certified design, departures from the certified design, and selection of the STP site.[71]

Jennifer Uhle, Director of the Office of New Reactors, Gary Holahan, Deputy Director of the Office of New Reactors, Frank Akstulewicz, Director of the Division of New Reactor Licensing in the Office of New Reactors, and Mark Delligatti, Deputy Director of the Division of New Reactor Licensing in the Office of New Reactors, provided background on the Staff's review of the combined license application.[72] Mr. Holahan explained that the Staff focused its review on the plant-specific aspects of the application—operational programs, site-specific design features, combined license information items, and departures from the certified design.[73] He noted that this combined license application is the first to reference the ABWR design, and NINA's application likewise references the Aircraft Impact Assessment amendment to the ABWR.[74] Mr. Akstulewicz provided a summary of the Staff's findings under 10 C.F.R. § 52.97(a).[75] Mr. Delligatti provided background on the Staff's environmental review, including a

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[70] *See* Ex. STP-011, NINA Presentation Slides: Overview Presentation (Nov. 19, 2015) (NINA Overview Presentation); *see also* Tr. at 20-24 (Mr. McBurnett).

[71] *See* Tr. at 25-34 (Mr. Head); Ex. STP-011, NINA Overview Presentation, at 3-6.

[72] *See* Ex. NRC-011, Staff Presentation Slides—Overview (Nov. 19, 2015) (Staff Overview Presentation); Tr. at 51-70.

[73] Tr. at 57 (Mr. Holahan).

[74] *Id.* (Mr. Holahan); Ex. NRC-011, Staff Overview Presentation, at 4.

[75] Tr. at 60-62 (Mr. Akstulewicz); Ex. NRC-011, Staff Overview Presentation, at 10-12.

summary of the Staff's findings in accordance with NEPA sections 102(2)(A), (C), and (E) and 10 C.F.R. § 51.107(a).[76]

b. Summary of the Safety Panels

The first safety panel focused on departures from the certified design and exemptions from the regulations, including the exemption from the financial qualification regulations.[77] Mr. Head testified for NINA, and Mr. McBurnett joined him on the panel.[78] Tom Tai, Senior Project Manager and lead project manager for the STP Units 3 and 4 review, Licensing Branch 2, Office of New Reactors; Richard Turtil, Senior Financial Analyst, Financial Analysis and International Projects Branch, Office of Nuclear Reactor Regulation; and Dinesh Taneja, Senior Electronics Engineer, Instrumentation, Controls, and Electronics Engineering Branch, Office of New Reactors, provided testimony for the Staff.[79] Mr. Turtil discussed NINA's request for an exemption from the financial qualification requirements in 10 C.F.R. § 50.33(f) and Part 50, Appendix C.[80] Mr. Taneja discussed the Staff's review of the Tier 1 departure on instrumentation and control.[81] In addition to departures and exemptions, the remainder of

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[76] Tr. at 63-69 (Mr. Delligatti); Ex. NRC-011, Staff Overview Presentation, at 12-18.

[77] *See* Tr. at 69 (Dr. Uhle); Ex. STP-012, NINA Presentation Slides: Safety Panel 1—Financial Qualifications (Nov. 19, 2015); Ex. NRC-012, Staff Presentation Slides—Safety Panel 1 (Nov. 19, 2015) (Staff Safety Panel 1 Presentation).

[78] Tr. at 89-92.

[79] *Id.* at 92-103; Scheduling Note at 2.

[80] Tr. at 96-100 (Mr. Turtil). This exemption is discussed in greater detail in section II.A.1, *infra*.

[81] Tr. at 100-03 (Mr. Taneja).

chapter one of the final Safety Evaluation Report was subject to our examination during the first safety panel.[82]

The second safety panel focused on the novel issues associated with the review of actions to address (1) NRC Bulletin 2012-01, "Design Vulnerability in Electric Power System" and (2) the issues in Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events."[83] Mr. Head provided testimony for NINA, with Steven Thomas, Engineering Manager for NINA, and Willem Mookhoek, Licensing Supervisor for NINA, on the panel.[84] Mr. Tai; Ryan Nolan, Reactor Systems Engineer, Plant Systems Branch, Office of New Reactors; and Sheila Ray, Senior Electrical Engineer, Electrical Engineering Branch, Office of Nuclear Reactor Regulation, provided testimony for the Staff.[85] The remaining portions of chapters eight and twenty-two of the final Safety Evaluation Report, as well as chapters eleven though sixteen, eighteen, and nineteen were also subject to our examination during the second safety panel.[86]

The third safety panel focused on the design basis flood assessment for the STP site and the Staff's review of the qualifications of Toshiba as an alternate vendor for the certified

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[82] Scheduling Note at 2.

[83] *Id.* at 3; Tr. at 69-70 (Dr. Uhle); *see* NRC Bulletin 2012-01: Design Vulnerability in Electric Power System (July 27, 2012), at 1 (ML12074A115); Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond–Design-Basis External Events (Effective Immediately), EA-12-049 (Mar. 12, 2012), at 3 (ML12054A735) (Order EA-12-049).

[84] Tr. at 119-22; Scheduling Note at 3.

[85] Tr. at 119, 122-31; Scheduling Note at 3.

[86] Scheduling Note at 3.

ABWR design.[87] Mr. Head provided testimony for NINA, with Mr. Thomas and Mr. Mookhoek on the panel.[88] Mr. Tai; Dr. Henry Jones, Senior Hydrologist, Hydrology and Meteorology Branch 1, Office of New Reactors; and Richard McIntyre, Senior Reactor Operations Engineer, Quality Assurance Vendor Inspection Branch, Office of New Reactors, provided testimony for the Staff.[89] The remaining portions of chapters two and seventeen of the final Safety Evaluation Report, as well as chapters three though seven, nine, and ten were also subject to our examination during the third safety panel.[90]

c. Summary of the Environmental Panel

The environmental panel summarized the process for developing the environmental impact statement, the analysis of alternatives, the assessment of new information, and the conclusions and recommendations of the final environmental impact statement.[91] Mr. Head testified for NINA and was joined on the panel by Peggy Travis, Environmental Supervisor for STPNOC, and Russell Kiesling, Chief Consultant, Kiesling Ventures LLC, who was the environmental lead for NINA.[92] Patricia Vokoun, Project Manager, Environmental Projects Branch, Office of New Reactors, and Andrew Kugler, Senior Project Manager, Environmental Technical Support Branch, Office of New Reactors, provided testimony for the Staff.[93]

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[87] *Id.* at 4; Tr. at 70 (Dr. Uhle).

[88] Tr. at 148, 150-53; Scheduling Note at 4.

[89] Tr. at 148, 153-61; Scheduling Note at 4.

[90] Scheduling Note at 4.

[91] Scheduling Note at 5.

[92] Tr. at 184-87; Scheduling Note at 5.

[93] Tr. at 185, 187-98; Scheduling Note at 5.

3. Post-Hearing Questions

After the hearing, we issued additional questions for written answers from NINA and the Staff.[94] We then admitted NINA's and the Staff's responses as exhibits, adopted corrections to the hearing transcript, and closed the evidentiary record.[95]

II. DISCUSSION

A. Exemptions and Departures

NINA submitted four requests for specific exemptions from our regulations that are outside the scope of the design certification rule; one request was later withdrawn.[96] In addition, the combined license application contains a total of 275 departures from the ABWR certified design.[97] The Staff performed an extensive review of the exemption requests and departures and noted that NINA effectively responded to its requests for additional information.[98]

1. Exemptions

The Staff evaluated and found acceptable three requests to exempt NINA from NRC regulations outside the scope of the design certification rule. First, NINA requested an exemption from the definition of "construction" in 10 C.F.R. § 50.10(a)(1) to allow the installation of crane foundation retaining walls during the excavation process prior to the issuance of the

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[94] Order (Transmitting Post-Hearing Questions) (Nov. 30, 2015) (unpublished) (Post-Hearing Questions Order).

[95] Order (Adopting Proposed Transcript Corrections, Admitting Post-Hearing Exhibits, and Closing the Record of the Proceeding) (Dec. 21, 2015) (unpublished).

