

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

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

In the Matter of)

DTE ELECTRIC COMPANY)

(Fermi Nuclear Power Plant, Unit 3))

) Docket No. 52-033-COL
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CLI-15-13

MEMORANDUM AND ORDER

On February 4, 2015, we held a hearing on DTE Electric Company's combined license application to construct and operate a new nuclear reactor at the Fermi Nuclear Power Plant site in Monroe County, Michigan.¹ The purpose of the evidentiary hearing was to consider the sufficiency of the NRC Staff's review of DTE'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 license.

¹ See In the Matter of DTE Electric Company, Combined License for Enrico Fermi Unit 3; Notice of Hearing, 79 Fed. Reg. 72,215, 72,216 (Dec. 5, 2014) (Notice of Hearing); Tr. at 1-217 (attached as Appendix B to Order of the Secretary (Adopting Proposed Transcript Corrections and Admitting Post-Hearing Exhibits) (Mar. 9, 2015) (unpublished) (Transcript Correction Order)).

I. BACKGROUND

A. Proposed Action

DTE seeks to build a GE-Hitachi Economic Simplified Boiling Water Reactor (ESBWR) at the Fermi Nuclear Power Plant site in Monroe County, Michigan. Two units currently exist at the site: Unit 1 was permanently shut down in 1972; Unit 2 began commercial operation in 1988 and is operating today.² DTE submitted its combined license application for Unit 3 on September 18, 2008. The Staff docketed and accepted the application for review shortly thereafter.³

Over the past six years, the Staff has spent approximately 52,000 hours reviewing DTE's application to determine whether it complies with the Atomic Energy Act of 1954, as amended, and the NRC's regulations.⁴ The Staff's review included an analysis of the environmental impacts of constructing and operating Fermi Unit 3 in accordance with the National Environmental Policy Act of 1969 (NEPA), on which the Staff has spent another 17,000 hours.⁵

² DTE submitted an application to renew the operating license for Fermi Unit 2 for an additional twenty years. See DTE Electric Company; Fermi Unit 2, 79 Fed. Reg. 34,787 (June 18, 2014). The Atomic Safety and Licensing Board designated to preside over the *Fermi* license renewal proceeding granted two petitions to intervene. *DTE Electric Co.* (Fermi Nuclear Power Plant, Unit 2), LBP-15-5, 81 NRC __ (Feb. 6, 2015) (slip op.). DTE has appealed the Board's decision. *Applicant's Notice of Appeal of LBP-15-5* (Mar. 3, 2015); *Applicant's Brief in Support of Appeal of LBP-15-5* (Mar. 3, 2015) (ADAMS accession no. ML15062A634).

³ See Detroit Edison Company; Notice of Hearing, and Opportunity To Petition for Leave To Intervene and Order Imposing Procedures for Access to Sensitive Unclassified Non-Safeguards Information and Safeguards Information for Contention Preparation on a Combined License for Fermi 3, 74 Fed. Reg. 836 (Jan. 8, 2009).

⁴ Tr. at 49 (Mr. Tracy).

⁵ *Id.*

In a separate rulemaking proceeding, the Staff reviewed GE-Hitachi's application to certify the design for the ESBWR. The Staff completed the rulemaking and issued the final ESBWR design certification rule, following our approval, in October 2014.⁶ DTE's combined license application incorporates by reference the ESBWR certified design.⁷

The Office of New Reactors led the review and provided much of the expertise, 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 and III.⁸ The Staff held approximately eighty public meetings on the Fermi Unit 3 combined license application.⁹ In its environmental review, the Staff worked closely with the U.S. Army Corps of Engineers, a cooperating agency.¹⁰ Other federal agencies, including the U.S. Department of Homeland Security and the U.S. Fish and

⁶ See 10 C.F.R. pt. 52, app. E; Final Rule, Economic Simplified Boiling-Water Reactor Design Certification, 79 Fed. Reg. 61,944 (Oct. 15, 2014) (ESBWR Final Rule). The final rule became effective on November 14, 2014. ESBWR Final Rule, 79 Fed. Reg. at 61,944.

⁷ See *generally* Ex. NRC000006A to NRC000006H and NRC000006J, DTE Energy, Fermi 3 Combined License Application (Oct. 2014) (DTE Combined License Application). Portions of DTE's combined license application contain sensitive unclassified non-safeguards information and are not publicly available.

⁸ See Tr. at 51-52 (Tracy); *Staff Witness List* (Jan. 14, 2015), Attachment A, at 1-3 (Staff Witness List).

⁹ Ex. NRC000001, "Staff Statement in Support of the Uncontested Hearing for Issuance of Combined License for the Fermi Nuclear Plant Unit 3," Commission Paper SECY-14-0132 (Nov. 20, 2014), at 4 (Staff Information Paper).

¹⁰ See Tr. at 59 (Mr. Delligatti).

Wildlife Service, also contributed to the Staff's review of DTE's license application.¹¹ In addition, the Staff consulted with state, local, and tribal organizations—both in the United States and in Canada—concerning a variety of issues, including issues arising under the National Historic Preservation Act.¹² 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, as required by our regulations.¹³

DTE did not pursue an early site permit for Fermi Unit 3.¹⁴ 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 studied as part of the Staff's combined license review and are within the scope of our decision today.

¹¹ See Ex. NRC0000001, Staff Information Paper at 5; Tr. at 51 (Mr. Tracy), 60 (Mr. Delligatti) 152 (Ms. Sutton).

¹² Ex. NRC0000001, Staff Information Paper at 5.

¹³ 10 C.F.R. §§ 1.13, 52.87; see Stetkar, John W., Chairman of the ACRS, letter to Allison M. Macfarlane, Chairman of the NRC (Sept. 22, 2014) (ML14252A294) (ACRS Letter). The ACRS concluded that “[t]here is reasonable assurance that Fermi Unit 3 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.” ACRS Letter at 1. It also found that there is reasonable assurance that the ESBWR design and the Fermi Unit 3 site satisfy NRC requirements that were imposed as part of the agency's lessons learned from the Fukushima Dai-ichi accident on March 11, 2011. ACRS Letter at 2. The Staff responded to other, generic recommendations in the ACRS letter. See Satorius, Mark A., Executive Director for Operations, letter to John W. Stetkar, Chairman of the ACRS (Nov. 14, 2014) (ML14293A058) (Staff Response to ACRS).

¹⁴ See 10 C.F.R. pt. 52, subpt. A.

B. Review Standards

The Atomic Energy Act, 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.¹⁵ Our Notice of Hearing for the “uncontested” or “mandatory” portion of this proceeding outlines the standards for our review.¹⁶ On the safety side, we must determine whether:

- (1) the applicable standards and requirements of the Atomic Energy Act 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 Atomic Energy Act, and the Commission’s regulations;
- (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.¹⁷

On the environmental side, we must consider and determine:

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

¹⁵ AEA § 189a., 42 U.S.C. § 2239(a).

¹⁶ See Notice of Hearing, 79 Fed. Reg. at 72,216.

¹⁷ 10 C.F.R. § 52.97(a).

- (3) after weighing the environmental, economic, technical, and other benefits against environmental and other costs, and considering reasonable alternatives, whether the combined license should be issued, denied, or appropriately conditioned to protect environmental values; and
- (4) whether the NEPA review conducted by the Staff has been adequate.¹⁸

We do not review DTE'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.¹⁹

C. Contested Proceeding

When the Staff docketed DTE's combined license application, it also provided interested persons an opportunity to challenge the application in a contested proceeding, in accordance with Atomic Energy Act section 189a.²⁰ Nineteen individuals and environmental groups (collectively, Intervenor) submitted a request for hearing and petition to intervene with fourteen proposed contentions.²¹ A Licensing Board comprised of three administrative judges, one with legal expertise and two with technical expertise, granted Intervenor's request for hearing and

¹⁸ *Id.* § 51.107(a).

¹⁹ *South Carolina Electric & Gas Co. and South Carolina Public Service Authority (also referred to as Santee Cooper)* (Virgil C. Summer Nuclear Station, Units 2 and 3), CLI-12-9, 75 NRC 421, 428 (2012); *Southern Nuclear Operating Co.* (Vogtle Electric Generating Plant, Units 3 and 4), CLI-12-2, 75 NRC 63, 74 (2012).

²⁰ See 74 Fed. Reg. at 836.

²¹ Intervenor are Beyond Nuclear, Citizens for Alternatives to Chemical Contamination, Citizens Environmental Alliance of Southwestern Ontario, Don't Waste Michigan, Sierra Club, Keith Gunter, Edward McArdle, Henry Newman, Derek Coronado, Sandra Bihn, Harold L. Stokes, Michael J. Keegan, Richard Coronado, George Steinman, Marilyn R. Timmer, Leonard Mandeville, Frank Mantei, Marcee Meyers, and Shirley Steinman.

admitted Contentions 3, 5, 6, and 8.²² Contention 3 pertained to the management of Class B and C low-level waste, Contention 5 pertained to hydrology at the Fermi site, Contention 6 concerned aquatic impacts from algae, and Contention 8 concerned potential adverse impacts on the eastern fox snake, a state-listed endangered species.²³

The Board granted summary disposition of Contentions 3, 5, and 6 in favor of DTE.²⁴ And after an evidentiary hearing, the Board resolved Contention 8 in favor of the Staff. The Board also held a hearing on a new contention that concerned DTE's compliance with the NRC's quality assurance regulations, Contention 15A/B, which was resolved in favor of DTE.²⁵ Intervenors petitioned for review of the Board's ruling on Contention 15A/B; they did not seek review of the Board's decisions resolving the other admitted contentions.²⁶ We later denied Intervenors' petition for review of the Board's dismissal of Contention 15A/B.²⁷

²² LBP-09-16, 70 NRC 227, 306 (2009). DTE challenged the Board's ruling on standing and argued that the fifty-mile "proximity presumption" should no longer apply in reactor licensing proceedings based on DTE's interpretation of contemporaneous judicial concepts of standing. It did not challenge the Board's contention admissibility ruling. We affirmed the Board's ruling on standing and upheld the validity of the proximity presumption. CLI-09-22, 70 NRC 932, 933 (2009) (citing *Calvert Cliffs 3 Nuclear Project, LLC* (Calvert Cliffs Nuclear Power Plant, Unit 3), CLI-09-20, 70 NRC 911 (2009)).

²³ LBP-09-16, 70 NRC at 256, 272, 277, 285-86.

²⁴ See Order (Granting Motion for Summary Disposition of Contention 3) (July 9, 2010) (unpublished); Order (Granting Motion for Summary Disposition of Contention 5) (Mar. 1, 2011) (unpublished); LBP-12-23, 76 NRC 445, 452 (2012) (among other things, granting summary disposition of Contention 6).

²⁵ LBP-14-7, 79 NRC 451, 454 (2014). See generally LBP-10-9, 71 NRC 493, 499 (2010).

