January 14, 2015

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

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

NRC STAFF RESPONSES TO COMMISSION PRE-HEARING QUESTIONS

Pursuant to the Commission's Order (Transmitting Pre-Hearing Questions) of December 30, 2014, the staff of the U.S. Nuclear Regulatory Commission (Staff) hereby responds to the questions posed in that Order. These questions generally pertain to subjects discussed in the Staff's Final Safety Evaluation Report (FSER)[1] or Final Environmental Impact Statement (FEIS).[2]

The Commission's Order directed some questions to the Staff and some to both the Staff and DTE Electric Company (Applicant or DTE). Attachment A to this filing presents the Staff's responses.

/Signed (electronically) by/
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Dated at Rockville, Maryland
This 14th day of January, 2015

[1] Final Safety Evaluation Report for the Fermi Nuclear Power Plant, Unit 3 (Nov. 18, 2014).

[2] NUREG-2105, Environmental Impact Statement for the Combined License (COL) for Enrico Fermi Unit 3; Final Report (Jan. 18, 2013).

Attachment A

Staff Responses to Commission Pre-Hearing Questions

NRC STAFF RESPONSES TO COMMISSION QUESTIONS

1. Please describe the approach to design acceptance criteria being taken for the Fermi Unit 3 combined license (COL). How does this approach differ from that used in the Vogtle and Summer COLs?

Staff Response: The Fermi COL application employs the Economic Simplified Boiling-Water Reactor (ESBWR) design acceptance criteria (DAC) in the areas of piping, digital instrumentation and controls (I&C), and human factors engineering (HFE). These DAC are incorporated by reference by the COL applicant. The use of DAC for the ESBWR is described in Section 14.3 of the design control document (DCD). Chapters 3, 7, and 18 of the DCD, respectively, describe the piping, digital I&C, and HFE design methodologies, codes, and standards. The Fermi 3 COL applicant will have to complete these DAC as part of the Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) closure process.

The Vogtle and Summer COL applications differed from the Fermi 3 COL application because of differences between the ESBWR and AP1000 design certifications. For piping DAC, Vogtle and Summer included two COL ITAAC: one that includes completion of the piping design and another that includes completion of the pipe break hazards analysis. The AP1000 design certification amendment completed much of the digital I&C DAC. However, the system definition phase relating to the hardware design for the protection and monitoring system remained as DAC for the Vogtle and Summer licensees to complete in the ITAAC closure process. The AP1000 design certification amendment completed the HFE DAC and no further action was required by the Vogtle and Summer licensees. Accordingly, the Vogtle and Summer licensees, as well as the Fermi 3 COL applicant, have implemented DAC consistent with Commission policy, as approved in the respective design certification rulemakings.

2. Please provide a summary of any standard COL information for the ESBWR design center that changed between the previous reference COL application (North Anna 3) and Fermi Unit 3.

Staff Response:

In accordance with Regulatory Issue Summary 2006-06, “New Reactor Standardization Needed to Support the Design-Centered Licensing Review Approach” (Agencywide Document Access and Management System (ADAMS) Accession No. ML053540251), the staff conducted reviews at the time Fermi 3 became the R-COL application to ensure that the standard information evaluated for the North Anna Unit 3 Safety Evaluation Report (SER) with open items was directly applicable to the Fermi 3 application. The staff did not identify any standard COL information for the ESBWR design center that changed between the previous R-COL application and Fermi 3 as part of these reviews. Standard content items that had not yet been closed for the North Anna review were closed in the Fermi 3 SER.

3. Please summarize significant changes to the COL application that may have resulted from the recent issuance of the final ESBWR design certification.

Staff Response: There are no significant changes to the COL application as a result of the issuance of the final ESBWR design certification. Because the Fermi 3 applicant had been periodically updating the COL application throughout the design certification review, there were

no new technical matters that the Fermi 3 applicant needed to address at the time final design certification was issued.

4. Staff's safety standard review plan was last updated in 2007. What guidance is available for meeting safety requirements established after 2007?

Staff Response: Although the last comprehensive update to NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: Light Water Reactor Edition" (SRP) was in 2007, the staff continues to update its regulatory guidance on an ongoing basis, not solely in response to new requirements. These changes include updates to sections of the SRP as well as other guidance documents – Regulatory Guides, Commission policy as described in SECY papers and corresponding Staff Requirement Memoranda, Interim Staff Guidance (ISG), NRC-approved or endorsed industry codes and standards, certain technical reports (e.g., NUREGs and topical reports and corresponding safety evaluations), and Branch Technical Positions. Furthermore, the staff's practice has been to prepare regulatory guidance to accompany rulemakings, so that the guidance for meeting new requirements is available contemporaneously with the imposition of the requirements.

The number of new safety requirements and associated staff guidance established after 2007 and pertinent to the Fermi COL application has been small. These include, for example, certain post-Fukushima requirements imposed by Order, as well as new emergency preparedness regulations published. Examples of guidance for meeting such safety requirements include JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events;" JLD-ISG-2012-03, "Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation;" and NSIR/DPR-ISG-01, "Emergency Planning for Nuclear Power Plants" (ADAMS Accession No. ML113010523). Revised guidance has also been established for hurricane winds and missiles in Regulatory Guide (RG) 1.221, "Design-Basis Hurricane and Hurricane Missiles for Nuclear Power Plants."

For each new regulatory requirement established after 2007, the staff issued review guidance specific to how these requirements could be met, and that guidance was used to the extent applicable during the Fermi review.

5. In a letter dated September 22, 2014, the Advisory Committee on Reactor Safeguards (ACRS) reported on its safety review of the Staff's Advanced Safety Evaluation Report (Advanced SER) for the Fermi Unit 3 COL application. The ACRS letter concluded that there is reasonable assurance that Fermi Unit 3 can be built and operated without undue risk to public health and safety. However, the ACRS letter also identified three generic issues related to seismic reevaluations, mitigating strategies, and spent fuel pool instrumentation. In addition, the ACRS letter discussed an issue related to the protection of equipment from tornado-generated missiles. (ADAMS accession No. ML14252A294). The Staff responded to the ACRS on November 14, 2014 (ADAMS Accession No. ML14293A058).

(a) Is the Staff expecting a response back from the ACRS?

Staff Response: The staff is not expecting any future response from the ACRS on the Fermi 3 COL application.

(b) How are the issues identified by the ACRS being closed out or addressed?

Staff Response: While the staff believes that all issues on the Fermi 3 COL application have been resolved, the staff has met and will meet in the future with the ACRS on the generic concerns identified in the Committee's letter, dated September 22, 2014. Specifically, the staff met with the ACRS in November 2014 to discuss ACRS questions related to seismic hazards analysis uncertainties, and a subsequent meeting is being planned. With respect to the ACRS concern with mitigating strategies, the staff met with the ACRS as part of activities associated with the Mitigation of Beyond Design Basis Events rulemaking in November and December 2014, and will continue to meet with the ACRS on this rulemaking.

The staff believes that the generic concerns related to spent fuel pool instrumentation qualification and the tornado-driven missile issues are resolved and plans no further interaction with the ACRS on those topics.

6. Regarding the material control and accounting (MC&A) exemption, how does the exemption request and the Staff's evaluation of it compare to what was done in the previously issued COLs? Does the Staff have a plan to amend the regulations to obviate the need for MC&A exemptions for future Part 52 applicants?

Staff Response: The staff's evaluation of the MC&A exemption request for Fermi Unit 3 is the same as what was done for previously issued COLs. Nuclear reactors licensed under *Title 10 of the Code of Federal Regulations* (10 CFR) Part 50 are explicitly exempted from certain requirements in 10 CFR Part 74. Several COL applicants under 10 CFR Part 52 have sought similar exemptions, asserting that the rationale for exempting Part 50 reactors should be applied to the MC&A program for nuclear reactors licensed under either Part. This includes being subject to the MC&A requirements of Subpart B of 10 CFR Part 74, just as they are currently applicable to licenses issued under 10 CFR Part 50.

A rule that would make such exemptions unnecessary was initiated in response to the SRM for SECY-08-0059, "Rulemaking Plan: Part 74 – Material Control and Accounting of Special Nuclear Material." The proposed rule was published as "Amendments to Material Control and Accounting Regulations; Proposed Rule," 78 Federal Register (FR) 67225 (November 8, 2013). This proposed rule updates Part 74 to incorporate references to reactor licensees under both Part 50 and Part 52. Once this rule is final, the same regulations will be applied to the MC&A programs for licensees under Part 50 and Part 52, and exemptions will not be needed.