[96] Ex. NRC-001, Staff Information Paper, at 13 (citing Letter from Mark McBurnett, STPNOC, to Document Control Desk, NRC (Sept. 16, 2009), at 2 (ML092930393) (withdrawing previous request for exemption from Appendix A to 10 C.F.R. Part 52, Section IV.A.2.a)).

[97] Ex. STP-002, NINA Pre-filed Testimony, at 10.

[98] Tr. at 114-16 (Mr. Tai, Mr. Turtil, Mr. Taneja).

combined licenses.[99] Second, NINA sought an exemption from the material control and accounting requirements of 10 C.F.R. §§ 70.22(b), 70.32(c), 74.31, 74.41, and 74.51, which either do not apply to reactors or expressly contain exclusions for reactors licensed under Part 50.[100]

Third, NINA requested an exemption from our financial qualifications requirements.[101] Under 10 C.F.R. §§ 52.77, 50.33(f), and Part 50, Appendix C, a combined license applicant must submit information that demonstrates that it either possesses or has reasonable assurance of obtaining the funds necessary to cover estimated construction and operating costs for the term of the license. Our regulations also require that an applicant identify the specific sources of funds on which it will rely.[102] The Staff was not able to find that NINA met these financial qualifications requirements "primarily due to an absence of specifically identified sources of funds."[103]

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[99] *See, e.g.*, Ex. STP-002, NINA Pre-filed Testimony, at 9; Ex. NRC-001, Staff Information Paper, at 17. The Staff approved this request in 2010, but NINA has not yet installed the two crane foundation retaining walls. Ex. NRC-001, Staff Information Paper, at 17 (citing Letter from George Wunder, Sr. Project Manager, NRC to Mark McBurnett, STPNOC (Nov. 5, 2010) (ML102770454)).

[100] *See, e.g.*, Ex. STP-002, NINA Pre-filed Testimony, at 9. These exclusions do not include Part 52 applicants, even though, for purposes of these requirements, the applications are for the same facility type. The Staff evaluated the request and determined that it satisfies the criteria for exemption, primarily because the NRC has found that these requirements are unnecessary for similar Part 50 applicants. Accordingly, the same exemption has been granted to applicants for previously-issued combined licenses. Ex. NRC-001, Staff Information Paper, at 16-17. For both Part 50 and Part 52 applicants, 10 C.F.R. Part 74, Subpart B (excluding section 74.17), contains material control and accounting performance requirements. *Id.*

[101] *See, e.g.*, Ex. STP-002, NINA Pre-filed Testimony, at 9.

[102] Ex. NRC-001, Staff Information Paper, at 14.

[103] *Id.*

Outside of this adjudication, the Staff provided us a recommendation that the NRC proceed with a rulemaking to amend or rescind the 10 C.F.R. Part 50 financial qualifications demonstration requirements.[104] The Staff proposed, among other things, that the financial qualifications requirements for merchant-plant initial-license applicants be changed to be consistent with the Part 70 standard, which provides that an application will be approved if the applicant (among other things) "appears to be financially qualified."[105] We approved the Staff's recommendation and directed that in the rulemaking the Staff "should seek to develop a standard of review that approximates, as appropriate, the approach currently used for 10 CFR Part 70 applications, but does not reduce the standard of review below that of 'appears to be financially qualified.'"[106] We also directed the Staff to consider using an exemption process "that anticipates the outcome of the proposed changes to the current" requirements during the pendency of the rulemaking "to address existing and emergent cases."[107]

The Staff issued a Draft Regulatory Basis for the Financial Qualifications for Reactor Licensing Rulemaking in June 2015.[108] The Draft Regulatory Basis provides the basis for a

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[104] *See* "Policy Options for Merchant (Non-Electric Utility) Plant Financial Qualifications," Commission Paper SECY-13-0124 (Nov. 22, 2013), at 16-18 (ML13057A006).

[105] *Id.* at 17-18; 10 C.F.R. § 70.23(a)(5) ("An application for a license will be approved if the Commission determines that . . . the applicant appears to be financially qualified to engage in the proposed activities in accordance with the regulations in this part.").

[106] Staff Requirements—SECY-13-0124—Policy Options for Merchant (Non-Electric Utility) Plant Financial Qualifications (Apr. 24, 2014), at 1 (ML14114A358) (quoting 10 C.F.R. § 70.23(a)(5)).

[107] *Id.* at 2 (unnumbered).

[108] Ex. NRC-001, Staff Information Paper, at 14 (citing Financial Qualifications for Reactor Licensing Rulemaking: Draft Regulatory Basis Document (June 2015) (ML14324A706) (Draft Regulatory Basis)); Financial Qualifications for Reactor Licensing; Draft regulatory basis; public meeting and request for comment, 80 Fed. Reg. 34,559 (June 17, 2015).

future proposed rule that, if published, would solicit public comment on a proposal to change the Part 50 standard. The proposed rule would not require the applicant to demonstrate that it possesses or can provide reasonable assurance of obtaining the funds necessary for construction and operation. Rather, the applicant would be held to the standard currently used in Part 70, that it "appears to be financially qualified."[109] Under the approach set out in the Draft Regulatory Basis, the applicant would provide a construction cost estimate and financial capacity plan.[110] The plan would describe how the applicant will finance construction and operation of the proposed facility and would demonstrate that the applicant has the financial capacity to obtain the necessary financing for construction and operation.[111]

NINA requested an exemption from the NRC's financial qualifications requirements in 10 C.F.R. §§ 52.77, 50.33(f), and Part 50, Appendix C and proposed instead to satisfy a financial qualifications standard similar to that of 10 C.F.R. Part 70, consistent with the approach envisioned in our Staff Requirements Memorandum for SECY-13-0124.[112] In its request, NINA

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[109] Ex. NRC-001, Staff Information Paper, at 14.

[110] Draft Regulatory Basis at 13-14. As currently envisioned, this plan would include descriptions of the management team and of the anticipated funding methods and sources, including a discussion of past successes with such financing used in past energy or other large build projects. *Id.*

[111] *Id.* An applicant's financial capacity "reflects [its] level of understanding of the size and scope of the project, including the level of capital necessary to undertake the project, and . . . the organizational and human resources, experience, skills, and expertise required to obtain proper financing." *Id.* at 14. The Draft Regulatory Basis distinguishes between those applicants that have more than fifty percent of their financing and those with fifty percent or less financing at the time of the application. For the latter, the applicant is expected to propose one or more license conditions that will ensure funding is available before beginning reactor construction. *Id.* at 15 & n.10 (noting that the use of license conditions is not required and that an applicant could "propose an alternate approach" for the NRC to consider).

[112] Letter from Scott Head, NINA, to Document Control Desk, NRC (May 18, 2015), at 2 (ML15140A077) (NINA Exemption Request). This amended exemption request superseded an

addressed the standards governing exemptions in 10 C.F.R. §§ 52.7 and 50.12, submitted a financial capacity plan with proposed license conditions, and referenced previously submitted construction and operational cost estimates.[113] The Staff reviewed NINA's exemption request using the analysis it prepared for the Draft Regulatory Basis.[114] The Staff concluded that NINA demonstrated its financial capacity, that its construction and operational cost estimates are reasonable, and that the proposed license conditions, as revised by the Staff, were consistent with our direction in the Staff Requirements Memorandum for SECY-13-0124.[115] As approved by the Staff, the license conditions require NINA to provide updated cost estimates and demonstrate secured financing prior to construction and operation.[116]

The Staff further concluded that the exemption request satisfied the requirements of 10 C.F.R. § 50.12.[117] Section 50.12(a) provides that the Commission may grant exemptions from the regulations, if the exemptions are authorized by law, will not present an undue risk to

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earlier request: Letter from Scott Head, NINA, to Document Control Desk, NRC (June 19, 2014) (ML14175A142).

[113] NINA Exemption Request at 2; Ex. NRC-001, Staff Information Paper, at 15; *see also* Tr. at 91-92 (Mr. Head) (discussing NINA's financial capacity plan and stating the expectation that NINA will receive funding through project financing using a combination of loans under the Department of Energy loan guarantee program, from the Japan Bank of International Cooperation, and from other sources, as well as equity).

[114] *See* Ex. NRC-001, Staff Information Paper, at 15.