²⁶ *Intervenors' Petition for Review of LBP-14-07 (Ruling for Applicant on Quality Assurance)* (June 17, 2014).

²⁷ CLI-14-10, 80 NRC 157 (2014).

Shortly after it ruled on Intervenors' last remaining admitted contentions, the Board requested our permission to hold an evidentiary hearing on Intervenors' proposed Contention 23, which challenged the Staff's discussion of the environmental impacts of building a new transmission-line corridor for Fermi Unit 3.²⁸ The Board did not admit the contention because the Board found that Intervenors had filed it impermissibly late.²⁹ Nonetheless, the Board determined that Contention 23 presented issues that warranted the Board's review *sua sponte* and sought our approval to undertake such a review. Intervenors also filed a petition for review of the Board's dismissal of Contention 23.³⁰ We denied Intervenors' petition for review.³¹ And we denied the Board's request for *sua sponte* review and concluded that the environmental impacts of the transmission corridor were among the issues appropriate for resolution in this uncontested proceeding.³² We discuss the Staff's review of the transmission-line corridor as part of today's decision.

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 various NRC licensing actions served as part of the

²⁸ LBP-14-9, 80 NRC 15, 37 (2014).

²⁹ See *id.* at 34. Intervenors filed proposed Contention 23 a second time after the Staff issued the Final Environmental Impact Statement (FEIS). The Board again dismissed the contention as impermissibly late. See *id.* at 36-37.

³⁰ *Intervenors' Petition for Review of Atomic Safety and Licensing Board's Dismissal of Contention 23 for Lack of Timeliness* (Oct. 6, 2014); see Order of the Secretary (Sept. 10, 2014) (unpublished) (amending the deadline for Intervenors' petition for review).

³¹ CLI-15-1, 81 NRC __ (Jan. 13, 2015) (slip op.).

³² *Id.* at __ (slip op. at 13-14).

environmental analysis of the impacts of spent fuel storage after the end of a reactor's license term pending ultimate disposal in a repository.³³ 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, we held the issuance of final licensing decisions for affected matters, including this one, while we addressed the court's remand.³⁴ To address the court's remand and provide a comprehensive analysis of the environmental impacts of continued storage, we issued a final Continued Storage Rule and supporting Generic Environmental Impact Statement.³⁵ 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.³⁶ The Board dismissed Intervenor's continued storage contention consistent with our direction.³⁷ Separately, the Staff considered whether the

³³ 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).

³⁴ *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 (2012).

³⁵ *Calvert Cliffs 3 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 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).

³⁶ *Calvert Cliffs*, CLI-14-8, 80 NRC at 79-80.

³⁷ Order (Denying Motion to Admit Waste Confidence Contention) (Oct. 6, 2014), at 3 (unpublished).

Continued Storage Rule and the associated Generic Environmental Impact Statement presented new and significant information such that a supplement to the Final Environmental Impact Statement for Fermi Unit 3 (FEIS) was required.³⁸ The Staff compared the fuel cycle impacts analysis in the FEIS with the analysis in the Generic Environmental Impact Statement for Continued Storage and concluded 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.³⁹ Therefore, the Staff determined that a supplement to the FEIS was not required.⁴⁰

Thereafter, intervenors sought leave to file a new contention that would require the NRC to make safety-related findings for the Continued Storage Rule and suspend licensing decisions until completing that action.⁴¹ We exercised our supervisory authority to consider this and other

³⁸ See Ex. NRC000004, *NRC Staff Responses to Commission Pre-Hearing Questions* (Jan. 14, 2015), at 42-43 (Staff Responses to Initial Pre-Hearing Questions) (citing Consideration of New Information Regarding the Impacts of the Continued Storage of Spent Fuel for the Fermi Nuclear Power Plant, Unit 3, Combined License Application (Nov. 20, 2014) (ML14318A477) (Staff's New and Significant Information Analysis)).

³⁹ *Id.* at 43 (citing Staff's New and Significant Information Analysis).

⁴⁰ *Id.*

⁴¹ *Intervenors' Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings in the Combined Operating Licensing Proceeding for Fermi 3 Nuclear Power Plant* (Sept. 29, 2014); *Petition to Suspend Final Decisions in All Pending Reactor Licensing Proceedings Pending Issuance of Waste Confidence Safety Findings* (Sept. 29, 2014) (errata Oct. 1, 2014; amended and corrected petition Oct. 6, 2014).

substantively similar filings, dismissed the proposed “waste confidence safety contention,” and denied the suspension petitions.⁴²

Finally, Beyond Nuclear, a party to the contested proceeding, joined a group of petitioners in a multi-docket petition to supplement the environmental impact statements for a number of applications, including DTE’s combined license application for Fermi Unit 3, to incorporate by reference the analysis in the Generic Environmental Impact Statement for Continued Storage.⁴³ Beyond Nuclear also filed a new contention, accompanied by a motion to reopen the record, as a “placeholder” to permit it to challenge the Staff’s Final Environmental Impact Statement for Fermi Unit 3 (FEIS) assuming that Beyond Nuclear is successful in its pending challenge to the Continued Storage Rule in the D.C. Circuit.⁴⁴ We denied the petition

⁴² *DTE Electric Co. (Fermi Nuclear Power Plant, Unit 3)*, CLI-15-4, 81 NRC ___, ___ (Feb. 26, 2015) (slip op. at 3, 5); *DTE Electric Co. (Fermi Nuclear Power Plant, Unit 3)*, CLI-14-9, 80 NRC 147, 149-50 (2014). Some of the parties challenging DTE’s application in the contested proceeding also joined other multi-docket suspension petitions that we later denied. See *DTE Electric Co. (Fermi Nuclear Power Plant, Unit 3)*, CLI-14-7, 80 NRC 1, 5 & n.11, 10 (2014) (denying suspension request that would have halted final licensing decisions pending action on a petition for rulemaking regarding the Staff’s review of the potential expedited transfer of spent fuel from pools to dry casks); *Union Electric Co. d/b/a Ameren Missouri (Callaway Plant, Unit 2)*, CLI-11-5, 74 NRC 141, 146, 177-78 (2011) (requesting suspension of proceedings and other relief after the March 11, 2011, accident at Fukushima Dai-ichi).

⁴³ 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).

⁴⁴ *Beyond Nuclear’s Motion to Reopen the Record of Combined License Proceeding for Fermi Unit 3 Nuclear Power Plant* (Feb. 12, 2015), at 1-2; *Beyond Nuclear’s Hearing Request and Petition to Intervene in Combined License Proceeding for Fermi Unit 3 Nuclear Power Plant* (Feb. 12, 2015), at 1-3. See generally *New York v. NRC*, Nos. 14-1210, 14-1212, 14-1216, and 14-1217 (Consolidated) (D.C. Cir.) (Beyond Nuclear filed its petition for review in the D.C. Circuit on October 29, 2014).

to supplement and declined to admit Beyond Nuclear's "placeholder" contention.⁴⁵ The Board has terminated its jurisdiction.⁴⁶

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 DTE's combined license application, except for the contested matters, are subject to our review in the uncontested proceeding.⁴⁷ 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 at the time the Staff issues its final safety or environmental review document.⁴⁸ The Staff issued the FEIS for Fermi Unit 3 in January 2013 and the final Safety Evaluation Report (SER) in November 2014,

⁴⁵ *DTE Electric Co. (Fermi Nuclear Power Plant, Unit 3)*, CLI-15-10, 81 NRC __ (Apr. 23, 2015) (slip op.); CLI-15-12, 81 NRC __ (Apr. 23, 2015) (slip op.).

⁴⁶ LBP-15-12, 81 NRC __ (Mar. 20, 2015) (slip op.); see also *Virginia Electric and Power Co. d/b/a Dominion Virginia Power and Old Dominion Electric Cooperative* (North Anna Power Station, Unit 3), CLI-12-14, 75 NRC 692, 693, 699-701 (2012). As the Board observed, a number of matters remained pending before the Commission after the Board resolved the final contention pending before it. LBP-15-12, 81 NRC at __ (slip op. at 2-4). To clarify an understandable point of confusion, the Board's jurisdiction terminates when there are no longer any contested matters pending before it. In this instance, the Board's jurisdiction terminated when we exercised supervisory authority over the "waste confidence safety contention" in CLI-14-9.

⁴⁷ See Notice of Hearing, 79 Fed. Reg. at 72,216.

⁴⁸ 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) (SRM-SECY-10-0082).

which triggered the start of the uncontested portion of this proceeding.⁴⁹ We received the Staff's information paper on November 20, 2014, shortly after the Staff's issuance of the SER.⁵⁰

1. Pre-hearing Activities

We issued the Notice of Hearing on December 1, 2014, and set the schedule for the parties—the Staff and DTE—to file their lists of witnesses, as well as for DTE to provide its pre-filed testimony.⁵¹ We also issued several questions on environmental and safety-related topics to DTE and the Staff to answer in writing before the hearing.⁵² In addition, we invited interested states, local government bodies, and federally-recognized Indian tribes and Canadian Provinces, local government bodies, and First Nations to provide statements of issues for us to consider as part of the uncontested proceeding.⁵³ We received one response from the

⁴⁹ See Ex. NRC0000010A to NRC0000010D, “Environmental Impact Statement for the Combined License (COL) for Enrico Fermi Unit 3” (Final Report), NUREG-2105, Vols. 1-4 (Jan. 2013) (FEIS); Ex. NRC0000008A to NRC0000008B, “Final Safety Evaluation Report for the Fermi 3 Combined License Application” (Nov. 18, 2014) (SER). Portions of the SER contain sensitive unclassified non-safeguards information and are not publicly available.

⁵⁰ See Ex. NRC000001, Staff Information Paper at 1.

⁵¹ Notice of Hearing, 79 Fed. Reg. at 72,216. The Staff's information paper serves as its pre-filed testimony.

⁵² See Order of the Secretary (Transmitting Additional Pre-Hearing Questions) (Jan. 16, 2015) (unpublished) (Transmission-Line Corridor Questions); Order of the Secretary (Transmitting Pre-Hearing Questions) (Dec. 30, 2014) (unpublished) (Initial Pre-Hearing Questions). We also issued a question that contains sensitive unclassified non-safeguards information and was therefore filed on the non-public docket for the proceeding. The parties' responses to that question were likewise filed on the non-public docket.

⁵³ Notice of Hearing, 79 Fed. Reg. at 72,216-17.

Delaware Nation, which stated that it declined to participate because the Fermi Unit 3 project does not lie within its area of interest.⁵⁴

2. The Hearing

The Secretary of the Commission transmitted a scheduling note to DTE and the Staff setting the topics for and the order of presentations at the hearing.⁵⁵ In the first panel, witnesses for DTE and the Staff provided an overview of DTE's combined license application and the Staff's review. The next two panels focused on safety-related issues, and the final two panels focused on environmental issues.