7. NRC licensees are required to provide a protective action recommendation to State and local officials for members of the public within the plume exposure pathway emergency planning zone. 10 C.F.R. § 50.47(b)(10). Figure I-1 of the Fermi Emergency Plan shows the emergency planning zone being divided into five pre-designated protective action areas. All of these protective action areas are located on land areas within the United States. Figure I-1 does not pre-designate protective action areas over United States and Canadian portions of Lake Erie. Do NRC regulations require the applicant to make protective action recommendations to Canadian officials?

Staff Response: NRC emergency preparedness regulations do not address communications requirements to Canadian officials, and therefore there is no requirement for DTE to make protective action recommendation (PAR) notifications to Canada. The Fermi 3 proposed Emergency Plan is consistent with the Emergency Plan for Fermi 2.

Although not required by regulations, the Fermi 3 proposed Emergency Plan provides for an initial notification to the Province of Ontario, Canada for each of the following:

- Initial emergency classification;
- Classification escalation;
- Issuance of, or change to, a PAR for the general public;
- State of a radiological release status; and
- Event de-escalation, termination, or entry into Recovery phase.

The Michigan State Police provide all follow-up notifications, such as routine emergency condition updates, to the Province of Ontario, which then responds in accordance with the Provincial Nuclear Emergency Response Plan. The Provincial Nuclear Emergency Response Plan addresses the full range of emergency response issues, including emergency response organization notification and activation, public notification, personnel and environmental monitoring protective measures, emergency response facilities, and inter-agency communications, consistent with the requirements of Canadian laws and regulations.

Furthermore, the NRC and the Canadian Nuclear Safety Commission (CNSC) have an international agreement titled "Arrangement Between USNRC and CNSC for the Exchange of Technical Information and Cooperation in Nuclear Safety Matters" (ADAMS Accession No. ML12152A096), which states the Parties will notify each other promptly of any significant radiological event, accident, or emergency that occurs in activities under their respective jurisdictions.

8. One of the Novel environmental issues raised in SECY-14-0132 is international interactions as a result of Fermi Unit 3 being within seven miles of the border with Canada. Because seven miles is less than the 10-mile Emergency Planning Zone, please describe in more detail how the proximity to Canada affected the emergency planning review in Section 13.3 of the Safety Evaluation Report (SER).

Staff Response: The NRC review was not materially affected by the proximity to Canada. The Emergency Preparedness regulations do not address areas outside of the United States. However, the staff did engage in international outreach by attending a Government-to-Government meeting early in the Fermi 3 review that addressed Fermi's Emergency Planning Zone (EPZ). Emergency management personnel from Essex County, Ontario, participated in this meeting along with U.S. emergency management organizations.

9. Please explain how the applicant's Emergency Plan provides the means to make protective action recommendations to State, local, or provincial officials for members of the public (e.g., boaters) on Lake Ontario within the United States and Canadian portions of the plume exposure pathway emergency planning zone, should such response become necessary.

Staff Response: If a General Emergency is declared, DTE will notify the State of Michigan, Monroe County, and Wayne County governmental authorities with a PAR to evacuate the Protective Action Areas (PAAs) within a 2-mile radius around the Fermi 3 site; evacuate 5-miles downwind in affected areas and shelter in place the remainder of the Plume Exposure Pathway EPZ, unless other conditions make evacuation dangerous. The PAR is provided to offsite agencies within 15 minutes of the General Emergency declaration and within 15 minutes of a

change in status of the PAR. The State of Michigan, in conjunction with Monroe and Wayne counties, is responsible for making decisions regarding the public protective actions. Protective actions are implemented by affected state and local officials.

The U.S. Coast Guard (USCG) will provide assistance through the National Response Framework (NRF) upon request from the state in the event of an emergency at Fermi 3 affecting activities on Lake Erie, including Canadian waters. Upon notification by the State, the Captain of the Port exercises his authority to control traffic through establishment of a safety zone in the immediate area.

The Province of Ontario, in conjunction with affected local officials, is responsible for making decisions regarding public protective actions in the Province and for implementation of those protective action decisions, including notification of affected members of the public. See the response to Question 7 for additional details on notifications to the Province of Ontario.

10. Planning Standard 10 C.F.R. § 50.47(b)(9) requires that the onsite and offsite plans provide adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency. The regulation does not explicitly include or exclude assessment and monitoring beyond the 10-mile emergency planning zone. The bases for selecting a 10-mile emergency planning zone are described in Section I.D of NUREG-0654. Included in these bases is the consideration that detailed planning within ten miles would provide a substantial base for expansion of response efforts in the event that this proved necessary. Please explain how the applicant's Emergency Plan provides the means to assess and monitor offsite doses beyond the 10-mile emergency planning zone and to use those results to make protective action recommendations to State, local, or provincial officials for members of public if the projected radiological doses exceed the Environmental Protection Agency's protection action guides.

Staff Response: The Fermi 3 proposed Emergency Plan describes a dose projection software program named Raddose-V, which is the same software used for Fermi 2. Raddose-V is capable of calculating doses, plume concentrations and depositions at receptors in the 10 mile plume exposure and 50 mile ingestion pathway Emergency Planning Zones. Outputs of the software include:

- Dose and dose rate data reported at radial grid receptors
- Plume effective dose equivalent (Plume EDE)
- Four day ground effective dose equivalent (Ground EDE)
- Committed effective dose equivalent (CEDE)
- Total effective dose equivalent (TEDE)
- CDE-Thyroid from inhalation of iodines
- Total ground level concentration of all isotopes
- Deposition rate and accumulated deposition of all isotopes on the ground
- Dose and deposition information for up to 75 predefined survey points
- Color coded dose values based on EPA-400 Protective Action Guides (PAGs) for TEDE and CDE-Thyroid doses
- Dose and dose rates in either Rem or mRem
- Ground level concentrations in uCi/cc
- Deposition in units of uCi/m2

The Fermi 3 proposed Emergency Plan describes the use of monitoring equipment and monitoring teams within the 10-mile EPZ. Detailed emergency planning, including the means to assess and monitor offsite doses outside of the 10-mile EPZ, is not required to be described in the Emergency Plan. NUREG-0396; EPA 520/1-78-016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants" (ADAMS Accession No. ML051390356) provided the basis for the 10-mile EPZ. The NUREG noted that by having detailed planning out to 10 miles, there is a sufficient basis for expansion for response efforts should they be necessary.

11. The Fermi Unit 3 COL application is required to include emergency plans that comply with Appendix E to Part 50. *See* 10 C.F.R. § 52.79(a)(21). Part 50, Appendix E, provides, in IV.B "Assessment Actions," that initial Emergency Action Levels (EALs) shall be discussed and agreed on by the applicant and state and local governmental authorities, and approved by the NRC. Has the NRC approved the initial EALs? Or did the Staff review and approve a plan for developing EALs or impose a license condition?

Staff Response: The NRC staff proposes to impose Condition 2.D.(12)(c) for the initial EAL scheme. The license condition requires submission of a fully developed set of site-specific EALs in accordance with the NRC-endorsed version of Nuclear Energy Institute (NEI) 07-01 "Methodology for Development of Emergency Action Levels Advanced Passive Light Water Reactors," Revision 0, (ADAMS Accession No. ML092030210), with no deviations. The EAL scheme will be discussed and agreed upon with State and local officials. The fully developed EAL scheme shall be submitted to the NRC at least 180 days before the date scheduled for initial fuel load as set forth in the notification submitted in accordance with 10 CFR 52.103(a). The NRC staff will confirm that the site specific EALs have the appropriate level of detail, and are consistent with the NRC-endorsed version of NEI 07-01, Revision 0, with no deviations.

12. SECY-14-0132 says, in the table on page 12, that the evaluation for the exemption on MC&A is located in Section 1.5.4 of the Final Safety Evaluation Report (FSER). Yet, there is no Section 1.5.4; rather, the evaluation is in Section 1.4.5. Beyond this apparent transposition of numbers, there appears to be an omission in FSER Chapter 1 in that page 1-1 states that "Section 1.5 documents regulatory findings that are in addition to those directly related to the [S]taff's review of the [Final Safety Analysis Report (FSAR)]." There is no Section 1.5 in the FSER. Please resolve this discrepancy.