[115] *Id.* The comment period on the Draft Regulatory Basis ended on August 3, 2015. The Staff received three comments on the draft basis, all of which supported amending the financial qualification requirements for reactors; none suggested a stricter standard than the one the Staff has applied in its review of NINA's exemption request here. *Id.* at 15 n.3; *see also* Tr. at 113-14 (Mr. Turtil).

[116] Ex. NRC-001, Staff Information Paper, at 15.

[117] *Id.*

the public health and safety, and are consistent with the common defense and security and when special circumstances exist. First, the Staff determined that the exemption is authorized by law because the exemption would not conflict with the AEA or any other law.[118] The Staff observed that the AEA affords us "broad discretion to prescribe requirements for financial qualifications."[119]

Second, the Staff found that the exemption does not present an undue risk to the public health and safety because the exemption is not directly related to any safety requirements.[120] Although the financial qualifications regulations are intended to protect public health and safety (for example, to prevent safety lapses caused by underfunding), the Staff observed that the NRC has not found a direct correlation between pre-licensing financial reviews and later safe construction and operation, and the NRC maintains a number of programs and processes that more directly ensure safe construction and operation.[121] Moreover, consistent with the analysis in its Draft Regulatory Basis, the Staff concluded that NINA meets the Part 70 standard for financial qualifications, as appropriately modified for a combined license applicant (that is, NINA

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[118] Ex. NRC-008, Safety Evaluation Report, § 1.11S.5.4; *see* 10 C.F.R. § 50.12(a).

[119] Ex. NRC-008, Safety Evaluation Report, § 1.11S.5.4, at 1-177; *see* AEA § 182a., 42 U.S.C. § 2232(a) ("Each application for a license hereunder . . . shall specifically state such information as the Commission, by rule or regulation, may determine to be necessary to decide such of the technical and financial qualifications of the applicant . . . ."); *New England Coal. on Nuclear Pollution v. NRC*, 582 F.2d 87, 93 (1st Cir. 1978) ("The [AEA] gives the NRC complete discretion to decide what financial qualifications are appropriate.").

[120] Ex. NRC-008, Safety Evaluation Report, § 1.11S.5.4, at 1-177.

[121] *Id.* at 1-176; *see* 10 C.F.R. § 50.12(a). These programs include a detailed technical licensing review, the construction reactor oversight process, the reactor oversight process, the resident inspector program, the operating experience program, the vendor inspection program, and the quality assurance inspection program. Ex. NRC-008, Safety Evaluation Report, § 1.11S.5.4.

appears to be financially qualified) and the license conditions would prevent NINA from constructing or operating STP Units 3 and 4 unless and until the necessary funding is secured.[122]

Third, the Staff found that the exemption is consistent with the common defense and security.[123] The Staff determined that the exemption does not relate to any requirements that directly govern security-related activities at proposed Units 3 and 4.[124] The Staff also found that NINA satisfied the Part 70 standards as modified in the Draft Regulatory Basis, and, relatedly, the license conditions ensure that the common defense and security will not be impacted.[125]

And fourth, the Staff asserts that special circumstances are present as described in 10 C.F.R. § 50.12(a)(2)(vi): there is a material circumstance not considered when the regulation was adopted for which it would be in the public interest to grant an exemption.[126] Because the Staff relies exclusively on that section, we must be consulted before the exemption is granted.[127] The Staff's Information Paper served as the necessary consultation.[128] NINA is the first

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[122] *Id.* at 1-777 to 1-778.

[123] *Id.* at 1-778.

[124] *Id.*

[125] *Id.*; *see* 10 C.F.R. § 50.12(a).

[126] Ex. NRC-008, Safety Evaluation Report, § 1.11S.5.4, at 1-778; Ex. NRC-001, Staff Information Paper, at 15-16; *see* 10 C.F.R. § 50.12(a)(2)(vi). In its exemption request, NINA asserted that § 50.12(a)(2)(ii) also applies because the Part 50 financial qualification requirements are not necessary to achieve the purpose of the rule—to prevent safety lapses from underfunded projects—because the license conditions will ensure that the project will only proceed once adequate funding is obtained. NINA Exemption Request, Attachment 1, at 6.

[127] *See* 10 C.F.R. § 50.12(a)(2)(vi).

[128] *See* Ex. NRC-001, Staff Information Paper, at 16.

applicant to seek an initial license as a merchant plant.[129] In the Staff's view, the current Part 50 financial qualifications standards go "beyond the NRC's mandate of ensuring safety and have become an unnecessary impediment to licensing."[130] While our rules contemplate applications from merchant plants, "[a]ll current nuclear power reactor licensees were found to be financially qualified at initial licensing [of the facility] on the basis of their status as rate-regulated utilities."[131] Merchant plants, unlike rate-regulated utilities, may not have a predictable source of funds for construction or operation at the time of licensing because they cannot recover costs through the ratemaking process like utility applicants can.[132] And without identified sources of funds, an applicant cannot meet our current Part 50 financial qualification standards. Consistent with our direction in the Staff Requirements Memorandum for SECY-13-0124, the Staff's review anticipates the outcome of the proposed changes to the regulation by virtue of its use of the Draft Regulatory Basis.[133] For this reason, and for those discussed above, we approve the Staff's decision to grant NINA's requested exemption, subject to the license conditions identified by the Staff.

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[129] STP Units 3 and 4 are considered merchant plants, with over ninety percent of their electricity to be sold in deregulated markets. Tr. at 96 (Mr. Turtil).

[130] Ex. NRC-001, Staff Information Paper, at 16; Tr. at 100 (Mr. Turtil).

[131] Draft Regulatory Basis at 6.

[132] *Id.*

[133] Ex. NRC-008, Safety Evaluation Report, § 1.11S.5.4, at 1-778 to 1-779.

2. Departures

NINA identified 275 departures from the certified design in its application.[134] Of the 275 departures in the combined license application, 246 are standard departures, which would apply to future ABWR combined license applicants that use the STP Units 3 and 4 combined license application as the reference application for the ABWR.[135] The Staff noted that the ABWR design was certified in 1997, a decade before the STP combined license application was docketed, and therefore, it was "reasonable to expect that improvements in technology and innovations in design will occur over such a period and that these improvements and innovations will result in proposed design changes."[136]

The Staff reviewed all departures to ensure that NINA adhered to the applicable regulatory criteria.[137] When evaluating the departures, the Staff evaluated the impacts of a departure in its totality; for example, a change to a pump, valve, control circuit, or piping system is not evaluated in isolation but may require the coordination of engineers in various disciplines to ensure that all of the impacts of the change are considered.[138] Additionally, NINA evaluated the cumulative change in risk from its departures, and the Staff found that the cumulative impact

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[134] Ex. NRC-001, Staff Information Paper, at 17; Ex. STP-002, NINA Pre-filed Testimony, at 10-11.

[135] Ex. STP-002, NINA Pre-filed Testimony, at 11.

[136] Ex. NRC-005-R, Staff Answers to Pre-Hearing Questions, at 1.

[137] *Id*.

[138] *Id.*

is not a significant change to the plants' risk profile.[139] Further, the Staff stated that granting the exemptions, in its view, did not result in any cumulative impacts.[140]

B. Site-Specific Issues Addressed in the Proceeding

Although our review encompassed the entire application, we discuss here a brief selection of the topics discussed at the hearing and in responses to pre- and post-hearing questions.

1. Toshiba as an Alternate Vendor

Toshiba is referred to as an "alternate vendor" because it is not the entity that obtained the design certification.[141] NINA submitted a due diligence report that provided its assessment evaluating whether Toshiba is qualified to supply the ABWR design for STP Units 3 and 4 under 10 C.F.R. § 52.73(a).[142] As part of its due diligence, NINA identified a number of potential areas of vulnerability for Toshiba and focused its review on those areas.[143] As a result of its evaluation, NINA concluded that Toshiba is qualified to supply the certified design.[144] To confirm NINA's conclusion, the Staff reviewed the due diligence report and conducted a vendor inspection at Toshiba's Isogo Nuclear Engineering Center in Yokohama, Japan.[145] As part of its

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[139] *Id.*

[140] *Id.*

[141] Tr. at 158 (Mr. McIntyre).

[142] *Id.* (Mr. McIntyre).