The Staff made available seventy-eight witnesses at the hearing.⁵⁶ Twelve of these witnesses were scheduled panelists; the remainder stood by to answer questions on topics relating to their expertise.⁵⁷ A total of twelve witnesses offered testimony on behalf of DTE on panels at the hearing and in pre-filed written testimony.⁵⁸

⁵⁴ E-mail from Corey Smith, Assistant Director, Delaware National Cultural Preservation, to Hearing Docket, NRC (Jan. 20, 2015) (ML15022A627). The Delaware Nation requested, however, that "should th[e] project inadvertently uncover an archaeological site or object(s)" that "you halt all construction and ground disturbance activities and immediately contact the appropriate state agencies, as well as our office (within 24 hours)." *Id.*

⁵⁵ See Vietti-Cook, Annette, Secretary of the Commission, memorandum to Counsel for DTE and the Staff (Jan. 30, 2015) (Scheduling Note) (revising the scheduling note issued on January 22, 2015).

⁵⁶ See Staff Witness List at 1-3; Tr. at 14-15.

⁵⁷ See Scheduling Note at 1-5; Tr. at 14-15.

⁵⁸ See Ex. DTE000004, *Applicant's Witness List for the Fermi Unit 3 Hearing on Uncontested Issues* (Jan. 14, 2015); Tr. at 12-13, 132-33; Ex. DTE000001, *Applicant's Pre-filed Written Testimony in Support of the Hearing on Uncontested Issues for Fermi Unit 3* (Jan. 14, 2015) (DTE Pre-filed Testimony).

a. *Summary of the Overview Panels*

Peter Smith, Director of Nuclear Development for DTE, and Ron May, Sr., Executive Vice President of DTE, represented DTE on the overview panel.⁵⁹ Mr. Smith provided background on the development of DTE's license application, including DTE's decision to pursue a combined license, its selection of the ESBWR for the reactor design, and the selection of the Fermi site.⁶⁰ He also provided an overview description of the Fermi site and the features of the ESBWR.⁶¹

Glenn Tracy, 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 Fermi Unit 3 combined license application.⁶² In particular, Mr. Akstulewicz described the "design-centered review approach," a review methodology that we have endorsed, where the Staff performs a single technical review for standard issues involving a particular design that are then applied to other combined license applications referencing the same design.⁶³ When DTE submitted its application, the combined

⁵⁹ Tr. at 18.

⁶⁰ See Ex. DTE000005, Fermi 3, Combined License Mandatory Hearing, Introduction & Overview (Jan. 28, 2015), at 1-4 (DTE Overview Presentation); see *also* Tr. at 19-33.

⁶¹ See Ex. DTE000005, DTE Overview Presentation at 5-9.

⁶² See Tr. at 48.

⁶³ Ex. NRC000011, Combined License Application Review, Fermi 3, Overview (Jan. 28, 2015), at 5 (Staff Overview Presentation); Tr. at 53-54; see *also* *Summer*, CLI-12-9, 75 NRC at 427 & n.17 (discussing the design-centered review approach with respect to the AP1000 reactor design).

license application for a new nuclear plant at the North Anna Power Station was designated as the “reference application,” the “Reference COL” or “RCOL,” for the ESBWR design-centered review.⁶⁴ DTE was a “subsequent application,” “Subsequent COL” or “SCOL.”⁶⁵ In May 2010, the Fermi application took over as the reference application after the North Anna applicant selected a different reactor design.⁶⁶ The Staff verified that the standard content in the North Anna safety evaluation report directly applied to Fermi Unit 3, and DTE provided information to address the open items in that report.⁶⁷ Mr. Akstulewicz completed his testimony with a summary of the Staff’s findings under 10 C.F.R. § 52.97(a).⁶⁸ Mr. Delligatti provided background on the Staff’s environmental review, including a 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).⁶⁹

b. Summary of the Safety Panels

The first safety panel focused on the soil-structure interaction and seismic analyses for Fermi Unit 3.⁷⁰ Peter Smith testified for DTE.⁷¹ With him on the panel were Javad Moslemian,

⁶⁴ Ex. NRC000011, Staff Overview Presentation at 6-7.

⁶⁵ *Id.*

⁶⁶ Tr. at 54 (Mr. Akstulewicz).

⁶⁷ Ex. NRC000011, Staff Overview Presentation at 8.

⁶⁸ *Id.* at 11-13.

⁶⁹ Tr. at 58-65; Ex. NRC000011, Staff Overview Presentation at 14-20.

⁷⁰ See Ex. DTE000006, Fermi 3 COLA, Combined License Mandatory Hearing, Safety—Panel 1 (Jan. 28, 2015) (DTE Safety Panel 1 Presentation); Ex. NRC000012, Combined License Application Review, Fermi 3, Safety Panel 1 (Jan. 28, 2015) (Staff Safety Panel 1 Presentation).

⁷¹ Tr. at 83-85.

Engineering Manager, Sargent and Lundy, and Steven Thomas, Engineering Manager, Black and Veatch.⁷² Adrian Muniz, Lead Project Manager for the Fermi Unit 3 Application Review, Licensing Branch 3, Office of New Reactors, Sara Tabatabai, Seismologist, Structural, Geotechnical and Seismic Engineering Branch, Office of Research, and Manas Chakravorty, Senior Structural Engineer, Structural Engineering Branch 2, Office of New Reactors, provided testimony for the Staff.⁷³ In addition to the soil-structure interaction and seismic analyses, the first ten chapters of the Fermi 3 SER were subject to our examination during the first safety panel.⁷⁴

The second safety panel focused on Fermi SER Chapter 20, which covered the Staff's activities relating to recommendations from the Near-Term Task Force established in response to the accident at Fukushima Dai-ichi on March 11, 2011, and the discussion of Fukushima-related regulatory actions in DTE's application and the Staff's SER.⁷⁵ Peter Smith provided testimony for DTE, with David Hinds, Technical Engineering Manager, GE-Hitachi, and Steven Thomas, Black and Veatch, on the panel.⁷⁶ Adrian Muniz, Angelo Stubbs, Senior Reactor Systems Engineer, Plant Systems Branch, Office of New Reactors, Raul Hernandez, Reactor

⁷² Tr. at 82; Scheduling Note at 2.

⁷³ Tr. at 85-92; Scheduling Note at 2. During her review of DTE's application, Ms. Tabatabai worked in the Office of New Reactors. Tr. at 87.

⁷⁴ Scheduling Note at 2-3.

⁷⁵ See Ex. DTE000007, Fermi 3, Combined License Mandatory Hearing, Safety—Panel 2 (Jan. 28, 2015) (DTE Safety Panel 2 Presentation); Ex. NRC000013, Combined License Application Review, Fermi 3, Safety Panel 2 (Jan. 28, 2015) (Staff Safety Panel 2 Presentation).

⁷⁶ Tr. at 114; Scheduling Note at 3.

Systems Engineer, Plant Systems Branch, Office of New Reactors, and Dan Barss, Team Leader, Division of Preparedness and Response, Office of Nuclear Security and Incident Response, provided testimony for the Staff.⁷⁷ Chapters eleven through nineteen of the Fermi 3 SER were also subject to our examination during the second safety panel.⁷⁸

c. Summary of the Environmental Panels

The first environmental panel provided an overview of the Staff's review process for the Fermi Unit 3 FEIS, including a summary of its development, the Staff's analysis of alternatives, and a summary of the Staff's conclusions and recommendations.⁷⁹ Peter Smith testified for DTE, with Randall Westmoreland, Technical Expert and Environmental Lead, DTE, and Steven Thomas from Black and Veatch.⁸⁰ Jennifer Dixon-Herrity, Chief of the Environmental Projects Branch in the Office of New Reactors, Mallecia Sutton, Lead Environmental Project Manager, Environmental Projects Branch, Office of New Reactors, and Andrew Kugler, Senior Environmental Project Manager, Technical Support Branch, Office of New Reactors, provided testimony for the Staff.⁸¹ The second environmental panel focused on compliance with the National Historic Preservation Act with regard to the permanently shut-down Fermi Unit 1, which

⁷⁷ Tr. at 116-17; Scheduling Note at 3.

⁷⁸ Scheduling Note at 3.

⁷⁹ See Scheduling Note at 4; Ex. DTE000008, Fermi 3, Combined License Mandatory Hearing, Environmental Overview—Panel 1 (Jan. 28, 2015) (DTE Environmental Panel 1 Presentation); Ex. NRC000014, Combined License Application Review, Fermi 3, Environmental Panel 1 (Jan. 28, 2015) (Staff Environmental Panel 1 Presentation).

⁸⁰ Tr. at 139; Scheduling Note at 4.

⁸¹ Tr. at 142; Scheduling Note at 5.

DTE plans to demolish, as well as interactions between the Staff and international organizations over the course of the Staff's environmental review.⁸² The same witnesses for the first environmental panel testified for the second environmental panel.⁸³

3. Post-hearing Questions

After the hearing, we issued additional questions for written answers from DTE and the Staff.⁸⁴ In addition to admitting DTE's and the Staff's responses as exhibits, as well as additional exhibits from DTE, we adopted corrections to the hearing transcript.⁸⁵ In its response to our post-hearing questions, the Staff provided a clarification to its hearing testimony.⁸⁶ The Staff also filed four additional exhibits—NRC000018, NRC000019, NRC000020, and NRC000021—relating to recent Staff activities under the Endangered Species Act.⁸⁷ We admit these exhibits and close the evidentiary record for the uncontested hearing.

⁸² See Ex. DTE000009, Fermi 3, Combined License Mandatory Hearing, Environmental Overview—Panel 2 (Jan. 28, 2015) (DTE Environmental Panel 2 Presentation); Ex. NRC000015, Combined License Application Review, Fermi 3, Environmental Panel 2 (Jan. 28, 2015) (Staff Environmental Panel 2 Presentation).

⁸³ Tr. at 180.

⁸⁴ Order of the Secretary (Transmitting Post-Hearing Questions) (Feb. 11, 2015) (unpublished).

⁸⁵ Transcript Correction Order at 1.

⁸⁶ Ex. NRC000017, *NRC Staff Responses to Commission Post-Hearing Questions* (Feb. 19, 2015), at 1 (Staff Responses to Post-Hearing Questions). Although we allow this clarification, which reiterated statements in the Staff's response to pre-hearing question 33, Ex. NRC000004, Staff Responses to Initial Pre-Hearing Questions at 30, we remind the Staff that when a party requests action from the presiding officer in an NRC adjudicatory proceeding, the request must come in the form of a motion. See 10 C.F.R. § 2.323.

⁸⁷ See Roach, Kevin C., Counsel for the Staff, letter to the Commissioners (Apr. 5, 2015), at 1 (April 5 Commission Notification); Ex. NRC000018, Supplemental Biological Assessment, U.S. Fish and Wildlife Service, Enrico Fermi Unit 3 Combined License Application (Feb. 2015) (continued . . .)