Staff Response: Chapter 1 of the Fermi 3 SER was renumbered in the final document and Section 1.5, which was present in earlier drafts, became Section 1.4. The staff has reviewed all of Chapter 1 and found several section number references, in addition to those identified in the question, that were not updated. The references identified will be corrected before the bound NUREG version of the FSER is published.

In the FSER, the staff evaluation of the applicable exemption criteria and the reason the staff finds the applicant has satisfied the exemption criteria is presented in Section 1.4.4 of Chapter 1. The staff evaluation of the applicant's compliance with licensing requirements in 10 CFR Parts 30, 40, and 70 for nuclear power plant licenses is presented in Section 1.4.5.

13. As part of this hearing, we must determine whether the applicant is technically qualified to "engage in the activities authorized", which includes both construction and operation of an Economic Simplified Boiling Water Reactor (ESBWR) at the Fermi site. 10 C.F.R. § 52.97(a)(1)(iv). In both the Vogtle and V.C. Summer COL reviews, the Staff found the applicants technically qualified, in part because those applicants had already signed engineering, procurement, and construction (EPC) contracts with established vendors. Here, the applicant has not selected a primary contractor for these tasks; instead, there is a commitment (COM1.4-001) in the FSAR that the "primary contractor for site engineering" will be "supplied in an FSAR update following selection." (FSER at 1-20). Please explain in more detail why you find the applicant technically qualified without an identified primary contractor and without an executed EPC contract. As part of your response, please address why COM1.4-001 is sufficient, when it states that the applicant will provide the name of the contractor in the FSAR, but provides no commitment regarding the quality or experience of the contractor.

Staff Response: The regulatory basis for determining that the applicant is technically qualified is consistent with that used for the Vogtle and Summer COLs.

The staff concluded that the Fermi 3 COL applicant is technically qualified because the applicant holds a 10 CFR Part 50 license for a nuclear power plant (Fermi 2), has demonstrated its ability to construct and operate a nuclear plant (Fermi 2), and has an NRC-approved Quality Assurance (QA) Program as described in Chapter 17 of the FSER. The staff also considered the quality of the information provided in the application and in the responses to the staff's requests for additional information that provide the applicant's basis for addressing technical issues. This is consistent with the staff's findings presented in the licensing proceedings for the Vogtle and V.C. Summer COLs.

The Fermi 3 FSAR Chapter 17, "Quality Assurance," and the Fermi 3 Quality Assurance Program Description (QAPD) describe the QA Program and QA controls for contractors performing safety-related work activities associated with the Fermi 3 COL application. The COL applicant commits to American Society of Mechanical Engineers (ASME) NQA-1-1994 edition as a method of meeting the requirements of Appendix B to 10 CFR Part 50. Early in the COL application review process, the staff conducted an inspection of the applicant's implementation of its QA program, including oversight of contractors. The staff found the applicant's QA implementation to be acceptable. Although applicants and licensees impose applicable technical and quality assurance requirements through purchase orders with contractors, the applicants and licensees are ultimately responsible for complying with all regulatory requirements. The NRC may also inspect the applicant's contractors with Appendix B-compliant QA programs to verify that these programs are, indeed, in compliance with the applicable regulatory requirements. The staff believes that commitment "COM 1.4-001" is acceptable as a post-licensing activity because contractors performing safety-related work activities would have to meet the applicable Chapter 17 Quality Assurance requirements, as specified in the applicant's contractual requirements, and the licensee is responsible for assuring that the plant will be constructed in accordance with its licensing basis.

14. For seismic hazard curves, uncertainty may vary significantly with vibration frequency. Describe the sufficiency of the standard seismic design requirements in the Design Control Document (DCD) to account for potential implications, if any, of this observation on the ground motion uncertainty for the Fermi Unit 3 site. Please explain how the observations in calculated variations of uncertainty with ground motion frequency at Fermi are calculated in the seismic hazard analysis to assure that adequate seismic margin exists.

Staff Response: See response to Question 15.

15. Subsection 2.5.2.4 of the FSAR describes the applicant's Probabilistic Seismic Hazard Analysis (PSHA) calculations for the Fermi Unit 3 site, including the generation of seismic hazard curves. These hazard curves show the probability of exceeding a certain ground motion level. For any given vibration frequency the hazard is given by a family of curves that account for uncertainty in the calculations. A behavior that has been observed to be common in these hazard curves is that this uncertainty varies significantly per vibration frequency. Explain how the potential implications of this observation were accounted for in determining whether the Fermi Unit 3 site meets the standard seismic design requirements in the DCD.

Staff Response to Questions 14 and 15: The following discussion describes how uncertainty is factored into the development of the seismic hazard characterization for a site by providing a description of (1) the seismic siting regulations, (2) the development of seismic ground motion curves for a site, (3) seismic design requirements, (4) the probabilistic seismic hazard approach, and (5) the use of mean hazard curves.

10 CFR Part 50, 10 CFR 100.23 "Geologic and Seismic Siting Criteria," and Appendix S to 10 CFR Part 50 establish the seismic design basis for plants licensed after January 10, 1997. Appendix S defines the Safe-Shutdown Earthquake (SSE) as "the vibratory ground motion for which certain structures, systems, and components must be designed to remain functional." 10 CFR 100.23 requires that the Safe Shutdown Earthquake Ground Motion for the site be determined considering that "uncertainties are inherent in such estimates. These uncertainties must be addressed through an appropriate analysis, such as a probabilistic seismic hazard analysis" (PSHA).

As described in RG 1.208, "A Performance-Based Approach to Define the Site-Specific Earthquake Ground Motion," the development of a site-specific ground motion response spectrum (GMRS) utilizing a PSHA satisfies the requirements of 10 CFR 100.23 with respect to the development of the SSE. The GMRS defined in RG 1.208 is developed using a performance-based approach and involves scaling the site-specific hazard response, which corresponds to a mean annual frequency of exceedance (MAFE) of 10^{-4}, by a design factor. The design factor is aimed at ensuring the achievement of the performance target. This performance target is defined relative to the onset of inelastic deformation in a structure, system, or component (SSC). The onset of significant inelastic deformation (OSID) corresponds to "essentially elastic behavior." As such, OSID of a SSC can be expected to occur well before failure. Application of the performance-based approach results in a relatively consistent annual probability of acceptable plant SSC performance across the range of plant locations and structural frequencies and ensures significant margin beyond this target performance goal.

DCDs provide generic seismic design requirements for prospective applicants to meet in order to show adequate safety against seismic events. The DCD specifies certified seismic design response spectra (CSDRS), which specifies the seismic demand used to design SSCs. This is one of several seismic parameters reviewed and approved by the staff in its seismic review. The DCD seismic design requirements are not site-specific. In other words, uncertainties in site-specific PSHA calculations do not impact the DCD requirements. However, prospective COL applicants are required to demonstrate that the site-specific seismic hazard or GMRS either falls below the CSDRS or show evidence that the proposed design is capable of accommodating the site-specific seismic demand (i.e., ground motion acceleration values) with acceptable margin.

In seismic hazard calculations, there are two main types of uncertainties: uncertainties related to lack of complete knowledge in the seismic source characterization and ground motion prediction models and uncertainties related to natural variations inherent in the physical processes. As part of input to its PSHA calculations, the Fermi 3 applicant used the NUREG-2115, "Central and Eastern United States Seismic Source Characterization for Nuclear Facilities" model and the Electric Power Research Institute (EPRI) (2004, 2006) ground motion model (GMM). Both the NUREG-2115 model and EPRI (2004, 2006) GMM have been previously reviewed and endorsed by NRC staff. Both were developed using a structured, NRC-endorsed process (described in NUREG/CR-6372 and NUREG-2117), which explicitly incorporates and tracks the different types of uncertainty described above. Using these models and a well-established PSHA methodology, the applicant calculated mean seismic hazard curves for seven different ground vibration frequencies at the Fermi Unit 3 site. These mean seismic hazard curves were used to calculate the GMRS at the Fermi Unit 3 site, consistent with the approach defined in Regulatory Guide 1.208.

Different elements of the uncertainty can have differing impacts on the derived seismic hazard curves for each ground motion vibration (spectral) frequency. For instance, the uncertainty in the geometries or boundaries of seismic source zones may affect the hazard estimates similarly for all ground vibration frequencies. However, the uncertainty in the maximum magnitude applicable for a seismic source zone and the uncertainty in applicable ground motion models lead to a larger uncertainty in hazard for lower spectral frequencies (< 2.5 Hz) than for higher spectral frequencies (10 Hz or greater).