[143] *Id*. at 170-71 (Mr. Thomas).

[144] *Id.* at 170 (Mr. Thomas).

[145] *Id.* at 158 (Mr. McIntyre); Ex. NRC-008, Safety Evaluation Report, § 1.4S.4, at 1-24; Ex. NRC-014, Staff Presentation Slides—Safety Panel 3 (Nov. 19, 2015), at 11-14.

review, the Staff investigated whether Toshiba had access to engineering documents that are design basis documents for the U.S. ABWR and, if not, whether Toshiba could independently develop the documents.[146] The Staff conducted a comprehensive evaluation of whether Toshiba could support the design as the original design vendor would have; the Staff assessed, among other things, Toshiba's quality assurance program, subcontractor qualification procedures, and corrective action program.[147] In response to a question at the hearing, NINA noted that Toshiba produced references cited in the Design Control Document, as well as design basis calculations requested by NINA, and satisfactorily performed calculations that had to be redone.[148] As both the Staff and NINA noted at the hearing, Toshiba has considerable experience in the design and construction of nuclear power plants and has supplied major portions of the international design of ABWRs currently in operation.[149] The Staff concluded that Toshiba's programs are consistent with 10 C.F.R. Part 50, Appendix B and 10 C.F.R. Part 21 and that Toshiba has the technical ability and access to necessary technical documentation. Therefore, the Staff found Toshiba to be qualified to supply the ABWR certified design under 10 C.F.R. § 52.73(a).[150]

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[146] Tr. at 159, 174 (Mr. McIntyre), 174-75 (Mr. Tai).

[147] Ex. NRC-005-R, Staff Answers to Pre-Hearing Questions, at 4.

[148] Tr. at 172-73 (Mr. Thomas); *see* Ex. NRC-008, Safety Evaluation Report, § 1.4S.4.

[149] Tr. at 33-34, 152-53 (Mr. Head), 160 (Mr. McIntyre).

[150] *Id.* at 161 (Mr. McIntyre).

2. Fukushima Near-Term Task Force Recommendation 4.2—Mitigation Strategies for Beyond-Design-Basis External Events

In SECY-12-0025, the Staff provided the Commission with proposed orders requiring, among other things, mitigation strategies for beyond-design-basis external events to be issued to all power reactor licensees and construction permit holders.[151] At that time, the Staff also indicated its expectation that applications for combined licenses under active review (as the STP application was) would address all Commission-approved Fukushima recommended actions prior to licensing "to the fullest extent practicable."[152] In 2012, the NRC issued Order EA-12-049 requiring all operating reactors to develop and implement strategies to cope without alternating current (AC) power for an indefinite amount of time.[153] The Order required all current license holders to use a three-phase approach for mitigating beyond-design-basis external events.[154] The initial phase requires the use of installed equipment and resources to maintain or restore core cooling, containment, and spent fuel pool cooling; the transition phase requires providing sufficient portable, onsite equipment and consumables to maintain or restore these functions until offsite resources can be brought in; and the final phase requires using offsite resources to maintain those functions indefinitely.[155] After issuance of Order EA-12-049, the

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[151] *Id.* at 123 (Mr. Nolan); "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami," Commission Paper SECY-12-0025 (Feb. 17, 2012) (ML12039A111) (SECY-12-0025).

[152] SECY-12-0025 at 10-11 (addressing pending and future new reactor design certification and license applications); *see* Tr. at 123 (Mr. Nolan).

[153] Tr. at 123 (Mr. Nolan).

[154] Order EA-12-049 at 4.

[155] *Id.*

Staff issued Interim Staff Guidance JLD-ISG-2012-01, which the Staff used to guide its review of NINA's mitigation strategies for STP Units 3 and 4.[156]

At the hearing, NINA and the Staff both described the mitigation strategies for STP Units 3 and 4.[157] NINA explained that there is no requirement for a transition phase in NINA's FLEX strategy because it can use permanently installed initial phase equipment to support a coping duration of at least thirty-six hours—long enough for final phase offsite equipment to arrive at the site.[158] Nonetheless, the STP site maintains portable onsite equipment that provides defense in depth.[159]

The mitigation strategies for STP Units 3 and 4 include unique design features or approaches to sustain core cooling and enhance the ability of the ABWR certified design to withstand a station blackout event.[160] These features and approaches include: (1) enhanced core cooling and spent fuel pool cooling capabilities; (2) strategic management of power systems that can provide direct current (DC) power supplies for at least thirty-six hours; (3) use of the remote shutdown panel to maximize DC battery service time; (4) capability to access water in the ultimate heat sink for long term core cooling and spent fuel pool cooling; and (5) use of containment overpressure protection to ensure containment integrity.[161]

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[156] Tr. at 124 (Mr. Nolan); "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," JLD-ISG-2012-01, Rev. 0 (2012) (ML12146A014).

[157] Tr. at 119-21 (Mr. Head), 123-26 (Mr. Nolan), 127-28 (Ms. Ray).

[158] *Id.* at 120 (Mr. Head).

[159] *Id.* (Mr. Head).

[160] Ex. NRC-001, Staff Information Paper, at 23.

[161] *Id.* at 23-24.

The Staff reviewed the information provided by NINA using the standards set forth in Order EA-12-049.[162] The Staff proposed a license condition requiring the licensee to develop "an overall integrated plan to maintain or restore core cooling, containment function, and [spent fuel pool] cooling capabilities in the event of a simultaneous loss of all AC power and loss of normal access to the [ultimate heat sink]."[163] This license condition requires the licensee to finalize development of strategies and guidance and specify implementation details.[164] Based on this license condition and the information NINA provided in the application, the Staff concluded that there is reasonable assurance that the application meets the underlying purpose of Order EA-12-049.[165]

3. Flammability Control System

NINA proposed to eliminate the flammability control system from the ABWR certified design for STP Units 3 and 4. The ABWR flammability control system "consists of two redundant hydrogen recombiners located in secondary containment" and "was designed to control the potential buildup of a combustible mixture of hydrogen and oxygen inside the containment during a design basis accident."[166] The Staff approved this departure for STP Units 3 and 4 because the NRC eliminated the requirement to maintain equipment needed to mitigate a design-basis loss of cooling accident hydrogen release, including hydrogen recombiners,

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[162] *Id.* at 24 (citing Order EA-12-049).

[163] *Id.*

[164] Tr. at 128 (Ms. Ray).

[165] Ex. NRC-001, Staff Information Paper, at 24; Ex. NRC-008, Safety Evaluation Report, § 22.2.

[166] Ex. NRC-005-R, Staff Answers to Pre-Hearing Questions, at 8, 9.

when 10 C.F.R. § 50.44 was revised in 2003.[167] The application for STP Units 3 and 4 meets the requirements of 10 C.F.R. § 50.44(c), which applies to water-cooled reactor combined licenses issued after 2003.[168] Under section 50.44(c), reactor containments must "have a capability for ensuring a mixed atmosphere during design-basis and significant beyond design-basis accidents," and license applicants must perform a structural analysis that demonstrates containment structural integrity in the event of an accident that releases "hydrogen generated from 100 percent fuel clad-coolant reaction accompanied by hydrogen burning."[169]

In a pre-hearing question, we noted that section 50.44 was revised because inerted containments provide protection from hydrogen combustion, but the Fukushima event showed that hydrogen combustion events can occur outside the inerted primary containment and cause significant damage to the secondary containment building.[170] We therefore asked whether the possible benefit of the flammability control system in the context of severe accident mitigation and recovery was considered with respect to the system's elimination in STP Units 3 and 4.[171] The Staff responded that studies conducted since the certification of the ABWR design have shown that hydrogen recombiners of the size and quantity included in the ABWR design do not

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[167] *Id.* at 8.

[168] *See* 10 C.F.R. § 50.44(c).

[169] *Id.* §§ 50.44(c)(1) and (5); *see also* Ex. STP-001, NINA Answers to Pre-Hearing Questions, at 9 ("The NINA review of the Fukushima event confirms that the Flammability Control System . . . removed from the primary containment in the ABWR design would not prevent hydrogen combustion in the secondary containment.").

[170] Pre-Hearing Question Order at 6.