II. DISCUSSION

A. 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 written questions before and after the hearing.

1. Safety-Related Issues

a. Soil-Structure-Interaction Analysis

The first safety issue that the Staff identified in its information paper and the first safety topic discussed at the hearing involved the soil-structure-interaction analysis for the Fermi site.⁸⁸ The design control document for the ESBWR is based on a generic set of site parameters. When evaluating an application that references the ESBWR for a specific site, the Staff focuses on whether the characteristics of the specific site fall within the parameters specified in the design control document.⁸⁹ As the Staff explained in its information paper, the partial bedrock

(. . . continued)

(Supplemental Biological Assessment); Ex. NRC000019, Hicks, Scott, U.S. Fish and Wildlife Service, letter to Jennifer L. Dixon-Herrity, NRC (Mar. 23, 2015) (March 23 Letter from the Fish and Wildlife Service); Roach, Kevin C., Counsel for the Staff, letter to the Commissioners (Apr. 29, 2015), at 1 (April 29 Commission Notification); Ex. NRC000020, Supplemental Biological Assessment to the U.S. Fish and Wildlife Service for the Enrico Fermi Unit 3 Combined License Application (Apr. 3, 2015) (Supplemental Biological Assessment (Northern Long-Eared Bat)); Ex. NRC000021, Hicks, Scott, U.S. Fish and Wildlife Service, letter to Jennifer L. Dixon-Herrity, NRC (Apr. 28, 2015) (April 28 Letter from the Fish and Wildlife Service); *see also* Smith, Tyson R., Counsel for DTE, letter to the Commissioners (Apr. 10, 2015), at 1-2. The exhibits were not accompanied by a motion. *See supra* note 86. Nevertheless, DTE has not opposed their admission and we find that they further contribute to the record.

⁸⁸ See Ex. NRC000001, Staff Information Paper at 14; Tr. at 83 (Mr. Smith).

⁸⁹ See Ex. NRC000001, Staff Information Paper at 14; *see also* 10 C.F.R. § 52.79(d)(1) (requiring applicants referencing a certified design to provide sufficient information for the Staff to determine whether the site's characteristics fall within the design's parameters).

embedment of the Reactor Building/Fuel Building and Control Building structures at the Fermi 3 site “deviates from the foundation configurations considered in the ESBWR [design control document]. In addition, the Fermi 3 site does not meet the minimum backfill shear wave velocity requirement of the ESBWR [design control document].”⁹⁰ Consequently, “site-specific soil structure interaction . . . analyses need[ed] to be performed to confirm that the certified design is adequate for the site.”⁹¹ DTE thus provided analyses to address these issues.⁹²

At the hearing, Peter Smith, testifying for DTE, explained that because the timing of its analyses coincided with the Staff’s post-Fukushima activities, DTE voluntarily updated its soil-structure-interaction analyses using inputs from the Central and Eastern U.S. Seismic Source Characterization for Nuclear Facilities (CEUS-SSC).⁹³ DTE also added margin to these inputs. DTE provided the results of its analyses, showing that the Fermi Unit 3 foundation response spectra using the updated inputs as well as updated inputs with added margin fell within the

⁹⁰ Ex. NRC000001, Staff Information Paper at 14; see *also* Ex. DTE000006, DTE Safety Panel 1 Presentation at 3 (depicting partial embedment and backfill).

⁹¹ Ex. NRC000001, Staff Information Paper at 14.

⁹² *Id.*; Tr. at 83 (Mr. Smith).

⁹³ Tr. at 83; Ex. DTE000006, DTE Safety Panel 1 Presentation at 2; see *also* Tr. at 87 (Ms. Tabatabai) (explaining that applicants like DTE were requested, not required, to consider using the updated model). The CEUS-SSC constitutes a key input to a probabilistic seismic hazard analysis. The probabilistic seismic hazard analysis is used as a method for accounting for uncertainty in seismic design and in calculating seismic risk. The seismic source characterization model describes where earthquakes will occur, how big they will be, and how often they will happen. The CEUS-SSC model includes consideration of an up-to-date database, full assessment and incorporation of uncertainties, and the range of diverse technical interpretations from the larger technical community. “Central and Eastern United States Seismic Source Characterization for Nuclear Facilities,” NUREG-2115, Vol. 1 (Jan. 2012), at ix-x (ML12048A804).

seismic design response spectra for the ESBWR.⁹⁴ DTE also provided comparisons of the in-structure response spectra and concluded that the ESBWR certified design envelopes the Fermi 3 site with “considerable margin.”⁹⁵ The Staff reviewed DTE’s analyses, performed additional analyses, and “confirmed that at the Fermi 3 site, the site-specific seismic demand is bounded by the [ESBWR design control document] analyses.”⁹⁶ The Staff concluded that DTE provided sufficient information to demonstrate the suitability of the ESBWR for the Fermi site.⁹⁷

b. Regulatory Treatment of Non-Safety Systems Equipment

In another area that focused on features of the ESBWR design and their applicability to the Fermi site, we asked pre-hearing questions on the protection of Regulatory Treatment of Non-Safety Systems (RTNSS) equipment from external hazards at the site.⁹⁸ This equipment is used to maintain core, containment, and spent fuel pool cooling after the reactor has been shut down for seventy-two hours following an accident.⁹⁹ RTNSS equipment is not relied on in the

⁹⁴ Ex. DTE000006, DTE Safety Panel 1 Presentation at 4; Tr. at 84 (Mr. Smith).

⁹⁵ Tr. at 85 (Mr. Smith); *see also* Ex. DTE000006, DTE Safety Panel 1 Presentation at 5.

⁹⁶ Ex. NRC000001, Staff Information Paper at 14; *see also* Ex. NRC000012, Staff Safety Panel 1 Presentation at 5-6 (showing similar results between the Staff’s confirmatory probabilistic seismic hazard analysis and DTE’s analyses and that they are enveloped by the ESBWR certified seismic design response spectrum).

⁹⁷ Ex. NRC000001, Staff Information Paper at 14; Ex. NRC000012, Staff Safety Panel 1 Presentation at 10; *see also* Tr. at 89 (Ms. Tabatabai).

⁹⁸ Initial Pre-Hearing Questions at 6-7, 12-13.

⁹⁹ Ex. NRC000008B, SER at 20-11. “RTNSS” refers to the regulatory oversight given to items that are not safety-related but perform risk-significant functions in passive reactor designs. *See, e.g.,* Ex. NRC000008A, SER at 3-1. As the Staff explained, “[b]y definition, RTNSS [structures, systems, and components] are non[-]safety equipment and should not be treated as safety-related.” Ex. NRC000004, Staff Responses to Initial Pre-Hearing Questions at 14. The RTNSS (continued . . .)

first instance in an accident or event; rather, the ESBWR's passive safety system performs that function.¹⁰⁰ DTE's application for Fermi Unit 3 incorporates by reference the RTNSS equipment from the ESBWR design control document; there are no departures from the ESBWR design with respect to the RTNSS equipment.¹⁰¹ Nevertheless, we considered certain aspects of RTNSS equipment in the uncontested hearing because it may be relied on to address certain post-Fukushima mitigation strategies for beyond-design-basis external events requirements after seventy-two hours.¹⁰² These post-Fukushima requirements are discussed further in Section C below.

(. . . continued)

concept was developed in the 1990s, in the context of the Staff's review of reactor designs with passive safety systems that also use active systems (as a backup to the passive system) to replenish coolant after a seventy-two hour period following an accident. The Staff sought to ensure that proper regulatory oversight was given to these systems, even though they were not safety-related, given uncertainties associated with passive safety system performance identified by the Staff. The Staff therefore determined that it "will not require that these active systems meet all the safety-related criteria, but will expect a high level of confidence that active systems which have a significant safety role are available when challenged." See "Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems (RTNSS) in Passive Plant Designs (SECY-94-084)," Commission Paper SECY-95-132 (May 22, 1995), Attachment 2, at 2-3 (ML003708005); Staff Requirements—SECY-95-132—Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems (RTNSS) in Passive Plant Designs (SECY-94-084) (June 28, 1995) (ML003708019); see also Callan, L. Joseph, Executive Director for Operations, to Commissioners, "Implementation of Staff Position in SECY-96-128, 'Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standardized Passive Reactor Design,' Related to Post-72 Hour Actions" (June 23, 1997), at 2-3 (ML003708229); "Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standardized Passive Reactor Design," Commission Paper SECY-96-128 (June 12, 1996) (ML003708224); Ex. NRC000004, Staff Responses to Initial Pre-Hearing Questions at 14.

¹⁰⁰ See Tr. at 96 (Mr. Nolan); Ex. NRC000004, Staff Responses to Initial Pre-Hearing Questions at 14.

¹⁰¹ Tr. at 97 (Mr. Smith).

¹⁰² Ex. NRC000008B, SER at 20-11.

In its letter summarizing its independent review of the safety aspects of DTE's application, the ACRS noted that seismic Category NS (non-seismic) and Category II structures that house RTNSS equipment must be evaluated for hurricane-generated missiles, but it also noted that there is no corresponding requirement for tornado-generated missiles.¹⁰³ The ACRS expressed some concern that the ability of these structures to withstand tornado-driven missiles had not been evaluated either with regard to the ESBWR design or for the Fermi Unit 3 site, making it "unclear that structures . . . hous[ing] RTNSS equipment that is credited for mitigation of beyond-design-basis external events will survive" the impact of a tornado-driven missile.¹⁰⁴ Nonetheless, the ACRS acknowledged the ESBWR's passive design and the ESBWR's ability to maintain passive core cooling, containment functions, and spent fuel cooling for at least

¹⁰³ ACRS Letter at 4; see also ESBWR Design Control Document, Tier 2, Chapter 3, Design of Structures, Components, Equipment, and Systems, Rev. 10 (Apr. 2010), at 3.3-1 (ML14104A929 (package)) (ESBWR DCD) ("Seismic Category I structures are designed for tornado and extreme wind phenomena. Seismic Category II structures are designed for extreme and tornado wind (excluding tornado missiles)," and "Seismic Category NS buildings that house RTNSS equipment are designed to withstand hurricane Category 5 wind velocity at 87.2 m/s (195 mph), 3-second gust."). Section 3.2.1 of the ESBWR design control document defines the seismic categories: Seismic Category I structures "must remain integral with systems and components (including their foundations and supports) that must remain functional or retain their pressure integrity in the event of a safe-shutdown earthquake." Seismic Category II structures, systems, and components "perform no safety-related function, but . . . [their] structural failure or interaction could degrade the functioning of a Seismic Category I item to an unacceptable level of safety or could result in incapacitating injury to occupants of the main control room." They "are designed to structurally withstand the effects of a [safe-shutdown earthquake]." "Seismic Category II structures, systems and components that are also classified as . . . [RTNSS] Criterion B in [design control document] Tables 19A-2 and 19A-3 are required to remain functional following a seismic event." All other structures, systems, and components are designated Seismic Category NS, and "are designed for seismic requirements in accordance with the International Building Code." ESBWR DCD at 3.2-1 to 3.2-2.