Figure Q-14a (below) illustrates this effect by utilizing a single representation of a seismic source zone impacting the Fermi 3 site. Black lines are individual seismic hazard curves calculated using alternative model parameters. Yellow lines indicate 5%, 50% (median), and 95% percentiles calculated from the distribution of the black curves at each x-value. Even though this is a result from a simplified model, the suite of seismic hazard curves shown for 0.5 Hz and 25 Hz frequencies demonstrate variable ranges in hazard (the y-axis) due to frequency-specific and variable impacts of different elements of the uncertainty model. Specifically, the hazard curves shown below in Figure Q-14a are for the base or very hard rock conditions at the Fermi 3 site. For this geologic setting, the hazard curves for the 25 Hz spectral accelerations, shown on the right, are higher, with smaller ranges of uncertainty for specific values of spectral acceleration, than the hazard curves for the 0.5 Hz spectral accelerations, shown on the left, which are lower and have larger ranges of uncertainty. This is primarily due to the larger number of postulated earthquakes over a wider range of magnitudes and distances in the region surrounding Fermi 3 being able to produce relatively high 25 Hz spectral accelerations. In contrast, not as many postulated regional earthquake scenarios for Fermi 3 are able to produce large 0.5 Hz spectral accelerations, which results in lower hazard curves with larger ranges of uncertainty for this lower spectral frequency.

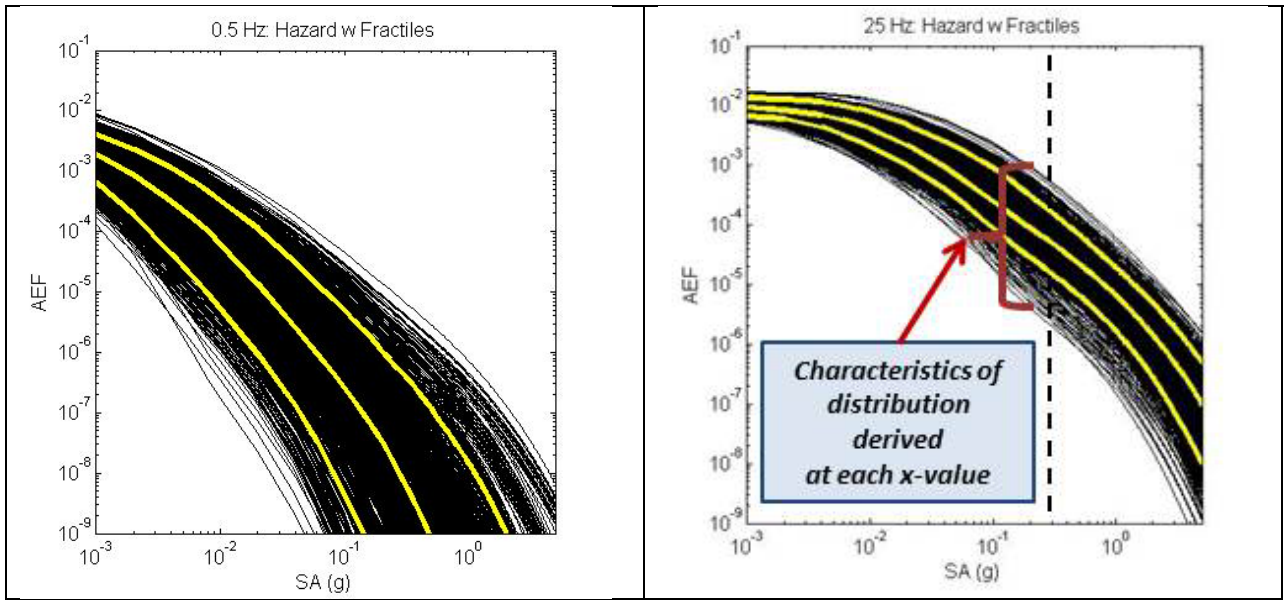

Figure Q-14a. Example Seismic Hazard Curves for the Fermi 3 Site (Single Source, two frequencies). The characteristics of the distribution in uncertainty in hazard (5th, 15th, 50th, 85th, 95th –percentiles and the mean) are calculated for each ground motion value (the x-axis, spectral acceleration (SA(g))), for each spectral frequency (the y-axis, annual exceedance frequency (AEF)).

For all ground motion frequencies, the mean hazard is directly derived from the uncertainty represented in the complete suite of hazard curves (such as those shown in the figure above with black lines). Thus, for each ground motion frequency, the mean hazard incorporates the uncertainty included in the seismic source characterization and ground models and the use of the target MAFE is consistent with achieving the performance goals and seismic margins inherent in RG 1.208.

In summary, the GMRS derived using the approach defined in RG 1.208 not only explicitly contains the influence of the frequency-specific uncertainty in the seismic source characterization and ground motion models, but also ensures margin beyond this level through the application of the performance-based design approach. For the Fermi 3 site, the applicant has also shown that the GMRS is well below the CSDRS established by the DCD. Figure Q-14b compares the applicant's GMRS with the CSDRS and illustrates that the proposed plant includes additional seismic margin beyond that inherent in the GMRS.

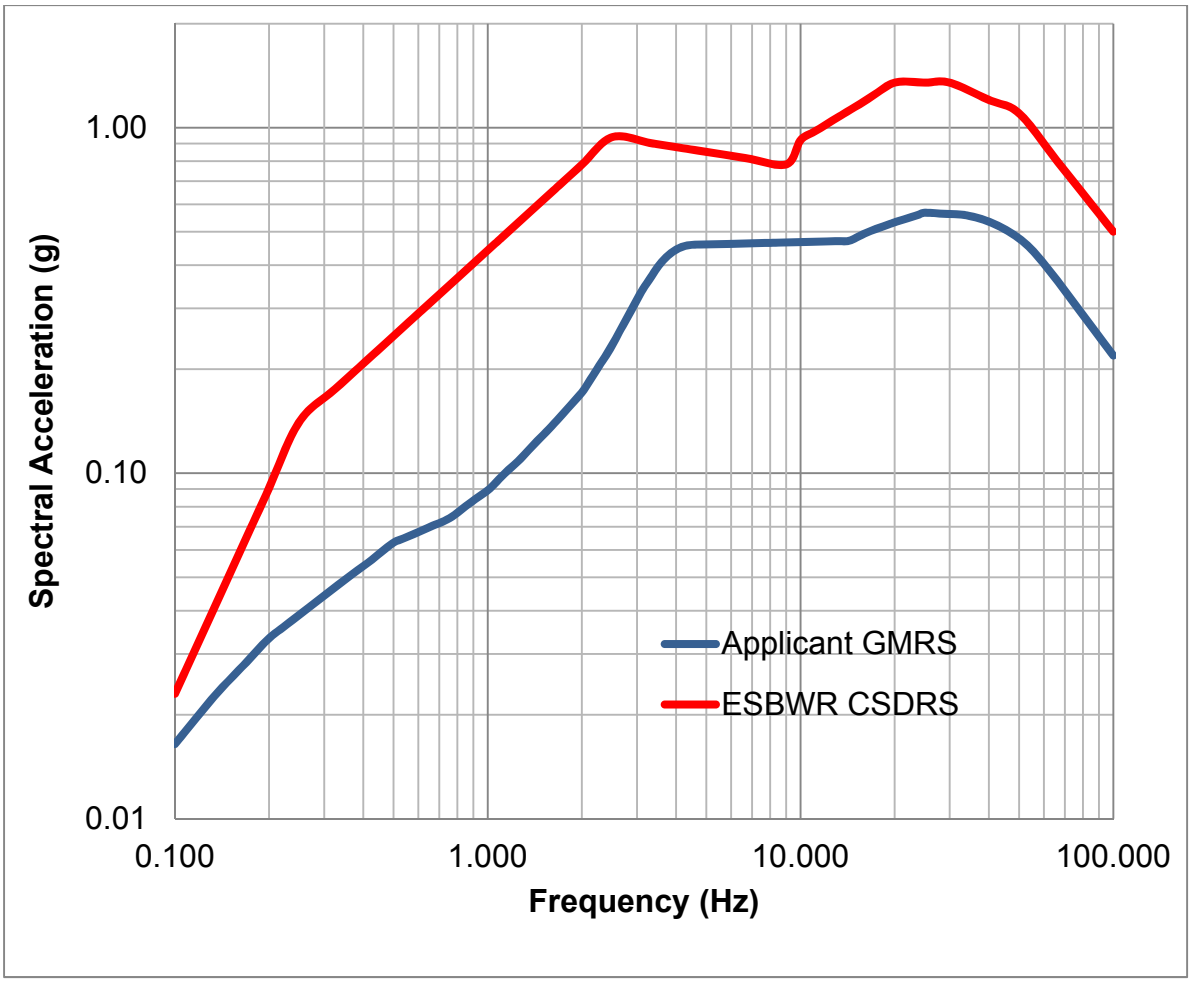

Figure Q-14b. Comparison of ESBWR design spectrum (red curve) to the Applicant (blue curve) site-specific ground motion response spectrum. Note that the ESBWR CSDRS bounds the GMRS at all spectral frequencies.