[171] *Id.*

provide a safety benefit for severe accidents.[172] The Staff explained that the size of the flammability control system was designed to account for the "combustible buildup of hydrogen and oxygen from a design basis metal water reaction and radiolysis of water during a loss of coolant accident. The severe accident amount of combustible hydrogen is much greater than the design basis assumptions used to size the [flammability control system]."[173] As such, the Staff concluded there was "limited benefit" in retaining the system in support of severe accident mitigation and recovery.[174]

4. Design Basis Flood Above Plant Grade

The Staff conducted a hydrology safety review using several potential flooding scenarios and determined that the most limiting flood would result from an instantaneous breach of the north segment of the main cooling reservoir embankment.[175] NINA concluded that such a breach would result in a probable maximum flood of 38.8 ft (11.8 m) above mean sea level (MSL) and therefore proposed a design basis flood elevation of 40 ft (12.2 m) MSL.[176] The Staff reviewed NINA's analysis and conducted an independent confirmatory analysis.[177] The power

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[172] Ex. NRC-005-R, Staff Answers to Pre-Hearing Questions, at 9.

[173] *Id*.

[174] *Id.*

[175] Ex. NRC-001, Staff Information Paper, at 25-26; Ex. NRC-008, Safety Evaluation Report, §§ 2.4S.4, 2.4S.10.

[176] Ex. NRC-006C, South Texas Project, Units 3 and 4, Combined License Application Rev. 12—Part 2 (Final Safety Analysis Report) Tier 2 (2015), § 2.4S.4, at 2.4S.4-1, 2.4S.4-20 (ML15124A421); Ex. NRC-001, Staff Information Paper, at 26.

[177] Ex. NRC-001, Staff Information Paper, at 26.

block of STP Units 3 and 4 is 34 ft (10.36 m) MSL.[178] Consequently, the design basis flood is approximately 6 ft (1.83 m) above the grade of the power block.[179] The Staff evaluated this proposal and concluded that the safety-related facilities will remain free from flooding.[180]

An NRC staff member did not concur with the Staff's hydrological conclusions, specifically with respect to determining the design basis flood level and maximum groundwater level.[181] These site parameters are important for structural design and protecting safety-related facilities from flooding.[182] The non-concurrence stated that the design basis flood level was not determined accurately nor conservatively in either NINA's application or the Staff's Safety Evaluation Report.[183] To resolve the issues raised by the non-concurrence, the Staff solicited independent expert reviewers from the University of Maryland, the U.S. Army Corps of Engineers, the U.S. Bureau of Reclamation, Virginia Polytechnic Institute and State University, Taylor Engineering Research Institute (University of North Florida), and the University of North Carolina.[184] The independent review panel concluded that all the technical issues were resolved

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[178] Ex. NRC-006C, Final Safety Analysis Report, § 2.4S.4, at 2.4S.4-1; Ex. NRC-001, Staff Information Paper, at 25.

[179] Ex. NRC-001, Staff Information Paper, at 26; Tr. at 151-52 (Mr. Head).

[180] Ex. NRC-001, Staff Information Paper, at 26; Ex. NRC-008, Safety Evaluation Report, §§ 2.4S.4, 2.4S.10.

[181] Ex. NRC-001, Staff Information Paper, at 27; *see* Non-Concurrence Process Record for NCP-2011-014 (Dec. 13, 2012) (ML12348A249).

[182] Ex. NRC-001, Staff Information Paper, at 27.

[183] *Id.* The individual asserted that the errors related to the design basis flood level resulted in several regulatory requirements not being met—10 C.F.R. § 52.79(a)(1)(iii); General Design Criterion 2, "Design bases for protection against natural phenomena," of 10 C.F.R. Part 50, Appendix A; and 10 C.F.R. § 100.20(c)(3). *Id.*

[184] *Id.*

correctly by the Staff.[185] In addition, the ACRS reviewed the non-concurrence as part of the ABWR Subcommittee's review of the STP Units 3 and 4 combined license application; the non-concurring individual made a presentation before the ACRS Subcommittee.[186] The ACRS concurred with the Staff's conclusions from its review of the site hydrology.[187]

Prior to the uncontested hearing, the non-concurring individual sent us a statement of technical concerns related to determining the design basis flood level for the STP combined license application.[188] The statement was served on the parties, and we have reviewed it. At the hearing, the Staff indicated that it had reviewed the statement, determined that the statement did not add anything new to the non-concurrence, and maintained its position, documented in the Safety Evaluation Report, on the design basis flood level.[189] Similarly, NINA reviewed the statement and indicated that the statement did not alter its analysis or conclusions on the design basis flood level for the site.[190]

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[185] *Id.*

[186] *Id.* at 28.

[187] *Id.*; ACRS Letter at 6.

[188] Memorandum from Emile Julian, Office of the Secretary, NRC, to NINA and the Staff (Nov. 12, 2015) (ML15316A848) (serving on the parties an email forwarding "Technical Concerns Regarding the Uncontested Hearing for Issuance of Combined Licenses for the South Texas Project Units 3 and 4, SECY 15-0123" (Nov. 2, 2015)).

[189] Tr. at 167 (Dr. Jones), 169 (Mr. Flanders).

[190] *Id.* at 168 (Mr. Head).

5. NRC Bulletin 2012-01—Electric Power System

Our regulations require the use of onsite and offsite electric power systems that permit the functioning of structures, systems, and components important to safety.[191] In Bulletin 2012-01, the NRC requested information about operating facilities' electric power system designs, in response to the loss of one of the three phases of the offsite power circuit (known as a single-phase open circuit condition) at Byron Station, Unit 2.[192] The Byron event led to identification of a design vulnerability in the protection scheme for certain engineered safety features buses. The Bulletin was issued to notify plants of the design vulnerability and the potential impact on safety-related equipment.[193] "The [S]taff was concerned that an undervoltage condition due to a loss of phase event could damage engineered safety features equipment and actuate protective devices."[194] To address this vulnerability, when one or more phases in the three phase offsite power system is lost, reactors with active safety systems, such as STP Units 3 and 4, should (1) detect an offsite power system open-phase circuit condition on the high voltage side of the main power transformer under all loading and operating configurations; (2) activate an alarm in the main control room; and (3) provide automatic mitigation and response to the event.[195] The Staff determined that these steps would ensure that AC power, with adequate capacity and capability, is available to safety-related equipment to

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[191] 10 C.F.R. pt. 50, app. A (General Design Criterion 17), § 50.55a(h)(3).

[192] Bulletin 2012-01 at 1. NINA addressed the issues raised in the Bulletin in several responses to requests for additional information. Ex. NRC-008, Safety Evaluation Report, § 8.2S, at 8-36.

[193] Tr. at 129 (Ms. Ray).

[194] Ex. NRC-001, Staff Information Paper, at 28.

[195] *Id.* at 29; Tr. at 129-30 (Ms. Ray); Ex. NRC-008, Safety Evaluation Report, § 8.2S.

meet its intended safety function.[196]

NINA is the first combined license applicant to resolve the open phase issue discussed in Bulletin 2012-01 for an active design.[197] The Staff found NINA's solution acceptable because it provides features for detection and alarm in addition to automatically protecting safety-related equipment.[198] The Staff further determined that NINA's solution prevents safety-related or non-safety-related loads from exceeding their ratings, which could damage equipment.[199] The Staff noted that NINA has added ITAAC and technical specification surveillance requirements, as well as committed to developing procedures and training, to address implementation of this solution.[200] The Staff concluded that the design meets the requirements in General Design Criterion 17 and 10 C.F.R. § 50.55a(h)(3).[201]

6. Reactor Vessel Material Surveillance Program

The material surveillance program collects data used to establish the conditions under which the reactor vessel can be operated with adequate margins of safety against fracture throughout its service life. Unless the reactor vessel meets the criteria of Part 50, Appendix H,

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[196] Ex. NRC-001, Staff Information Paper, at 29; Tr. at 130 (Ms. Ray); Ex. NRC-008, Safety Evaluation Report, § 8.2S.

[197] Ex. NRC-001, Staff Information Paper, at 29; Tr. at 130 (Ms. Ray).

[198] Ex. NRC-001, Staff Information Paper, at 29; Tr. at 130 (Ms. Ray); Ex. NRC-008, Safety Evaluation Report, § 8.2S.