¹⁰⁴ ACRS Letter at 4.

seventy-two hours after the plant is shut down.¹⁰⁵ It noted that RTNSS equipment would not be required for the first seventy-two hours after loss of AC power, and that equipment from national response centers could provide defense-in-depth mitigating strategies if RTNSS equipment is not available thereafter.¹⁰⁶

In its response to our pre-hearing questions, the Staff explained that when it developed the policy for the protection of RTNSS equipment from certain external events in the 1990s, it required some RTNSS equipment to withstand hurricane loads and missiles, but not tornado loads or tornado missiles.¹⁰⁷ The Staff focused on the external events that could potentially result in widespread damage—hurricanes, floods, and seismic events—over the more localized damage from a tornado.¹⁰⁸ The Staff represented that it has applied this approach consistently since that time to all passive reactor designs, including the ESBWR.¹⁰⁹

Specifically with regard to the application for Fermi Unit 3, the RTNSS B long-term cooling equipment is located in a seismic Category I structure that is “designed to provide

¹⁰⁵ *See id.*

¹⁰⁶ *Id.*

¹⁰⁷ Ex. NRC000004, Staff Responses to Initial Pre-Hearing Questions at 14.

¹⁰⁸ *Id.* at 14-15.

¹⁰⁹ *Id.* at 15. In its response to the ACRS on this issue, the Staff stated that it has since updated its RTNSS guidance to include tornado-missiles. *See* Staff Response to ACRS at 6. The Staff was asked at the hearing whether it was concerned that the updated guidance was not used in the review of DTE’s application. Tr. at 108-09 (Commissioner Baran). Ryan Nolan, Reactor Systems Engineer, Balance of Plant Branch, Office of New Reactors, stated that the Staff had no concern and reiterated that the RTNSS equipment is not safety-related and therefore not held to the standard of safety-related equipment and that the conservatism of the new guidance may vary depending on the site. *Id.* (Mr. Nolan).

protection from design-basis storms, tornados, and floods” so that the effects of natural phenomena do not adversely affect long-term core and spent fuel pool cooling.¹¹⁰ The Staff stated that the diesel-driven or motor-driven fire pumps housed within that enclosure can be used to provide makeup water to the passive safety system after the first seventy-two hours following an external event.¹¹¹ For the ancillary diesel generator, an item that is housed within a Category II structure and used to power the motor-driven fire pump, the Staff explained that the diesel-driven pumps or power sources brought from offsite could support mitigation if the structure housing the ancillary diesel generator does not survive an external event.¹¹²

c. Staff Activities Relating to Fukushima Lessons-Learned

The Staff, in its pre-hearing information paper, described its review of DTE’s combined license application relative to regulatory actions that the NRC has taken in response to lessons learned from the Fukushima Dai-ichi accident.¹¹³ The Staff requested DTE to “provide an evaluation of the Fermi 3 site for updated seismic hazards”; “develop mitigating strategies for beyond-design-basis external events”; “provide reliable spent fuel pool instrumentation”; and “evaluate emergency preparedness staffing and communications.”¹¹⁴ The Staff stated that DTE

¹¹⁰ Ex. NRC000004, Staff Responses to Initial Pre-Hearing Questions at 28; *see also* Ex. DTE000002, DTE Response to Initial Pre-Hearing Questions at 11.

¹¹¹ *Id.*

¹¹² *Id.*

¹¹³ Ex. NRC000001, Staff Information Paper at 14-15.

¹¹⁴ *Id.*

provided the requested information and updated its application accordingly.¹¹⁵ We asked the Staff a pre-hearing question regarding the Staff's verification of the adequacy of DTE's use of the Electric Power Research Institute's (EPRI) 2004/2006 ground motion model rather than EPRI's 2013 ground motion model to update its seismic hazard analysis.¹¹⁶

In Safety Panel 2, DTE and the Staff addressed the Fukushima-related requests for additional information.¹¹⁷ Mr. Smith for DTE stated that its responses to the Staff's information requests were primarily administrative in nature and none of them required changes to the design.¹¹⁸ He explained that the Staff will impose license conditions for: (1) implementing mitigation strategies under the NRC-endorsed "FLEX" approach proposed by the Nuclear Energy Institute (NEI);¹¹⁹ (2) operator training on external power for the ESBWR's spent fuel pool instrumentation; and (3) reevaluating staffing and communications for emergency preparedness.¹²⁰

¹¹⁵ *Id.* at 15.

¹¹⁶ Initial Pre-Hearing Questions at 11-12.

¹¹⁷ See Ex. DTE000007, DTE Safety Panel 2 Presentation at 2; Ex. NRC000013, Staff Safety Panel 2 Presentation at 3-16.

¹¹⁸ Tr. at 115.

¹¹⁹ See NEI 06-12, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, Rev. 0 (Aug. 2012) (ML12242A378) (proposing the flexible use of onsite and offsite equipment to cope with beyond-design-basis external events). The Staff endorsed the FLEX approach in JLD-ISG-2012-01, Interim Staff Guidance, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," Rev. 0 (Aug. 29, 2012) (ML12229A174).

¹²⁰ *Id.* at 115-16; see also Ex. DTE000007, DTE Safety Panel 2 Presentation at 2.

The Staff described three of its Fukushima-related requests for additional information and provided its findings at the hearing.¹²¹ First, the Staff discussed its assessment of the agency's 2012 order imposing requirements for mitigation strategies for beyond-design-basis external events.¹²² The Staff explained that the ESBWR passive design provides mitigation for seventy-two hours following a beyond-design-basis external event, or "initial phase mitigation."¹²³ Because the passive design provides mitigation for up to seventy-two hours without AC power, and installed RTNSS equipment could enhance the time period for transition to seven days, the Staff found that it provides sufficient time to transition to the final stage "without necessarily relying upon a transition phase."¹²⁴ After that time frame, DTE will rely on the ESBWR's passive design and offsite resources to maintain cooling for the core, containment, and spent fuel pool for "final phase mitigation."¹²⁵ The Staff concluded that the Fermi 3 mitigating strategies provide the core cooling, containment, and spent fuel pool cooling

¹²¹ With respect to the Staff's request for additional information concerning DTE's seismic hazard analysis, DTE updated the information in its application using inputs from the Central and Eastern U.S. Seismic Source Characterization Model. Ex. NRC000001, Staff Information Paper at 15. The Staff then performed its own calculations and confirmed that DTE's updated calculations "accurately characterize the ground motion at the Fermi 3 site." *Id.*; see also *supra* notes 88-97 and accompanying text.

¹²² Ex. NRC000013, Staff Safety Panel 2 Presentation at 3 (citing Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ML12054A736 (package))).

¹²³ Tr. at 120 (Mr. Stubbs).

¹²⁴ Ex. NRC000008B, SER at 20-10.

¹²⁵ Ex. NRC000013, Staff Safety Panel 2 Presentation at 4-7; Tr. at 121 (Mr. Stubbs).

capabilities required in the mitigation strategies order.¹²⁶ The Staff also discussed the proposed license condition that would require DTE to implement the guidance and strategies in the NEI “FLEX” plan prior to fuel load.¹²⁷

Second, with regard to spent fuel pool instrumentation, the Staff explained that the ESBWR design provides instruments that measure the level of water in the spent fuel pool which are full-range, safety-related, Seismic Category I, and permanently installed. The instruments are also protected from internally and externally generated missiles, physically separated from each other, and powered from separate power sources.¹²⁸ The ESBWR level instrument description will include “independent power source connectivity and instrument design accuracy.”¹²⁹ The Staff proposed a license condition that would require DTE to implement a training program on establishing the alternate power connections to the level instruments.¹³⁰

Finally, the Staff discussed the license condition that it would impose to ensure that DTE performs an assessment of communications systems and equipment needed during a prolonged station blackout and the staffing capability needed to respond to a multi-unit event.¹³¹ DTE would need to complete this assessment eighteen months before the last date scheduled

¹²⁶ Tr. at 121 (Mr. Stubbs).

¹²⁷ *Id.* (Mr. Stubbs); Ex. NRC000013, Staff Safety Panel 2 Presentation at 9.

¹²⁸ Ex. NRC000013, Staff Safety Panel 2 Presentation at 11; Tr. at 122 (Mr. Hernandez).

¹²⁹ Ex. NRC000013, Staff Safety Panel 2 Presentation at 11.

¹³⁰ *Id.* at 12; Tr. at 123 (Mr. Hernandez).

¹³¹ Ex. NRC000013, Staff Safety Panel 2 Presentation at 13.

for completing the inspections, tests, analyses, and acceptance criteria (ITAAC) in the combined license.¹³² The Staff found this approach acceptable because it would be imposed as a condition in the license and because DTE committed to using NRC-endorsed guidance when conducting its assessment.¹³³

d. Emergency Planning

In its pre-hearing information paper, the Staff identified the proximity of the Fermi site to the Canadian border as a novel issue in its environmental review.¹³⁴ We considered this issue in the context of the safety review as well and asked the Staff pre-hearing questions in recognition of the fact that the Canadian border lies within the ten-mile emergency planning zone for Fermi Unit 3.¹³⁵ In particular, we asked whether NRC regulations require an applicant to make protective action recommendations to Canadian officials in the event of an emergency at the Fermi site.¹³⁶ In addition, we asked how protective action recommendations to state, local, or provincial officials would be made regarding members of the public (for example, boaters) within the United States and Canadian portions of the plume exposure pathway

¹³² *Id.* at 15. The Staff modified the license condition proposed by DTE from a completion date of two years before initial fuel load. *Id.*

¹³³ *Id.* at 15-16; Tr. at 124 (Mr. Barss).

¹³⁴ Ex. NRC000001, Staff Information Paper at 17-19.

¹³⁵ Initial Pre-Hearing Questions at 3-4.

¹³⁶ *Id.* at 3.

emergency planning zone.¹³⁷ We also asked how the proximity of proposed Fermi Unit 3 to Canada affected the Staff's emergency planning review overall.¹³⁸

In response, the Staff noted that the NRC's emergency planning regulations do not address areas outside of the United States and therefore there is no requirement for DTE to make protective action recommendations to Canada.¹³⁹ The Staff explained, however, that DTE's emergency plan takes the Canadian border into account. It provides for an initial notification to the Province of Ontario, Canada in several circumstances: in the event of an initial emergency classification; a classification escalation; the issuance of, or change to, a protective action recommendation for the general public; the state of a radiological release status; and event de-escalation, termination, or entry into recovery phase.¹⁴⁰ The Staff also stated that state and local officials are responsible for implementing protective action recommendations and that if informed of a general emergency, the State of Michigan would request assistance from the U.S. Coast Guard (through the National Response Framework) for protective actions affecting activities on Lake Erie, including Canadian waters.¹⁴¹ The Province of Ontario and the appropriate local officials would be responsible for implementing protective actions in the Province and would respond in accordance with the Provincial Nuclear Emergency Response

¹³⁷ *Id.*

¹³⁸ *Id.*

¹³⁹ Ex. NRC000004, Staff Responses to Initial Pre-Hearing Questions at 4-5.