16. Section 2.4.3.4.1, Tables 2.4.3-3 and 2.4.3-4 of the FSER calculate the resulting flood elevations at the Fermi Site using the Hydrologic Engineering Centers River Analysis System (HEC-RAS) simulation software. The Staff found that the maximum water level resulting from flooding was 585.4 ft North American Vertical Datum (NAVD) 88 in the Alternative III scenario, which is 0.1 ft below the applicant's maximum water level calculated in sensitivity due to Snowmelt Alternative. Please describe why the applicant's maximum water level sensitivity due to snowmelt of 585.5 ft NAVD 88 is acceptable, when the NRC Staff calculated sensitivity due to snowmelt in Table 2.4.3-4 was 0.8 ft above the applicant's maximum water level.

Staff Response: As described in Section 2.4.3.4.1of the FSER, American National Standards Institute/American Nuclear Society (ANSI/ANS) 2.8-1992, "Determining Design Basis Flooding at Power Reactor Sites," guidelines outline three alternatives that are adequate for determining the maximum flood level at a site adjacent to a confined water body. Of these methods, Alternative III resulted in a water level of 585.4 feet NAVD88, the highest water level for the Fermi site. This met the acceptance criteria of being at least 1 foot below the planned plant grade of 588.8 feet NAVD88. However, neither Alternative III nor the other alternatives outlined in the ANSI guidelines for confined water bodies explicitly require consideration of snowmelt. Given the location of the Fermi site, the applicant performed a sensitivity analysis that is not explicitly called out in ANSI/ANS-2.8-1992 guidelines to determine the impact of snowpack and corresponding snowmelt as discussed in FSER Section 2.4.3.4.1. The staff reviewed the applicant's sensitivity analysis, including performing a similar sensitivity analysis. The applicant's sensitivity analysis showed that the resulting maximum water level for the site was not particularly sensitive to snowpack/snowmelt and that the corresponding water level including snowmelt remained more than 1 foot below the planned plant grade. The staff performed a similar confirmatory sensitivity analysis and calculated a slightly higher (i.e., 0.8 feet higher) flood level than the applicant, but still below the site grade, such that the acceptance criteria was met with margin. The difference in the results of the sensitivity analyses was due to the staff's choice of slightly more conservative model parameters for the runoff modeling and a higher Probable Maximum Flooding (PMF) with snowmelt for Swan Creek. However, considering the conservatisms in both the applicant's and the staff's analyses, the difference in the resulting values is negligible.

17. Section 3.8.4 of the FSER states that for seismic category NS and seismic category II buildings that house regulatory treatment of non-safety systems (RTNSS) equipment a hurricane missile criterion is specified. Section 2.3.1.4 of the FSER describes a tornado at the Fermi Unit 2 site in June 2010 and also states that the NRC Staff found that the Fermi Unit 3 site is located well inland from areas impacted by hurricanes. Section 2.4.5.4 of the FSER states that the NRC Staff verified that the Fermi Unit 3 site is beyond the influence of the probable maximum hurricane. The NRC Staff response dated November 14, 2014, to the ACRS Report on the Safety Aspects of the DTE Electric Company Combined License Application for Fermi Unit 3, dated September 22, 2014, states that new guidance specifies that RTNSS equipment should be analyzed and designed to withstand the effects of high winds produced in hurricanes and tornadoes.

(a) Please describe how General Design Criteria 2 to 10 C.F.R. Part 50, which requires that structures, systems, and components that are important to safety shall be designed to withstand the effects of natural phenomena, such as tornadoes, is met, in accordance with Regulatory Guide 1.76, dated March 2007.

Staff Response: 10 CFR 52.1 defines site parameters as the postulated physical, environmental and demographic features of an assumed site. Site parameters are specified in a standard design approval, standard design certification, or manufacturing license.

Site parameters for the ESBWR reactor design are defined in Tier 1, Section 5.1, and Tier 2, Section 2.0, of the ESBWR DCD. Tier 1, Table 5.1-1, and Tier 2, Table 2.0-1, of the ESBWR DCD both contain site parameters related to tornado and tornado missiles. The ESBWR DCD tornado and tornado missile site parameters are included in the design of Seismic Category I buildings and meet or exceed the design-basis tornado and tornado missile criteria specified in RG 1.76, dated March 2007. Consequently, the Seismic Category I buildings are designed to withstand the effects of tornadoes in accordance with GDC 2 as specified in RG 1.76, dated March 2007. As discussed below in response to Question 17(b), Seismic Category NS and seismic category II buildings that house RTNSS equipment are not required to be designed in accordance with GDC 2.

(b) Please describe the technical justification for the seismic category NS and seismic category II buildings that house RTNSS equipment at Fermi Unit 3 being designed for hurricane missiles but not tornado missiles, when the site is located in Region I for tornadoes, as defined in Regulatory Guide 1.76.

Staff Response: The staff considered external events, including hurricane and tornado-generated missiles, when developing the original RTNSS policy and technical guidance in the 1990's. In SECY-94-084, "Policy and Technical Issues Associated with the Regulatory Treatment of Non-safety Systems in Passive Plant Designs," the NRC first developed a framework for RTNSS. For the reasons set forth in SECY-94-084, RTNSS applies to systems and equipment that are not required by the GDC, and are therefore not subject to GDC 2. The development of the RTNSS policy and guidance is further provided in (1) SECY-96-128, "Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standardized Passive Reactor Design," (ADAMS Accession No. ML003708224) and (2) a memorandum from L. Joseph Callan, Executive Director for Operations to Chairman Jackson, "Implementation of Staff Position in SECY 96-128, ['Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standard Pressurized Reactor Design'], Related to Post-72 Hour Actions," (ADAMS Accession No. ML003708229).

In developing the RTNSS guidance, the staff recognized that specifying design parameters for RTNSS equipment was above and beyond NRC requirements at that time. The staff attempted to balance the need for an increased level of assurance that RTNSS equipment would survive external events, while recognizing that RTNSS equipment was not the primary means for a nuclear power plant to respond to and provide protection from design basis accidents and events. Accordingly, the staff established the position that, "the post-72 hour SSCs (systems, structures, and components) will not be required to withstand tornado loads or tornado missiles but wind-borne missiles for the hurricane winds would have to be considered." This position reflects the reality that the potential damage from a tornado is more localized than that from a hurricane. By definition, RTNSS SSCs are nonsafety equipment and should not be treated as safety-related SSCs. Therefore, the policy considerations and guidance focused on protecting RTNSS SSCs from those external events which could potentially result in widespread damage

to local communities, such as hurricanes, floods, and seismic events. This approach has been consistently applied to all approved passive nuclear power plant designs including the AP600, AP1000, and ESBWR, which Fermi 3 incorporates by reference.

18. FSER Section 3.8.4.4 discusses the Staff's evaluation of lateral seismic earth pressures on below grade external walls. The site-specific pressures for the Reactor/Fuel Building (RB/FB) and the Control Building (CB) exceed the corresponding pressures considered in the standard design. Describe the implications of such exceedance and the applicability of the standard design to the Fermi Unit 3 site in this regard. As part of your response please describe why it was unnecessary for the applicant to take a departure from the standard design for this analysis.