[199] Ex. NRC-001, Staff Information Paper, at 29; Tr. at 130-31 (Ms. Ray); Ex. NRC-008, Safety Evaluation Report, § 8.2S.

[200] Ex. NRC-001, Staff Information Paper, at 29; Tr. at 131 (Ms. Ray); Ex. NRC-008, Safety Evaluation Report, § 8.2S.

[201] Ex. NRC-001, Staff Information Paper, at 29; Tr. at 131 (Ms. Ray); Ex. NRC-008, Safety Evaluation Report, § 8.2S.

Section III.A, licensees must monitor the reactor pressure vessel beltline materials through a surveillance program that complies with ASTM E 185-82, as modified by Part 50, Appendix H.[202] Accordingly, NINA has proposed a surveillance program for STP Units 3 and 4. The surveillance program is based on the testing of material specimens that are stored in surveillance capsules inside the reactor pressure vessel and periodically withdrawn from the vessel on an NRC-approved schedule.[203] Licensees analyze the material specimens to evaluate changes, due to neutron irradiation and high temperatures, in the fracture toughness properties of the ferritic materials in the reactor vessel beltline region.[204]

The Design Control Document for the ABWR specifies the minimum number of capsules to be included in the ABWR (four) and provides a sample withdrawal schedule that is different from the schedule included in the ASTM standard.[205] Further, the Design Control Document directs a combined license applicant to identify the withdrawal schedule for each surveillance capsule as part of its combined license application.[206] This direction is consistent with 10 C.F.R. Part 50, Appendix H, which requires applicants to submit a proposed withdrawal schedule with a technical justification.[207]

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[202] 10 C.F.R. pt. 50, app. H, § III.B; ASTM E 185-82, *Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels* (1982) (ASTM E 185-82).

[203] 10 C.F.R. pt. 50, app. H, § III.B.3.

[204] *Id.*

[205] *See* ABWR Design Control Document, Tier 2, § 5.3.1.6.1.

[206] *Id.* § 5.3.4.2 at 5.3-19.

[207] 10 C.F.R. pt. 50, app. H, § III.B.3.

By way of background, in its review of the draft Design Control Document, the Staff noted that the applicant, GE, had only included three capsules in the proposed design.[208] The Staff requested that GE update the number of capsules in the design to accommodate a sixty-year service life.[209] GE did so, and the Staff approved the revision to include four capsules.[210] But the Staff did not approve a withdrawal schedule for the capsules. Instead, the ABWR Design Control Document indicates that a combined license applicant will provide a withdrawal schedule for each capsule as part of its license application. The schedule reflected in the Design Control Document is not part of the certified design and, as such, is subject to review as part of the combined license application.

In its application, NINA submitted a proposed withdrawal schedule for each unit that is identical to the sample schedule in the Design Control Document, but differs from the withdrawal schedule presented in Table 1 of ASTM E 185-82.[211] But NINA did not provide a technical justification for the use of this schedule, nor has the Staff analyzed the proposed schedule to verify its compliance with 10 C.F.R. Part 50, Appendix H.[212]

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[208] "Final Safety Evaluation Report Related to the Certification of the Advanced Boiling Water Reactor Design, Main Report," NUREG-1503, (July 1994), § 5.3.1, at 5-16 (ML080670592).

[209] *Id.*

[210] *Id.* at 5-16 to 5-17. Although initial reactor licenses are issued for forty years, sufficient surveillance capsules must be included to provide for an effective surveillance program for the design life of the facility, which, in this instance, is sixty years. *See id.*

[211] *See* Ex. NRC-006H, South Texas Project, Units 3 and 4, Combined License Application Rev. 12—Part 2 (Final Safety Analysis Report) Tier 2 (2015), § 5.3.1.6.1 at 5.3-2; § 5.3.4.2 at 5.3-5 (ML15124A421); ABWR Design Control Document, Tier 2, § 5.3.1.6.1; ASTM E 185-82 at Table 1, "Minimum Recommended Number of Surveillance Capsules and Their Withdrawal Schedule (Schedule in Terms of Effective Full-Power Years of the Reactor Vessel)."

[212] *See* Tr. at 176-77; Ex. NRC-016, *NRC Staff Responses to Commission Post-Hearing Questions* (Dec. 7, 2015), at 2-3 (Staff Answers to Post-Hearing Questions); Ex. STP-016,

After our review of the proposed capsule withdrawal schedule, we note the dissimilarity between NINA's proposed schedule and that in the ASTM standard, and the absence of a clear justification for the proposed alternative schedule. Based on our review of the record and the relevant requirements, we find that a license condition directing the use of the specified schedule in the ASTM standard is appropriate here. While NINA's proposed schedule does not present an immediate safety concern, we direct the Staff to include a condition in each combined license to require the use of the withdrawal schedule provided in Table 1 of ASTM E 185-82 for a three-capsule program in the initial forty-year licensing period (that is, withdrawal of capsules at 6 effective full power years, 15 effective full power years, and at a time where the neutron fluence is between one and two times the expected end-of-life fluence for the reactor pressure vessel).[213] Consistent with the certified design, a fourth capsule would be reserved for a potential period of extended operation.

We note one other matter with respect to the reactor vessel material surveillance program. Sections 7.3.1 and 8.2.1 of ASTM E 185-82, which are incorporated by reference in 10 C.F.R. Part 50, Appendix H, provide criteria for dosimetry testing and require testing of dosimeters located inside of the capsules in accordance with ASTM Guide E 482. In its

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NINA's Responses to Post-Hearing Questions (Dec. 3, 2015), at 3-4 (NINA Answers to Post-Hearing Questions).

[213] Table 1 of the ASTM standard provides that the first and second capsules may need to be withdrawn earlier than the specified times depending on other factors, but these other factors would not apply to STP. *See* Ex. NRC-016, Staff Answers to Post-Hearing Questions, at 2.

We have not ourselves evaluated the technical merits of the proposed schedule in NINA's combined license application. NINA is free to submit a license amendment request seeking to remove the license condition and to use an alternate withdrawal schedule accompanied by a technical justification, which can be evaluated by the Staff.

response to a post-hearing question on the proposed neutron dosimetry testing program, NINA indicated that it would not perform any testing of dosimeters located inside of the surveillance capsules because the linear relationship between fluence and power output precludes the need for such testing.[214] NINA's position is inconsistent with ASTM E 185-82, which is incorporated by reference into our regulations, as noted above. The ASTM standard and, by extension, our regulations require licensees to test dosimeters located inside of the surveillance capsules. We expect the Staff to ensure that the licensee implements an appropriate surveillance program, taking into account the internal dosimetry requirements, as part of its regular oversight of reactor operations.

7. Knowledge Management

It is uncertain when, if at all, construction of STP Units 3 and 4 would begin after issuance of the licenses.[215] At the hearing, we explored NINA's plans to maintain the knowledge gained during the combined license review, should NINA wait for an extended period of time to begin construction.[216] Specifically, we asked about NINA's plans for knowledge management and transfer to ensure that it remains technically qualified to construct and operate the units.[217] Mr. McBurnett explained that Toshiba, the vendor for the project, has extensive knowledge and experience in the construction and maintenance of ABWRs (with several under

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[214] NINA Answers to Post-Hearing Questions at 2; Post-Hearing Questions Order at 2.

[215] *See, e.g.*, Tr. at 111 (Chairman Burns).

[216] *Id.* at 111-13.

[217] *Id.* at 111 (Chairman Burns).

construction and others now operating in Japan).[218] Additionally, Mr. McBurnett stated that NINA is working to ensure that it maintains its records and documents in an organized, searchable fashion, developing expertise within the project, and maintaining contact with the people who have worked on the project over the years.[219]

8. Environmental Issues

The proposed site is co-located with existing STP Units 1 and 2 and would use much of the existing infrastructure.[220] As detailed in the FEIS, the impacts from building and operating the proposed units would be small for almost all resource areas.[221] The Staff's environmental review considered information from NINA's Environmental Report; consultation with federal, state, tribal, and local agencies; the Staff's independent review; and the Staff's consideration of comments received during the public scoping process and the comment period on the draft EIS.[222] The Staff did not identify any novel issues with respect to the environmental review for STP Units 3 and 4.[223] In addition, in response to our question at the hearing, the Staff stated that NINA did not take any novel approaches to its impact assessments of resource areas.[224]

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[218] *Id.* at 111-12 (Mr. McBurnett).