¹⁴⁰ *Id.* at 5.

¹⁴¹ *Id.* at 6.

Plan.¹⁴² In addition, the Staff noted that our agency and the Canadian Nuclear Safety Commission have formally agreed to notify each other “promptly of any significant radiological event, accident, or emergency that occurs in activities under . . . [our] respective jurisdictions.”¹⁴³ The Staff stated that its review “was not materially affected by the proximity to Canada.”¹⁴⁴

e. Squib Valves

We also asked the Staff to discuss its review of squib valves, which were the topic of considerable discussion during the mandatory hearings for the *Vogtle* and *Summer* combined license applications, which referenced the AP1000 certified design.¹⁴⁵ This topic was of particular focus for the *Vogtle* and *Summer* hearings because the inservice testing and inspection program for squib valves in those applications would have relied on an American Society of Mechanical Engineers (ASME) code provision that was still under development at the time.¹⁴⁶

In the event of a severe accident in an AP1000, squib valves, which are explosively activated, reduce pressure and inject water as needed into the reactor vessel.¹⁴⁷ The squib valves are subject to ITAAC specified in the AP1000 DCD. The purpose of the testing program

¹⁴² *Id.* at 5-6.

¹⁴³ *Id.* at 5 (citing “Arrangement Between USNRC and CNSC for the Exchange of Technical Information and Cooperation in Nuclear Safety Matters” (ML12152A096)).

¹⁴⁴ *Id.*

¹⁴⁵ See *Vogtle*, CLI-12-2, 75 NRC at 90-96; *Summer*, CLI-12-9, 75 NRC at 460-64.

¹⁴⁶ *Vogtle*, CLI-12-2, 75 NRC at 91; *Summer*, CLI-12-9, 75 NRC at 461.

¹⁴⁷ See *Vogtle*, CLI-12-2, 75 NRC at 90; *Summer*, CLI-12-9, 75 NRC at 461.

required by ITAAC is to ensure that the valves operate as intended under design conditions.¹⁴⁸ Although we found the Staff's review of the Vogtle and Summer applications rigorous, we shared a concern initially raised by ACRS regarding the status of the inservice inspection/inservice testing program for this component and imposed a condition in the Vogtle and Summer licenses that requires the implementation of a squib-valve surveillance program prior to fuel load.¹⁴⁹

The Vogtle and Summer applications and the Fermi Unit 3 application reference entirely different reactor designs: the Vogtle and Summer applications referenced the AP1000 certified design, and the Fermi Unit 3 application, as discussed above, references the ESBWR certified design. Nevertheless, the ESBWR also uses squib valves as part of its passive safety system, and the Staff has proposed a license condition, based on the experience licensing Vogtle and Summer, that would require a surveillance program for squib valves prior to fuel load to supplement the inservice testing requirements.¹⁵⁰ We asked the Staff a pre-hearing question on this issue; the Staff also provided testimony at the hearing.¹⁵¹

The Staff explained that the 2012 edition of the ASME code, which the Staff is in the process of incorporating by reference into 10 C.F.R. § 50.55a, includes pre-service and

¹⁴⁸ See *Vogtle*, CLI-12-2, 75 NRC at 90; *Summer*, CLI-12-9, 75 NRC at 461.

¹⁴⁹ *Vogtle*, CLI-12-2, 75 NRC at 93-95; *Summer*, CLI-12-9, 75 NRC at 461-63.

¹⁵⁰ Tr. at 98-99 (Mr. Scarbrough) (explaining that there is a wider size range of squib valves in the ESBWR than in the AP1000); Ex. NRC000008A, SER at 3-88 to 3-90; Ex. NRC000002, Draft Combined License, Enrico Fermi Nuclear Plant Unit 3, DTE Electric Company, Docket No. 52-033 (Dec. 4, 2014), at 12-14 (Draft Combined License).

¹⁵¹ Initial Pre-Hearing Questions at 9-10; Tr. at 98-100.

inservice surveillance provisions for squib valves.¹⁵² After the rulemaking is completed, licensees for new reactors will be required to comply with the ASME code surveillance provisions under 10 C.F.R. § 50.55a(f)(4)(i).¹⁵³ Until that time, however, the surveillance provisions will be imposed by a condition in the license.¹⁵⁴ At the hearing, Thomas Scarbrough, Senior Mechanical Engineer, Mechanical Engineering Branch, Office of New Reactors, explained that the proposed license condition for Fermi Unit 3 has more specific requirements than the ASME code provision.¹⁵⁵ He stated that the license condition specifically requires surveillance of squib valves in the gravity-driven cooling system and the automatic depressurization system but that it is consistent with the ASME code provision.¹⁵⁶

f. Knowledge Management

DTE has not set a date to begin construction of Fermi Unit 3 and has acknowledged that construction may not begin immediately after the issuance of a license for Fermi Unit 3.¹⁵⁷ At the hearing, we explored DTE's and the Staff's plans to maintain the knowledge gained during the combined license review, should DTE receive our approval for a license and wait for some period of months or years to begin construction.¹⁵⁸ DTE and the Staff were asked to address

¹⁵² Ex. NRC000004, Staff Responses to Initial Pre-Hearing Questions at 19.

¹⁵³ *Id.*; Tr. at 100 (Mr. Scarbrough).

¹⁵⁴ Ex. NRC000004, Staff Responses to Initial Pre-Hearing Questions at 19.

¹⁵⁵ Tr. at 99.

¹⁵⁶ *Id.*; see also Ex. NRC000004, Staff Responses to Initial Pre-Hearing Questions at 20.

¹⁵⁷ See Tr. at 209 (Mr. Smith).

¹⁵⁸ See *id.* at 209-12.

the challenges they see, if any, in preserving knowledge between receipt of a combined license and future construction.¹⁵⁹

Mr. Smith for DTE explained that over the past two years DTE has been in the process of establishing a “holder project” that will provide the “infrastructure” to comply with NRC requirements as a licensee “for an indefinite period of time,” including funds in its “long-term planning budget.”¹⁶⁰ Mr. Smith also explained that the continued operation of Fermi Unit 2 provides a “ready pool of resource[s].”¹⁶¹

Mr. Tracy, responding for the Staff, explained that the question goes to the heart of the Staff’s plans for the future of the new reactor program.¹⁶² He acknowledged the need to retain knowledge and experience between NRC Headquarters and NRC Region II for license issuance and proper oversight.¹⁶³ Mr. Akstulewicz expanded on this response, breaking down the knowledge-management issue into two time periods—the near term (five years) and the long term (beyond five years).¹⁶⁴ Over the next five years, Mr. Akstulewicz stated that the Staff will remain busy working through the detailed design of the ESBWR as the licensing review continues for the North Anna combined license application, whose applicant is again referencing

¹⁵⁹ Tr. at 209 (Chairman Burns).

¹⁶⁰ *Id.* at 209-10.

¹⁶¹ *Id.* at 210.

¹⁶² *See id.*

¹⁶³ *Id.*

¹⁶⁴ *Id.* at 211.

the ESBWR design.¹⁶⁵ Beyond that time frame, as DTE provides its regular updates to the Final Safety Analysis Report (FSAR), Mr. Akstulewicz stated that the Staff will need to ensure that knowledge and staffing resources are maintained to address potentially evolving technical issues.¹⁶⁶

2. Environmental Issues

a. Historic Preservation of Fermi Unit 1

The Staff identified two novel environmental issues in its information paper that it discussed at the hearing—the historic preservation of Fermi Unit 1, and the Staff’s interaction with international organizations due to the Fermi site’s proximity to the Canadian border.¹⁶⁷ DTE’s plans for constructing Fermi Unit 3 require the demolition of Fermi Unit 1, a prototype ninety-four megawatt electric fast breeder reactor that began commercial operation in 1957 and was permanently shut down in 1972.¹⁶⁸ The American Nuclear Society designated Fermi Unit 1

¹⁶⁵ *Id.*

¹⁶⁶ *Id.* at 212.

¹⁶⁷ Ex. NRC000001, Staff Information Paper at 16-19. The Staff also discussed its implementation of the Continued Storage Rule, but this became a potentially contested issue after the Staff submitted its paper and responded to pre-hearing questions on the topic. See Ex. NRC000001, Staff Information Paper at 19-20; Ex. NRC000004, Staff Responses to Initial Pre-Hearing Questions at 42-44. The parties were asked not to discuss the issue at the uncontested hearing. Tr. at 176-77 (Chairman Burns).

¹⁶⁸ Tr. at 180-81 (Ms. Sutton).

as a Nuclear Historic Landmark in 1986.¹⁶⁹ In addition, Fermi Unit 1 is eligible for listing in the National Register of Historic Places.¹⁷⁰

As part of its compliance with section 106 of the National Historic Preservation Act, the Staff determined that “if demolition of Fermi Unit 1 is required to build Fermi 3, this will result in a finding of adverse effect under [the] applicable . . . criteria in 36 CFR [§] 800.5.”¹⁷¹ The Staff, the Michigan State Historic Preservation Officer, and DTE entered into a memorandum of agreement to mitigate the adverse effect finding.¹⁷² DTE agreed to preserve artifacts from Fermi Unit 1 in a permanent exhibit at the Monroe County Community College; the exhibit opened in August 2013.¹⁷³ It also sent a documentation package on Fermi Unit 1 to the Michigan State Archives.¹⁷⁴ On January 31, 2014, DTE notified the Staff that it had completed work on the exhibit.¹⁷⁵ The Staff concluded that DTE had met the terms of the memorandum of agreement.¹⁷⁶

¹⁶⁹ Tr. at 181 (Ms. Sutton); Ex. NRC000015, Staff Environmental Panel 2 Presentation at 2.

¹⁷⁰ Ex. NRC000015, Staff Environmental Panel 2 Presentation at 2.

¹⁷¹ Tr. at 181 (Ms. Sutton). *See generally* National Historic Preservation Act of 1966, as amended, § 106, 16 U.S.C. § 470f.

¹⁷² Tr. at 181 (Ms. Sutton).

¹⁷³ *Id.* at 182 (Ms. Sutton); Ex. DTE000009, DTE Environmental Panel 2 Presentation at 3.

¹⁷⁴ Ex. NRC000015, Staff Environmental Panel 2 Presentation at 3.

¹⁷⁵ Tr. at 182 (Ms. Sutton).