Staff Response: Analyses using site-specific pressures demonstrated that the standard ESBWR design is acceptable at the Fermi 3 site. Furthermore, no departure is needed for Fermi 3 because the ESBWR DCD, Tier 1, Section 5.0, "Site Parameters," provides that in the case of seismic design and soil parameters not meeting the defined conditions, site-specific soil-structure interaction analyses may be performed to demonstrate the adequacy of the standard plant. As explained below, since the applicant has performed site-specific soil-structure interaction analyses for the RB/FB and CB and used site-specific soil pressures resulting from these analyses to confirm the seismic design adequacy of the standard ESBWR plant at the Fermi 3 site, it is unnecessary for the applicant to take a departure from the standard plant in this regard.

The applicant's site-specific evaluations of seismic lateral soil pressures on below grade exterior walls of the RB/FB and the CB are documented in FSAR Section 3.8.4.5.6 and in more detail in the Sargent & Lundy Report SL-012018, Revision 1, "Evaluation of Reactor Building/Fuel Building and Control Building Dynamic Bearing Capacity, Foundation Stability, and Wall Seismic Soil Pressures Summary Report," (ADAMS Accession No. ML13360A177). The staff's evaluation of the site-specific soil pressures is discussed in FSER Section 3.8.4.4.

As discussed in FSER Section 3.8.4.4, the site-specific seismic soil pressures for the RB/FB and the CB exceed the corresponding pressures considered in the standard design at some locations at elevations near the top of the rock. To address the potential implication of such exceedance on the wall design, the applicant performed additional evaluations of the responses of the walls to site-specific seismic soil pressures in terms of out-of-plane bending moments and shear forces and compared the results to the corresponding induced moments and shear forces in the walls due to the pressure profiles used in the standard design. In all cases, the applicant determined that the Fermi 3 internal member forces (bending moments and shears) resulting from the site-specific seismic analyses were bounded by the ESBWR standard design. The staff reviewed these evaluations and noted that at some locations, the site-specific seismic lateral soil pressures acting on below-grade exterior walls exceed the corresponding pressures considered in the standard design. However, the staff finds the standard design to be acceptable at the Fermi 3 site, because the member forces (moments and shears) induced in the walls by seismic lateral soil pressures resulting from the site-specific seismic analyses are bounded by the corresponding member forces considered in the standard design.

19. Discuss the site-specific conditions that required the performance of site-specific soil-structure interaction (SSI) analyses and how these conditions deviate from the ESBWR DCD.

Staff Response: There are two site-specific conditions for Fermi 3 that are not considered in the ESBWR DCD. First, the RB/FB and the CB structures at the Fermi 3 site will be partially embedded in the bedrock, as indicated in FSAR Section 2.5.4 and Figures 2.5.4-201 through 2.5.4-204. A partially embedded foundation configuration was not considered in the ESBWR standard design. Second, engineered granular backfill is used to fill the site excavation surrounding the power block structures at the Fermi 3 site. The ESBWR DCD indicates that the minimum shear wave velocity of the material surrounding the embedded walls should be greater than 300 m/s (1000 ft/s). However, this shear wave velocity criterion for the backfill material surrounding RB/FB and CB was not met at the Fermi 3 site. Since the ESBWR DCD also provides an alternative for sites whose soil parameters do not meet the conditions defined by the DCD, the applicant performed site-specific soil-structure interaction (SSI) analyses to address the effect of partial rock embedment and the ESBWR minimum shear wave velocity criterion for the side backfill on seismic design adequacy of the ESBWR standard plant at the Fermi 3 site. The staff reviewed these analyses and concluded the ESBWR design is adequate for the Fermi 3 site.

20. The ESBWR DCD, Tier 2, Appendices 3A.5 and 3A.5.2, describes the SSI analysis method implemented in the standard design, which is based on the use of the SASSI2000 analysis program. These DCD sections, including the use of SASSI2000, are designated as Tier 2* information, therefore requiring prior NRC approval to change. Instead of using the SASSI2000 program, the applicant used the SASSI2010 program in its site-specific SSI analyses. Please describe the validation and acceptability of the SASSI2010 program over the SASSI2000 program for the Fermi Unit 3 site-specific SSI analyses.

Staff Response: The applicant performed site-specific SSI analyses following the methodology in ESBWR DCD Tier 2 Appendices 3A.5 and 3A.5.2, which is based on the frequency domain complex response approach using the SASSI2000 program. However, the applicant used the SASSI2010 program instead of the SASSI2000 program in the site-specific SSI analyses. To ensure the acceptability of the SASSI2010 program for use in the site-specific SSI analyses at Fermi 3, the applicant performed validation and verification analyses. In these analyses, the applicant implemented a set of SSI test problems for which the solutions obtained using SASSI2010 were verified and validated against (a) analytical or numerical solutions available in the technical literature; (b) solutions obtained using SASSI2000; and (c) solutions obtained using other computer codes. The applicant did consider several test problems that incorporated subsurface profiles and input motions that were representative of the Fermi 3 site, as well as the frequency range of interest to the Fermi 3 site-specific SSI analyses.

The staff reviewed selected portions of the applicant's validation and verification calculations during the onsite audits on March 19 through 21, 2013, (ADAMS Accession No. ML13149A515) and November 18 through 22, 2013, (ADAMS Accession No. ML14028A245). The staff reviewed test problems performed using SASSI2010, which were considered relevant to the Fermi 3 site conditions. Based on its review and audits of the applicant's verification and validation analyses, the staff concluded that the SASSI2010 program is acceptable for performing site-specific SSI analyses at the Fermi 3 site. The staff's evaluation of the verification and validation of SASSI2010 for Fermi 3 application is discussed in FSER Section 3.7.2.4 under "Computer Programs Verification and Validation Issues."

21. In performing its site-specific SSI analyses of embedded structures, the applicant used two methods of analysis, namely the Direct Method and the Modified Subtraction Method. Section 3.7-2 of the Standard Review Plan (SRP) provides that the Direct Method should be used to the extent practical. For the use of other methods, technical justifications should be provided to demonstrate their adequacy. Please describe the process that the Staff followed to verify the adequacy of the applicant's justification for the SSI analyses that used the Modified Subtraction Method.

Staff Response: FSAR Subsection 3.7.2.4.1.3 indicates that the site-specific SSI analyses were performed using either the Direct Method (DM) or the Modified Subtraction Method (MSM). Current staff guidance regarding the use of the DM versus the MSM is in SRP Section 3.7.2 Revision 4, SRP Acceptance Criterion 3.7.2.II.4. Although the guidance states that the DM should be used to the extent practical, the MSM is also identified as an alternative for very large computer models where it is not feasible to use the DM. The guidance recommends the use of reduced-size computer models (e.g., quarter models) to perform direct comparisons between the MSM and the DM solutions and to draw conclusions that can be extrapolated to the full-size models.

In accordance with the above guidance, the applicant performed additional benchmark studies for those SSI case analyses that required the use of the MSM because of the computational limitations with the size of the computer models. The results of these benchmark studies are documented in Sargent & Lundy Reports SL-011814, Revision 0, "Modified Subtraction Method (MSM) Reactor Building/Fuel Building Benchmark Summary Report," (ADAMS Accession No. ML13127A034); SL-011874, Revision 0, "Modified Subtraction Method (MSM) Control Building Benchmark Summary Report," (ADAMS Accession No. ML13175A263); and SL-011863, Revision 0, "Modified Subtraction Method (MSM) Firewater Service Complex Benchmark Summary Report," (ADAMS Accession No. ML13175A264).

The benchmark studies were reviewed by the staff during the onsite audit on November 18 through 22, 2013 (ADAMS Accession No. ML14028A245). The staff reviewed the reduced-size models used in the benchmark studies to ensure that they were representative of the full-size models in terms of dynamic characteristics, foundation width-to-depth ratio, embedment depth, subsurface material profiles, and input motions. The staff also reviewed the DM versus the MSM comparisons of structural responses in terms of transfer functions, maximum absolute accelerations, maximum forces and moments, floor response spectra at the key locations in the structures identified in ESBWR DCD Tier 2 Appendix 3A, and the seismic lateral soil pressures acting on below-grade exterior walls. The staff confirmed that the results are essentially identical for the frequency range of interest to the Fermi 3 site conditions.

On the basis of the results of the benchmark studies performed using reduced-size computer models and the staff guidance discussed above, the staff concluded that the applicant's implementation of the MSM is acceptable for SSI analyses at the Fermi 3 site. The staff's evaluation of the applicant's benchmark studies of the MSM for Fermi 3 application is discussed in FSER Section 3.7.2.4 under "SSI Analysis Method."

22. Describe how the results of the applicant's site-specific SSI analyses demonstrate the applicability of the standard ESBWR design to the site.