[219] *Id.* at 112 (Mr. McBurnett).

[220] *Id*. at 188 (Ms. Vokoun).

[221] *Id*. at 191 (Ms. Vokoun).

[222] *Id*. at 197 (Ms. Vokoun). "The [S]taff addressed 378 individual comments extracted from the meeting transcripts, letters, and emails." Ex. NRC-005-R, Staff Answers to Pre-Hearing Questions, at 42.

[223] Ex. NRC-001, Staff Information Paper, at 30.

[224] Tr. at 198 (Ms. Vokoun).

The FEIS was completed in 2011, while the Staff was still conducting its safety review of the application.[225] Under 10 C.F.R. § 51.92, the Staff must supplement a FEIS if there are substantial changes in the proposed action that are relevant to environmental concerns or if there are new and significant circumstances or information relevant to environmental concerns that bear on the proposed action or its impacts. Accordingly, after publication of the FEIS, the Staff followed its process for consideration of new information to determine whether a supplement might be needed.[226] The Staff's process included an audit, conducted in February 2015, of NINA's process for identifying and assessing new information.[227] The Staff concluded that the new information did not present a seriously different picture of the environmental impacts of constructing and operating STP Units 3 and 4 when compared to the impacts described in the FEIS and that supplementation was not required.[228]

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[225] *Id*. at 196 (Ms. Vokoun).

[226] *Id*. (Ms. Vokoun); Ex. NRC-005-R, Staff Answers to Pre-Hearing Questions, at 39 (citing "Staff Process for Determining if a Supplement to an Environmental Impact Statement is Required in Accordance with Title 10 of the *Code of Federal Regulations*, Part 51.92(a) or 51.72(a)" (ML13199A170)).

[227] Tr. at 196 (Ms. Vokoun); Ex. NRC-005-R, Staff Answers to Pre-Hearing Questions, at 39-40 (citing Memorandum from Mark D. Notich, Sr. Project Manager, NRC to Jennifer L. Dixon-Herrity, Environmental Projects Branch Chief, NRC (Apr. 15, 2015) (ML15040A372) (providing summary report of the audit results of NINA's process for identifying new and potentially significant information)); *see also supra* at 13-14 & n.48 (regarding the Staff's consideration of the Continued Storage Rule and associated GEIS as potentially new and significant information).

[228] Ex. NRC-005-R, Staff Answers to Pre-Hearing Questions, at 40. Since the FEIS was completed, one new bird species has been federally listed as threatened under the Endangered Species Act and potentially occurs in the landscape surrounding the STP site—the rufa red knot (*Calidrus canutus rufa*). *Id.* at 45. Based on the review of information provided by experts from NINA and the U.S. Army Corps of Engineers, the Staff concluded that the STP project would not affect the rufa red knot, as it is a shorebird and the STP site does not provide, and is some distance from, its preferred habitat—beachfront and shores. *Id.* Because the Staff concludes

In pre-hearing questions and at the hearing, we explored the possible impacts of recent drought conditions in the area of the STP site.[229] NINA noted that drought conditions are not uncommon in Texas and were considered during the original design of the STP site.[230] Further, the "site was originally designed to accommodate four operating units and the Main Cooling Reservoir (MCR) was sized accordingly. Also, sufficient senior water rights were procured to ensure that four units could operate even under severe drought conditions."[231] NINA represented that it does not anticipate the need for any new water appropriations to support STP Units 3 and 4.[232] In part because of its ability to operate during severe drought conditions, NINA asserts that the STP site remains the obviously superior site even when recent drought conditions are considered.[233] Similarly, the Staff recognized that Texas experiences frequent droughts and considered the drought of record that occurred in the 1950s and was discussed in

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there would be no effect on the species, the Staff is not required to seek concurrence from the U.S. Fish and Wildlife Service or take further action under the Endangered Species Act. *Id.*

[229] *See* Ex. NRC-005-R, Staff Answers to Pre-Hearing Questions, at 42-44; Ex. STP-001, NINA Answers to Pre-Hearing Questions, at 44-45; Tr. at 199-200, 202-07. The Staff recognized that 2011 was the driest year on record for Texas and the State remained in severe drought condition from late 2010 until recently. Ex. NRC-005-R, Staff Answers to Pre-Hearing Questions, at 42.

[230] Ex. STP-001, NINA Answers to Pre-Hearing Questions, at 44.

[231] *Id.*

[232] *Id.*

[233] *Id.*

the FEIS.[234] Because the recent severe drought was bounded by the earlier drought of record, the Staff's impact evaluation in the FEIS did not change based on the recent drought.[235]

We also asked whether the recent drought conditions impacted any of the FEIS conclusions related to terrestrial ecological impacts.[236] Both NINA and the Staff reiterated that droughts are not uncommon in the area, and that the recent drought was not as severe as the drought of record discussed in the FEIS.[237] NINA further noted that the proposed location for STP Units 3 and 4 consists mainly of areas that do not offer particularly attractive habitat to the terrestrial species that inhabit the site.[238] Similarly, the Staff responded that the plants and wildlife on the site are expected to be broadly tolerant of extreme environmental conditions such as droughts, but also that loss or degradation of these resources would only be of minimal ecological significance.[239] Therefore, although the Staff did not perform a separate analysis of the impacts of the recent drought on terrestrial ecological resources, the Staff does not expect that any of the impact determinations would have changed.[240]

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[234] Ex. NRC-005-R, Staff Answers to Pre-Hearing Questions, at 42.

[235] *Id.*

[236] Pre-Hearing Questions Order at 27.

[237] Ex. STP-001, NINA Answers to Pre-Hearing Questions, at 45; Ex. NRC-005-R, Staff Answers to Pre-Hearing Questions, at 43.

[238] Ex. STP-001, NINA Answers to Pre-Hearing Questions, at 45.

[239] Ex. NRC-005-R, Staff Answers to Pre-Hearing Questions, at 43.

[240] *Id.*

C. Findings

We have conducted an independent review of the sufficiency of the Staff's safety findings, with particular attention to the topics discussed above. Our findings, however, are based on the entire record. Based on the evidence presented in the uncontested hearing, including the Staff's review documents and the testimony provided, we find that the applicable standards and requirements of the AEA and the NRC regulations have been met. The required notifications to other agencies or bodies have been duly made.[241] NINA is technically and financially qualified to engage in the activities authorized. We find that there is reasonable assurance that the facility will be constructed and operated in conformity with the licenses, the provisions of the AEA, and the NRC's regulations and that issuance of the licenses will not be inimical to the common defense and security or to the health and safety of the public. In addition, we find that the Staff's proposed regulatory exemptions meet the standards in 10 C.F.R. § 50.12. And finally, we find that the Staff's proposed license conditions as well as the license condition we direct the Staff to include, discussed in Section II.B.6 above, are

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[241] The Staff notified the Electric Reliability Council of Texas, the Public Utility Commission of Texas, and the Federal Energy Regulatory Commission about the combined license application in May 2015. Ex. NRC-001, Staff Information Paper, at 30 (citing Letter from Tom Tai, NRC, to Craven Crowell, Electric Reliability Council of Texas (May 5, 2015) (ML15085A440); Letter from Tom Tai, NRC, to Brian Almon, Public Utility Commission of Texas (May 5, 2015) (ML15085A370); Letter from Tom Tai, NRC, to Kimberly Bose, Federal Energy Regulatory Commission (May 5, 2015) (ML15085A430)). The Staff published notices of the application in advance of public EIS scoping meetings on January 27, 2008, and February 3, 2008, in the *Bay City Tribune* and *Victoria Advocate*. *Id.* Notices of the combined license application were also published in advance of public meetings on the draft EIS on April 25, 2010, May 2, 2010, and May 5, 2010, in the same papers. *Id.* at 30-31. In addition, pursuant to 10 C.F.R. § 50.43(a)(3), the Staff published a notice of the application in the *Federal Register* on April 23, 2015; April 28, 2015; May 6, 2015; and May 12, 2015 (at 80 Fed. Reg. 22,746; 80 Fed. Reg. 23,597; 80 Fed. Reg. 26,104; and 80 Fed. Reg. 27,190, respectively). *Id.* at 31.

appropriately drawn and sufficient to provide reasonable assurance of adequate protection of public health and safety.