¹⁷⁶ *Id.* (Ms. Sutton).

b. International Cooperation

The Staff found its interactions with international organizations to be an important part of its environmental review for Fermi Unit 3, given that the international boundary between the United States and Canada is just over seven miles (eleven kilometers) from the Fermi site.¹⁷⁷ Even though NRC regulations do not require the Staff to analyze the environmental impacts of NRC licensing actions “upon the environment of foreign nations,” the Staff explained that it extended its outreach to international organizations “to inform its analysis of the potential environmental impacts of the Fermi project.”¹⁷⁸ DTE, for its part, explained that cross-border interaction with Canada, although not usually pertaining to environmental concerns, is not new; it meets regularly with Canadian officials primarily with regard to emergency planning for Fermi Unit 2.¹⁷⁹ Mr. Smith testified for DTE; he explained that DTE addressed the potential trans-boundary impacts in its Environmental Report and that none of them were unique or unusual.¹⁸⁰

The Staff stated that it contacted two environmental organizations—the International Joint Commission’s Great Lakes Water Quality Board and the Great Lakes Fisheries Commission.¹⁸¹ The International Joint Commission’s Great Lakes Water Quality Board is made up of federal, state, provincial, local, and tribal government officials in the United States

¹⁷⁷ Ex. NRC000001, Staff Information Paper at 17-18.

¹⁷⁸ *Id.* (quoting 10 C.F.R. § 51.10(a)).

¹⁷⁹ Ex. DTE000009, DTE Environmental Panel 2 Presentation at 4; Tr. at 179 (Mr. Smith).

¹⁸⁰ Ex. DTE000009, DTE Environmental Panel 2 Presentation at 4; Tr. at 180.

¹⁸¹ Ex. NRC000001, Staff Information Paper at 18; Tr. at 183 (Ms. Sutton); see *also* Ex. NRC000010B, FEIS at D-7, D-77 to D-78.

and Canada, as well as representatives from business and environmental organizations.¹⁸² The Great Lakes Fisheries Commission is made up of federal, state, and provincial government officials from the United States and Canada, as well as academic experts.¹⁸³ The information that the Staff gathered from these organizations informed the Staff's analysis in the FEIS.¹⁸⁴ For example, in a letter responding to the Staff's request for comments, the Great Lakes Water Quality Board cited a number of its reports on water quality in the Great Lakes Basin, and the Staff considered this information when evaluating the impacts from operation of Fermi Unit 3.¹⁸⁵

The Staff also contacted the U.S. Fish and Wildlife Service for information relating to trans-boundary impacts to the Detroit River International Wildlife Refuge, which Fish and Wildlife manages jointly with the Canadian government.¹⁸⁶ In 2003, DTE placed portions of the Fermi site under management of the Detroit River International Wildlife Refuge.¹⁸⁷ Fish and Wildlife commented during the scoping process for the Fermi Unit 3 application that it would "continue to work with DTE on wildlife management during the Fermi 3 planning process."¹⁸⁸ The Staff used the information obtained from Fish and Wildlife regarding the refuge to inform its

¹⁸² Ex. NRC000001, Staff Information Paper at 18.

¹⁸³ *Id.*

¹⁸⁴ *Id.*

¹⁸⁵ See Ex. NRC000010B, FEIS at D-78.

¹⁸⁶ Ex. NRC000001, Staff Information Paper at 18.

¹⁸⁷ *Id.*; see also Ex. NRC000010B, FEIS at D-54.

¹⁸⁸ Ex. NRC000001, Staff Information Paper at 18.

land use and terrestrial ecology impact determinations.¹⁸⁹ Overall, the Staff found that the information it obtained through its international outreach “supported the thoroughness of . . . [its] review.”¹⁹⁰

c. Proposed Transmission-Line Corridor

In its Environmental Report, DTE described a proposed transmission corridor to deliver electricity from the new plant to the grid.¹⁹¹ DTE explained that the International Transmission Company (ITC*Transmission*) plans to install three new 345 kV transmission lines from Unit 3 to a substation northwest of the plant.¹⁹² The proposal would place the lines in existing corridors of Fermi and non-Fermi lines for 18.6 miles (29.9 kilometers).¹⁹³ The lines would then continue to the Milan substation in a mostly undeveloped corridor for 10.8 miles (17.4 kilometers).¹⁹⁴ DTE stated that ITC*Transmission* would own and operate the lines in the proposed corridor.¹⁹⁵

DTE’s Environmental Report discussed potential environmental impacts along the potential transmission corridor.¹⁹⁶ DTE concluded that the environmental impacts of transmission-line development likely would be small because most of the development would

¹⁸⁹ *Id.*

¹⁹⁰ *Id.* at 19.

¹⁹¹ Ex. NRC000006F, DTE Combined License Application at 1-4 to 1-5, 2-22 to 2-26.

¹⁹² *Id.* at 1-4 to 1-5.

¹⁹³ *Id.* at 2-23.

¹⁹⁴ *Id.*

¹⁹⁵ *Id.* at 1-5.

¹⁹⁶ See, e.g., Ex. NRC000006F, NRC000006G, NRC000006H, DTE Combined License Application at 2-22 to 2-26, 2-469 to 2-473, 4-12 to 4-22, 5-5 to 5-10

likely take place along an existing corridor.¹⁹⁷ Further, DTE reasoned that the proposed shorter, 10.8-mile (17.4-kilometer) undeveloped corridor would be expected to experience minimal impacts because best management practices likely would be used and only a limited area around the bases of the towers would be disturbed.¹⁹⁸ The NRC Staff incorporated this information into the FEIS along with its own review. Appendix M of the FEIS provides a roadmap of the Staff's discussion of transmission-line impacts.¹⁹⁹

As discussed above, Intervenors in the contested proceeding twice proposed a contention challenging DTE's and the Staff's discussion of transmission-corridor impacts. The Board dismissed those challenges as impermissibly late, but requested our permission to review the adequacy of the Staff's consideration of transmission-corridor impacts *sua sponte*. We denied the Board's request, which left the issue uncontested and therefore suitable for our review in the mandatory hearing. Thereafter, we explored with DTE and the Staff the environmental impacts of the proposed transmission-line corridor before and during the hearing.²⁰⁰

¹⁹⁷ See Ex. NRC000006G, DTE Combined License Application at 4-12 to 4-22.

¹⁹⁸ See *id.* at 4-15 to 4-16.

¹⁹⁹ Ex. NRC000010D, FEIS at M-1 to M-2.

²⁰⁰ See Transmission-Line Corridor Questions; Tr. at 154-58 (Commissioner Baran); Ex. NRC000016, NRC Staff Responses to Commission Additional Pre-Hearing Questions, Proposed Corrections to Draft COL, and Updated Exhibit Table (Jan. 30, 2015).

Building transmission lines is not considered “construction” within the scope of the NRC’s regulatory authority.²⁰¹ As such, the Staff ordinarily evaluates the environmental impacts of building transmission lines as part of its cumulative impacts analysis.²⁰² However, the U.S. Army Corps of Engineers—a cooperating agency in the environmental review of DTE’s combined license application—considered preconstruction activities like the proposed transmission-line corridor to be within the direct impacts of the Fermi Unit 3 project.²⁰³ Therefore, the Staff considered the impacts of the proposed transmission-line corridor for Fermi Unit 3, normally a “preconstruction activity,” together with the impacts of “construction” activities within the NRC’s regulatory purview.²⁰⁴ The Staff also discussed measures to mitigate any adverse impacts from the transmission lines, as well as considered transmission-line impacts in its alternatives analysis.²⁰⁵

²⁰¹ See *id.* §§ 50.10(a)(2)(vii), 51.4 (defining “construction”); see also See Final Rule, Limited Work Authorizations for Nuclear Power Plants, 72 Fed. Reg. 57,416, 57,417 (Oct. 9, 2007) (Limited Work Authorization Rule) (requiring NRC authorization “only before undertaking activities that have a reasonable nexus to radiological health and safety and/or common defense and security”).

²⁰² Limited Work Authorization Rule, 72 Fed. Reg. at 57,421.

²⁰³ See Ex. NRC000010A, FEIS at 1-7 to 1-8, 4-1 to 4-4.

²⁰⁴ See *id.* at 4-3; Ex. NRC000010D, FEIS at M-1 to M-2.

²⁰⁵ See, e.g., *id.* at 4-25 (citing the Environmental Protection Agency’s recommendation that when clearing forested land for transmission lines that DTE “consider establishing low-growing native plants conducive to periodic mowing”); *id.* at 4-9 (noting ITC *Transmission’s* statement that it would use best practices for minimizing environmental impacts); Ex. NRC000010B, FEIS at 9-4 (discussing transmission-corridor impacts relative to alternative sources of energy); *id.* at 9-81, 9-95 to 9-96, 9-263 (considering transmission-corridor impacts in the comparison of alternative sites).

The Staff explained at the hearing that there would have been no difference in its FEIS analysis of transmission-corridor impacts had the Staff considered their development a “direct impact” of licensing Fermi Unit 3.²⁰⁶ Given that there has been no formal proposal by ITC *Transmission* announcing the route of the proposed transmission line for Fermi Unit 3, the Staff performed its analysis using the best information available.²⁰⁷ The Staff expected that the U.S. Army Corps of Engineers and state agencies, including the Michigan Department of Environmental Quality, would perform additional environmental analyses when ITC *Transmission* applies for the permits it will need to build any new transmission lines.²⁰⁸

d. Consultation under the Endangered Species Act

Section 7 of the Endangered Species Act requires an agency, in consultation with and with the assistance of the Secretary of the Interior or the Secretary of Commerce (as appropriate), to ensure that “any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat of such species.”²⁰⁹ As part of its environmental review, the Staff prepared a biological assessment discussing the potential impacts of constructing and operating Fermi Unit 3 on federally listed threatened or endangered species and species that are candidates for federal listing.²¹⁰ The Staff found that

²⁰⁶ See Tr. at 155-58.

²⁰⁷ See *id.* at 155; Ex. NRC000010A, FEIS at 2-10.

²⁰⁸ See, e.g., Ex. NRC000010A, FEIS at 2-61, 4-8, 4-11.

²⁰⁹ Endangered Species Act § 7(a)(2), 16 U.S.C. § 1536(a)(2).

²¹⁰ See Ex. NRC000010D, app. F.

no listed species were likely to be adversely affected by the project, and the respective federal resource agencies agreed.²¹¹ After the Staff finalized the FEIS, and shortly before the hearing, however, the U.S. Fish and Wildlife Service listed a new threatened species, the rufa red knot bird.²¹²

At the hearing, the Staff provided the status of ongoing interactions with Fish and Wildlife concerning the rufa red knot bird.²¹³ Mallecia Sutton testified that the Staff contacted Fish and Wildlife and planned to issue a supplemental biological assessment for the rufa red knot.²¹⁴ The Staff has since notified us that it submitted its biological assessment to Fish and Wildlife on February 20, 2015.²¹⁵ The Staff determined that the proposed action may affect but is not likely to adversely affect the rufa red knot.²¹⁶ The Fish and Wildlife Service concurred with the Staff's conclusion.²¹⁷

The Staff also provided a status update on Fish and Wildlife's then-proposed listing of the northern long-eared bat as a threatened or endangered species.²¹⁸ We note that the Fish and Wildlife Service listed the northern long-eared bat as a threatened species on April 2,

²¹¹ Tr. at 152 (Ms. Sutton).