Staff response: The applicant has performed site-specific SSI analyses to confirm that the ESBWR design is applicable for the Fermi 3 site conditions where the RB/FB and CB are partially embedded in the rock and surrounded by granular backfill that did not meet the DCD shear wave velocity criterion for the backfill material as discussed in the response to Question 19. The applicant developed seismic inputs for the Fermi 3 site consisting of foundation input response spectra (FIRS), site-specific ground motion time histories, and three subsurface material properties in accordance with the staff guidance in the SRP. The three site-specific subsurface material profiles (best estimate, lower bound, and upper bound) account for the variability in the subsurface material properties at the Fermi 3 site. In all cases, site-specific foundation input response spectra are enveloped by the ESBWR certified seismic design response spectra.

The applicant performed the site-specific SSI analyses cases as summarized in FSER Tables 3.7.2-1 and 3.7.2-2 using the site-specific seismic inputs consisting of site-specific ground motion time histories along with the site-specific soil-structure model and subsurface material profiles. The results of the site-specific analyses are described in FSAR Section 3.7.2.4.1.6. The applicant compared the results of the analyses at key locations with the seismic design envelopes specified in the ESBWR DCD for maximum seismic accelerations, seismic structural loads, floor response spectra, and lateral soil pressures on the embedded portions of the exterior walls. Based on this comparison, the applicant concludes that with the exception of lateral soil pressure, Fermi 3 site-specific enveloping seismic demands are less than the corresponding values in the ESBWR DCD. While the site-specific lateral soil pressures on the embedded portions of the exterior walls exceed the lateral soil pressure reported in the ESBWR DCD at some locations, the wall forces induced by the lateral soil pressures are within the design capacities of these walls for ESBWR DCD. As such, the applicant concluded that DCD standard plant design is applicable to the Fermi 3 site. The applicant's site-specific evaluations of seismic lateral soil pressures on below grade exterior walls of the RB/FB and the CB are documented in FSAR Section 3.8.4.5.6.

The staff reviewed the information provided in the application, response to the request for additional information, and the ESBWR DCD. The staff also conducted audits of the site-specific seismic analyses and calculations to confirm the applicant's conclusions that, with the exception of lateral soil pressure, Fermi 3 site-specific enveloping seismic demands are less than the corresponding values in the ESBWR DCD. Further, while the site-specific lateral soil pressures on the embedded portions of the exterior walls exceed the lateral soil pressure reported in the ESBWR DCD at some locations, the wall forces induced by the lateral soil pressures are within the design capacities of the standard plant wall design. Therefore, the staff concluded the ESBWR standard design is adequate for the Fermi 3 site. The staff's review of the results of SSI analyses cases is discussed in FSER Section 3.7.2.4 under "SSI Analysis Results."

23. Chapter 3 of the FSER for Fermi Unit 3 states:

In RAI 03.09.06-1 for the Fermi [Unit] 3 COL application, the [S]taff requested [DTE] to describe its plans for addressing the surveillance of squib valves that will provide reasonable assurance of the operational readiness of those valves to perform their safety functions in support of the Fermi [Unit] 3 COL application. In a letter dated November 9, 2010 (ADAMS Accession No. ML103140611), [DTE] submitted a planned revision to Fermi [Unit] 3 COL FSAR Section 3.9.6 to specify that industry and regulatory guidance will be considered in the development of the [inservice testing (IST)] Program for squib valves. [DTE] indicated that the FSAR would also state that the IST Program for squib valves will incorporate lessons learned from the design and qualification process for these valves, such that surveillance activities provide reasonable assurance of the operational readiness of squib valves to perform their safety functions. The [S]taff found that the planned changes to the Fermi [Unit] 3 COL FSAR are sufficient to describe the IST Program for squib valves for incorporating the lessons learned from the design and qualification process in developing surveillance activities that will provide reasonable assurance of the operational readiness for squib valves to perform their safety functions.

Is there specific industry or regulatory guidance that the applicant has committed to use in developing their IST program in order to provide reasonable assurance of the operational readiness for squib valves to perform their safety functions?

Staff Response: The 2012 Edition of the ASME *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) includes additional preservice and inservice surveillance provisions for squib valves to be used in plants with construction permits or combined licenses issued after January 1, 2000. These requirements are currently being incorporated in the ongoing rulemaking related to 10 CFR 50.55a. After the rulemaking is completed, these provisions will be required to be included in the Fermi 3 IST program by 10 CFR 50.55a(f)(4)(i) prior to plant startup. In the interim, these requirements will be imposed via license condition if the draft license is issued as proposed. Additional details are provided below.

The NRC staff concluded in Section 3.9 of the FSER that the Fermi 3 COL applicant has provided reasonable assurance that mechanical systems and components to be installed in Fermi 3 will have the structural integrity and functional capability to perform their design functions for the safe operation of the Fermi 3 nuclear power plant. Part of the NRC staff's review involved the completeness of the inservice testing (IST) program description in accordance with 10 CFR 52.79(a)(11). As discussed in SECY-05-197, "Review of Operational Programs in a Combined License Application and General Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria," COL applicants should fully describe IST and other operational programs to avoid the need for ITAAC for the implementation of those programs. SECY-05-0197 indicates that the NRC intends to inspect operational programs and their implementation as they are developed and put into place to verify that the programs being implemented are consistent with the FSAR.

Fermi 3 FSAR Section 3.9.6 references the ESBWR DCD, which specifies compliance with the provisions in the 2001 Edition through the 2003 Addenda of the ASME OM Code, which is incorporated by reference in 10 CFR 50.55a. The 2001 Edition through the 2003 Addenda of the ASME OM Code includes IST provisions for pyrotechnic-actuated (squib) valves that were developed based on squib valves used in operating boiling water reactors (BWRs). Some of the

squib valves in new reactors with passive post-accident heat removal systems (such as Fermi 3) will be larger and more complex than the squib valves in current operating plants. Therefore, the Fermi 3 FSAR specifies that the IST program for squib valves will incorporate lessons learned from the design and qualification process for these valves, such that surveillance activities provide reasonable assurance of the operational readiness of squib valves to perform their safety functions.

In recognition of the complexity and safety significance of the squib valves to be used in new reactors, the 2012 Edition of the ASME OM Code includes additional preservice and inservice surveillance provisions for squib valves to be used in plants with construction permits or combined licenses issued after January 1, 2000. The staff has a rulemaking activity underway to incorporate by reference the 2012 Edition of the ASME OM Code in 10 CFR 50.55a, including these squib valve provisions.

The NRC regulations in 10 CFR 50.55a(f)(4)(i) require that IST programs comply with the latest edition and addenda of the ASME OM Code incorporated by reference in 10 CFR 50.55a, as of 12 months before the date scheduled for initial loading of fuel. With the completion of the ongoing rulemaking, a Fermi 3 licensee will be required to implement the squib valve provisions in the 2012 Edition (or a subsequent incorporated edition) of the ASME OM Code in its IST program prior to plant startup. During plant construction and operation, the Fermi 3 IST program will be subject to NRC inspection activities as described in NRC Inspection Procedure 73758, "Part 52, Functional Design and Qualification, and Preservice and Inservice Testing Programs for Pumps, Valves and Dynamic Restraints," to confirm the development and implementation of the IST program consistent with the NRC regulations and Fermi 3 FSAR provisions, including preservice and inservice surveillance activities for squib valves.

Condition 2.D.(12).e in the draft Fermi 3 license supplements the squib valve provisions specified in the ASME OM Code currently referenced in the Fermi 3 FSAR by requiring surveillance of squib valves in the gravity driven cooling system and the automatic depressurization system in the Fermi 3 ESBWR nuclear power plant to provide reasonable assurance of their operational readiness to perform their safety functions. This proposed license condition is consistent with the license condition for squib valves imposed on the COL licensees for the Vogtle Units 3 and 4 and Summer Units 2 and 3 AP1000 nuclear power plants, as well as with the squib valve provisions for new reactors in the 2012 Edition of the ASME OM Code The proposed Fermi 3 license condition expires when either (1) the license condition is incorporated into the Fermi 3 IST program; or (2) the updated ASME OM Code requirements for squib valves in new reactors, as accepted by the NRC in 10 CFR 50.55a, are incorporated into the Fermi 3 IST program. Either approach provides sufficient regulatory control, such that the Fermi 3 IST program will provide reasonable assurance of the operational readiness for squib valves to perform their safety functions.