We also conducted an independent review of the Staff's environmental analysis in the FEIS, taking into account the particular requirements of NEPA. NEPA section 102(2)(A) requires agencies to use "a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts" in decision-making that may impact the environment.[242] We find that the environmental review team used the systematic, interdisciplinary approach that NEPA requires.[243] The environmental review team consisted of more than sixty individuals with expertise in disciplines including ecology, geology, hydrology, radiological health, socioeconomics, and cultural resources.[244]

NEPA section 102(2)(E) calls for agencies to study, develop, and describe appropriate alternatives.[245] The alternatives analysis is the "heart of the environmental impact statement."[246] Based on the discussion in the FEIS and the Staff's testimony at the hearing, we find that the environmental review identified an appropriate range of alternatives with respect to alternative power sources, alternative sites, and alternative system designs and adequately described the

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[242] NEPA § 102(2)(A), 42 U.S.C. § 4332(2)(A).

[243] *See, e.g.*, Tr. at 188-91 (Ms. Vokoun) (providing an overview of the Staff's environmental review methodology); Ex. NRC-015, Staff Presentation Slides—Environmental Panel (Nov. 19, 2015), at 3-6, 9-11.

[244] *See* Ex. NRC-010B, FEIS, app. A. The team consisted of individuals from the NRC, the U.S. Army Corps of Engineers, Pacific Northwest National Laboratory, and Idaho National Laboratory. *Id.*

[245] NEPA § 102(2)(E), 42 U.S.C. § 4332(2)(E).

[246] 10 C.F.R. pt. 51, app. A, § 5.

environmental impacts of each alternative.[247] We find reasonable the Staff's conclusion that none of the alternatives considered is environmentally preferable to the proposed action.[248]

NEPA section 102(2)(C) requires us to assess the relationship between local short-term uses and long-term productivity of the environment, to consider alternatives, and to describe the unavoidable adverse environmental impacts and the irreversible and irretrievable commitments of resources associated with the proposed action.[249] The discussion of alternatives is in Chapter 9 of the FEIS; the other items are discussed in Chapter 10.[250] The review team found the principal short-term benefit of the project to be the production of electrical energy.[251] The review team also found that the site would have much greater economic productivity hosting the reactors than it would if used for agriculture or other probable uses of the site.[252] While the review team noted there would be an impact to long-term productivity when the plant is not immediately dismantled at the end of operation, the team found that "the enhancement of regional productivity resulting from the electrical energy produced by the plant is expected to

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[247] *See, e.g.*, Tr. at 193-95 (Mr. Kugler); Ex. NRC-010A, FEIS, ch. 9.

[248] *See, e.g.*, Tr. at 195 (Mr. Kugler); Ex. NRC-010A, FEIS, § 9.2, at 9-31, 9-33; § 9.3, at 9-207; § 9.4, at 9-215.

[249] NEPA § 102(2)(C)(ii)-(v), 42 U.S.C. § 4332(2)(C)(ii)-(v).

[250] *See* Ex. NRC-010A, FEIS, chs. 9-10.

[251] *Id.*, § 10.3, at 10-13.

[252] *Id.,* § 10.3, at 10-13 to 10-14.

result in a correspondingly large increase in regional long-term productivity that would not be equaled by any other long-term use of the site."[253]

Chapter 10 of the FEIS includes tables listing the unavoidable adverse environmental impacts during preconstruction, construction, and operation, along with actions to mitigate those impacts.[254] The review team found that the unavoidable impacts during preconstruction and construction would be small for all resource areas except for socioeconomic impacts—physical impacts, demography, economic impacts, and community services and infrastructure—which would be small to moderate.[255] The impact for economics would be beneficial.[256] For operation, the review team found that the unavoidable adverse impacts would be small for all resource areas except economics, where the impacts would be beneficial and small to large.[257]

Finally, with regard to irreversible and irretrievable commitments of resources, the review team concluded that disposal of radioactive and nonradioactive wastes would require the long-term or irreversible commitment of land and over 22,000 gallons per minute (83,279 liters per minute) of cooling water would be lost through evaporation during operation.[258] While there would be both temporary and long-term changes to the abundance and distribution of terrestrial biota at the site, there is enough suitable habitat elsewhere in the area such that changes would

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[253] *Id.* at 10-14. The review team also noted that "most long-term impacts resulting from land-use preemption by plant structures can be eliminated by removing these structures or by converting them to other productive uses." *Id.*

[254] *Id.* at Tables 10-1 and 10-2.

[255] *Id.* at Table 10-1.

[256] *Id.*

[257] *Id.* at Table 10-2.

[258] *Id.* §§ 10.4.1.1 and 10.4.1.2.

not result in adverse impacts to the regional populations despite localized permanent loss of habitat.[259] With respect to aquatic biota, the review team expects preconstruction, construction, and operation to adversely affect the abundance and distribution of the aquatic community, including designated essential fish habitat in certain areas of the Colorado River.[260] The review team predicts that activities related to STP Units 3 and 4 would have more than minimal but less than substantial adverse effect on essential fish habitat in the Colorado River.[261] The review team expects that the aquatic habitat and populations would recover after Units 3 and 4 permanently cease operations and the plant is decommissioned.[262] The review team also concluded that during the construction of Units 3 and 4, the materials used and energy consumed, "while irretrievable, would be of small consequence with respect to the availability of such resources."[263] With regard to operation of the proposed units, the review team determined that uranium would be irretrievably committed, but it would be negligible in comparison to the availability of uranium ore and existing stockpiles of highly enriched uranium in the United States and Russia that could be processed into fuel.[264]

We must weigh these unavoidable adverse environmental impacts and resource commitments—the environmental "costs" of the project—against the project's benefits.[265] Considering the need for power in the region and the expected increase in productivity, jobs,

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[259] *Id.* § 10.4.1.3.

[260] *Id.*

[261] *Id.*

[262] *Id.*

[263] *Id.* § 10.4.2.

[264] *Id.*

[265] 10 C.F.R. § 51.107(a).

and tax revenue as described in the hearing and in the FEIS, we find that the benefits of the project outweigh the costs described above. Moreover, we have considered each of the requirements of NEPA section 102(2)(C) and find nothing in the record that would lead us to disturb the Staff's conclusions on those requirements.

In sum, for each of the environmental topics discussed at the hearing and in this decision, we find that the Staff's review was reasonably supported in logic and fact and sufficient to support the Staff's conclusions. Based on our review of the FEIS, we also find that the remainder of the FEIS was reasonably supported and sufficient to support the Staff's conclusions.

Therefore, as a result of our review of the FEIS environmental analysis, and in accordance with the Notice of Hearing for this uncontested proceeding, we find that the requirements of NEPA section 102(2)(A), (C), and (E), and the applicable regulations in 10 C.F.R. Part 51, have been satisfied with respect to the combined license application. We independently considered the final balance among conflicting factors contained in the record of this proceeding. We find, after weighing the environmental, economic, technical, and other benefits against environmental and other costs, and considering reasonable alternatives, that the combined licenses should be issued.

III. CONCLUSION

We find that, with respect to the safety and environmental issues before us today, the Staff's review of NINA's combined license application was sufficient to support the findings in 10 C.F.R. §§ 52.97(a) and 51.107(a). We *authorize* the Director of the Office of New Reactors to issue the combined licenses for the construction and operation of South Texas Project Units 3 and 4 subject to the directions and modifications contained herein.[266] We *authorize* the Staff to issue the record of decision.

IT IS SO ORDERED.

For the Commission

NRC SEAL

/RA/

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Annette L. Vietti-Cook
Secretary of the Commission

Dated at Rockville, Maryland,
this 9th day of February 2016.

[266] *See supra* section II.B.6.

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 **COMMISSION MEMORANDUM AND ORDER CLI-16-02** have been served upon the following persons by the Electronic Information Exchange.

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Office of the Secretary of the Commission

Dated at Rockville, Maryland
this 9th day of February, 2016