²¹² See Ex. NRC000014, Staff Environmental Panel 1 Presentation at 12.

²¹³ See *id.*

²¹⁴ Tr. at 152, 158-59.

²¹⁵ See April 5 Commission Notification at 1.

²¹⁶ *Id.*; see also Ex. NRC000018, Supplemental Biological Assessment at 25.

²¹⁷ April 5 Commission Notification; see also Ex. NRC000019, March 23 Letter from the Fish and Wildlife Service at 1-2.

²¹⁸ Ex. NRC000014, Staff Environmental Panel 1 Presentation at 12.

2015.²¹⁹ Subsequently, the Staff submitted a biological assessment to the Fish and Wildlife Service that concluded that construction and operation of Fermi Unit 3 may affect but is not likely to adversely affect the northern long-eared bat.²²⁰ The listing of the northern long-eared bat will not be effective until May 4, 2015.²²¹ In the meantime, however, the Fish and Wildlife Service has concurred with the Staff's conclusion.²²²

B. 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 Atomic Energy Act and the NRC regulations have been met. The required notifications to other agencies or bodies have been duly made. DTE is technically and financially qualified to engage in the activities authorized.²²³ We find that there is

²¹⁹ See Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Northern Long-Eared Bat with 4(d) Rule, 80 Fed. Reg. 17,974 (Apr. 2, 2015) (Northern Long-Eared Bat Listing); April 5 Commission Notification at 1.

²²⁰ Ex. NRC000020, Supplemental Biological Assessment (Northern Long-Eared Bat).

²²¹ Northern Long-Eared Bat Listing, 80 Fed. Reg. at 17,974.

²²² April 29 Commission Notification; Ex. NRC000021, April 28 Letter from the Fish and Wildlife Service.

²²³ As part of its financial qualification review, the Staff found that DTE had met the requirements for financial protection and onsite property insurance for Fermi Unit 3. Ex. NRC000008A, SER at 1-37 to 1-38. The Staff stated that it would issue DTE an amended indemnity agreement to include Fermi Unit 3 upon issuance of the combined license. *Id.* at 1-38. The Staff has since provided an update on the status of its amendment to the indemnity agreement. Particularly, the Staff represented that American Nuclear Insurers has committed to "endorse a site (continued . . .)

reasonable assurance that the facility will be constructed and operated in conformity with the license, the provisions of the Atomic Energy Act, and the NRC's regulations and that issuance of the license will not be inimical to the common defense and security or to the health and safety of the public. Additionally, we find that the Staff's proposed license conditions are appropriately drawn²²⁴ 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.²²⁵ We find that the environmental review team used the systematic,

(. . . continued)

insurance policy that includes the Fermi 3 site concurrent with the NRC's issuance of a . . . [combined license] to DTE" and concurrent with the amendment of the indemnity agreement. Roach, Kevin C., Counsel for the Staff, letter to the Commissioners (Mar. 24, 2015), at 1. The Staff further represented that it will coordinate with DTE and American Nuclear Insurers so that the amended policy is effective as of the date of the combined license and the amended indemnity agreement. *Id.* The Staff thus confirmed its financial protection finding. *Id.* at 1-2 (citing Ex. NRC000002, Draft Combined License at 1 ("The Fermi owner has satisfied the applicable provisions of 10 [C.F.R.] Part 140, "Financial Protection Requirements and Indemnity Agreements[.]")).

²²⁴ However, we direct the Staff to make the changes to the draft combined license that it identified during this proceeding. See Ex. NRC000004, NRC Staff Responses to Commission Initial Pre-Hearing Questions at 28-30; Ex. NRC000016, Staff Responses to Additional Pre-Hearing Questions, Attachment B; April 5 Commission Notification; see *also* Ex. NRC000002, Draft Combined License.

²²⁵ NEPA § 102(2)(A), 42 U.S.C. § 4332(2)(A).

interdisciplinary approach that NEPA requires.²²⁶ The environmental review team consisted of more than forty individuals with expertise in disciplines including ecology, geology, hydrology, radiological health, socioeconomics, and cultural resources.²²⁷

NEPA section 102(2)(E) calls for agencies to study, develop, and describe appropriate alternatives.²²⁸ The alternatives analysis is the “heart of the environmental impact statement.”²²⁹ Based on the Staff’s testimony at the hearing, as well as the discussion in the FEIS, 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 environmental impacts of each alternative.²³⁰ We find reasonable the Staff’s conclusion that none of the alternatives considered is environmentally preferable to the proposed action.²³¹

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

²²⁶ See, e.g., Tr. at 144-48 (Ms. Dixon-Herrity) (providing an overview of the Staff’s environmental review methodology); Ex. NRC000014, Staff Environmental Panel 1 Presentation at 3-8.

²²⁷ See Ex. NRC000010B, FEIS at A-1 to A-2.

²²⁸ NEPA § 102(2)(E), 42 U.S.C. § 4332(2)(E).

²²⁹ 10 C.F.R. pt. 51, subpt. A, app. A, § 5.

²³⁰ See, e.g., Tr. at 148-50 (Mr. Kugler); Ex. NRC000010B, FEIS Ch. 9.

²³¹ See, e.g., Tr. at 149-50 (Mr. Kugler); Ex. NRC000010B, FEIS at 10-25 to 10-26.

of resources associated with the proposed action.²³² The discussion of alternatives is in Chapter 9 of the FEIS; the other items are discussed in Chapter 10.²³³ The environmental review team found extensive short-term benefits of the project from the production of electrical energy and the economic productivity of a site that “is not currently available for agricultural or industrial uses.”²³⁴ In terms of long-term productivity, the review team found that “the enhancement of regional productivity that would result from the electrical energy produced by Fermi 3 would lead to a correspondingly large increase in regional long-term productivity that would not be equaled by any other long-term use of the site.”²³⁵

Chapter 10 of the FEIS includes a chart of the unavoidable adverse environmental impacts during preconstruction, construction, and operation, along with actions to mitigate those impacts.²³⁶ The environmental review team found that the unavoidable adverse impacts during preconstruction and construction would be small for all resource areas except for terrestrial and wetland resources, socioeconomics, and historical and cultural resources, which could be small to moderate based on potential impacts to the eastern fox snake, increased traffic during construction, and demolition of Fermi Unit 1, respectively.²³⁷ For operation, the review team found that the unavoidable adverse impacts during operation would be small for all resource

²³² NEPA § 102(2)(C)(ii)-(v), 42 U.S.C. § 4332(2)(C)(ii)-(v).

²³³ Ex. NRC000010B, FEIS ch. 9-10.

²³⁴ *Id.* at 10-21.

²³⁵ *Id.* at 10-22.

²³⁶ *Id.* at 10-4 to 10-21.

²³⁷ *See id.* at 10-5 to 10-9.

areas with the exception of terrestrial and wetland resources and socioeconomics, which could be small to moderate based on potential impacts to the eastern fox snake and increased traffic during outages, respectively.²³⁸

Finally, with regard to irreversible and irretrievable commitments of resources, the environmental review team concluded that preconstruction and construction activities on the Fermi site, including the proposed transmission corridor, “would permanently convert some portions of terrestrial and aquatic habitats.”²³⁹ The Staff also concluded that during the construction of Fermi Unit 3, the materials used and energy consumed, “while irretrievable, would be of small consequence with respect to the quantities of such resources that are available.”²⁴⁰ With regard to operation of Fermi Unit 3, the review team determined that uranium would be irretrievably committed, “but that this irreversible and irretrievable commitment . . . [would] be negligible.”²⁴¹

We must weigh these unavoidable adverse environmental impacts and resource commitments—the environmental “costs” of the project—against the project’s benefits.²⁴² Considering the need for power in the region and the expected increase in productivity, jobs, and tax revenue as described during 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

²³⁸ See *id.* at 10-12 to 10-19.

²³⁹ *Id.* at 10-23.

²⁴⁰ *Id.* at 10-25.

²⁴¹ *Id.*

²⁴² 10 C.F.R. § 51.107(a).

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 topics discussed at the hearing and in today's decision, we find that the Staff's review was reasonably supported in logic and fact and sufficient to support the Staff's conclusions.²⁴³ 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 license should be issued.

III. CONCLUSION

We find that, with respect to the safety and environmental issues before us today, the Staff's review of DTE's combined license application was sufficient to support the findings in

²⁴³ Our finding includes the Staff's consideration of the proposed transmission-line corridor for Fermi Unit 3. We are satisfied that the Staff took a hard look at the environmental impacts of the transmission-line corridor, regardless of whether the Staff's analysis is characterized as a cumulative impacts analysis or a direct impacts analysis. In substance, the Staff reviewed and discussed potential transmission-corridor impacts together with other preconstruction and construction impacts on the environment from construction and operation of Fermi Unit 3. We find that the Staff's approach was reasonable and that its consideration of this issue satisfied NEPA.

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 license for the construction and operation of Fermi Nuclear Power Plant Unit 3 subject to the directions and modifications contained herein.²⁴⁴ We *authorize* the Staff to issue the record of decision, subject to its revision as necessary to reflect the findings in this decision and the results of the Staff's analysis of environmental impacts on recently listed species.²⁴⁵

IT IS SO ORDERED.

For the Commission

NRC Seal

/RA/

Annette L. Vietti-Cook
Secretary of the Commission

Dated at Rockville, Maryland,
this 30th day of April, 2015.

²⁴⁴ See *supra* note 224.

²⁴⁵ See Ex. NRC000003, Draft Record of Decision, U.S. Nuclear Regulatory Commission Docket No. 52-033, Combined License Application for Enrico Fermi Nuclear Plant Unit 3 (Dec. 5, 2014). The Staff may issue the license notwithstanding the pendency of a petition for reconsideration under 10 C.F.R. § 2.345, a petition for review under 10 C.F.R. § 2.341, a motion for stay under 10 C.F.R. § 2.342, or a petition for action under 10 C.F.R. § 2.206. 10 C.F.R. § 2.340(i).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
)
DTE ELECTRIC COMPANY) Docket No. 52-033-COL
)
(Fermi Nuclear Power Plant, Unit 3))
Mandatory Hearing)

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **COMMISSION MEMORANDUM AND ORDER (CLI-15-13)** have been served upon the following persons by Electronic Information Exchange.

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Fermi Nuclear Power Plant, Unit 3, Docket No. 52-033-COL (Mandatory Hearing)
COMMISSION MEMORANDUM AND ORDER (CLI-15-13)

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Office of the Secretary of the Commission

Dated at Rockville, Maryland
this 30th day of April, 2015