24. Section 3.9.4 of the FSER includes the Staff's technical evaluation of COL Item 3.9.9-1-A related to the Steam Dryer Monitoring Plan. The FSER notes that the startup program includes providing data to the NRC at certain "hold points" during power ascension. FSER at 3-76.

(a) Please describe the use of the term "hold points" in this context. As part of your response, please discuss whether condition 2.D.(12)(b)8 of the draft COL includes a hold point when it restricts the licensee from raising power for 72 hours.

Staff Response: The term "hold point" is not included in the draft license; however, the license does not authorize the licensee to exceed specified thermal power levels until the licensee measures certain parameters, analyzes the data, and determines that the results meet specified criteria. These power levels, or power ascension plateaus, have historically been referred to as "hold points" by the nuclear industry. During startup of a nuclear power plant (including power ascension following a license amendment granting an extended power uprate (EPU)), the licensee will "hold" power ascension at intermediate power levels for an appropriate period of time to conduct evaluations of the status of the plant and its structures, systems, and components. During this time, the licensee will evaluate plant data and conduct walkdowns as specified in its procedures. Specific to the ESBWR design, GEH Engineering Report NEDO-33313 (Revision 5, December 2013), "ESBWR Steam Dryer Structural Evaluation," which is incorporated by reference in Section 3.9.5 of the ESBWR DCD, uses the term "hold point" in describing the ESBWR steam dryer startup program. The Fermi 3 COL applicant continues use of this term in FSAR Section 3.9, which incorporates by reference the ESBWR DCD (with supplements). The NRC staff's use of the term "hold point" in FSER Section 3.9.4 is limited to discussion of material provided in the ESBWR design certification application and the Fermi 3 COL application where this term was used.

In granting license amendment requests for EPUs at operating BWRs, the NRC staff imposed license conditions to verify that each licensee's analysis of its BWR steam dryer ensured the capability of the steam dryer to maintain its structural integrity under the EPU conditions. Examples of these EPU license conditions, which all include power ascension plateaus as described above, are available as follows:

- Vermont Yankee, March 2, 2006, ADAMS Accession No. ML060050024
- Susquehanna Steam Electric Station, Units 1 and 2, January 30, 2008, ADAMS Accession No. ML080020201
- Grand Gulf Nuclear Station, Unit 1, July 18, 2012, ADAMS Accession No. ML112590299
- Monticello Nuclear Generating Plant, December 9, 2013, ADAMS Accession No. ML13316B298
- Peach Bottom Atomic Power Station, Units 2 and 3, August 25, 2014, ADAMS Accession No. ML14133A046

The NRC staff used its experience with these EPUs to develop Condition 2.D.(12)(b) in the draft Fermi 3 license to verify the structural integrity of the steam dryer in Fermi 3 during power ascension. Item 3 of this condition would require that the licensee complete the initial actions between 65 and 75 percent thermal power. Item 4 of this condition would require that the licensee measure, record, and evaluate pressures, strains, and accelerations from steam dryer instrumentation at power levels approximately 5 percent higher than the previous power level. As part of its normal startup process, the licensee will hold the power ascension at these levels as long as necessary to complete this activity. Item 8 of this condition would require that the licensee provide the steam dryer analysis and results to the NRC project manager by facsimile or electronic transmission at three different power levels, then not exceed those three power levels (at which it performed steam dryer monitoring) for at least 72 hours after the NRC project manager has confirmed receipt of the transmission. Based on EPU experience, this 72-hour duration provides the NRC staff sufficient time to evaluate the information submitted by the licensee.

Condition 2.D.(12)(b) in the draft Fermi 3 license does not use the term "hold point," though the ESBWR and Fermi 3 COL applications use the term, as do several of the EPU license

conditions listed above. No authorization by the NRC is needed to proceed with power ascension after 72 hours have elapsed, and the burden would be on the NRC staff to identify any operational concerns that might warrant enforcement action (i.e., an order) to halt further power ascension. Moreover, Condition 2.D.(12)(b) is similar in structure to the standard power ascension conditions in the Vogtle and Summer COLs (Conditions 2.D.(2)-(6)) and the power ascension conditions in draft Fermi 3 Conditions 2.D.(2)-(6). Therefore, the use of this term in the FSER was intended to convey the historical industry use of the term and not imply any need for additional NRC authorization to increase power during power ascension.

This license condition was developed in the context of the NRC staff's review of steam dryer information in the ESBWR design certification and Fermi 3 COL applications, including provisions for how steam dryer performance would be monitored during and after initial plant startup. In NUREG-1966, "Final Safety Evaluation Report Related to the Certification of the Economic Simplified Boiling-Water Reactor Standard Design," Supplement 1, the NRC staff concluded that the ESBWR DCD and engineering reports incorporated by reference provide sufficient information to support the adequacy of the design basis for the ESBWR reactor vessel core support structure and internal structures (reactor internals). The staff stated that the ESBWR steam dryer loading procedure is conservative and acceptable and concluded that the ESBWR steam dryer design approach, analysis methodology, and verification procedure will provide adequate protection to the public health and safety insofar as the ESBWR steam dryer will not experience fatigue cracking or generate loose parts.

As noted above, the Fermi 3 FSAR incorporates by reference the ESBWR DCD sections related to the steam dryer and addresses the associated COL items specified in the DCD, including proposing a license condition for steam dryer monitoring. The NRC staff reviewed this information and concluded that the Fermi 3 COL applicant has provided reasonable assurance that mechanical systems and components to be installed in Fermi 3 will have the structural integrity and functional capability to perform their design functions for the safe operation of the Fermi 3 nuclear power plant. This review included an evaluation of the Fermi 3 applicant's response to the COL items related to the steam dryer as well as proposing the power ascension license condition described above, consistent with the staff's review of the ESBWR design certification.

(b) Will a license amendment be necessary to go beyond this hold point because it would grant the licensee greater operational authority? *See, e.g.*, *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Unit 1), CLI-96-13, 44 NRC 315, 326 (1996).

Staff Response: No. As discussed below, the license authorizes operation up to the maximum thermal power level specified in the license, but that authority is conditioned on the licensee's completion of the activities specified in the license. The NRC need not amend the license under *Perry* because the NRC does not approve the licensee's completion of the specified activities nor does the NRC make any findings in connection with the completion of those activities. Rather, the NRC would need to take enforcement action if it determined that the licensee had not complied with a license requirement.

In *Perry*, the Commission stated that "[a]s long as its withdrawal schedule [for the reactor vessel material specimens] meets the applicable ASTM standard, Cleveland Electric is not exceeding operating authority already granted in its Perry operating license." *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Unit 1), CLI-96-13, 44 NRC 315, 328 (1996). The Commission stated further that "[b]y merely ensuring that required technical standards are met,

the Staff's approval does not alter the terms of the license, and does not grant the Licensee greater operating authority." *Id*. at 328.

The NRC staff has determined that the Fermi 3 COL applicant's analysis of the steam dryer (as incorporated by reference from the ESBWR design certification) provides reasonable assurance that the steam dryer will maintain its structural integrity for full power operating conditions, and the license is structured to authorize full-power operation. During initial power ascension for Fermi 3, the information provided by the licensee (and associated requirement not to proceed with power ascension for 72 hours) will enable the NRC staff to verify that plant conditions and steam dryer performance are consistent with the licensee's analysis, such that technical requirements are met. Therefore, the license condition gives the NRC the opportunity to inspect or examine the results of the power ascension testing (and take action if necessary), but the staff is not performing a safety evaluation, granting approval, or making findings in order to allow the licensee to continue to the next power level. Continuation of plant startup following the activities conducted at specific power levels during the Fermi 3 power ascension does not require a license amendment.

25. Chapter 8 includes a description of the monitoring of transformers for open circuit conditions. Please explain the design vulnerabilities addressed in response to Bulletin 2012-01, "Design Vulnerability in Electric Power System."

Staff Response: For Fermi 3, the design vulnerability addressed during the staff review is the ability to detect an open phase condition in the offsite power distribution system and the ability of the design to assure that intended safety functions can be performed in the face of that condition. The concern about potential open phase condition design vulnerabilities arose when an undetected open phase condition on a three phase circuit in the switchyard occurred at Byron Station, Unit 2 (January 30, 2012) and demonstrated a design vulnerability in the Byron protective relaying scheme for the station transformers (i.e., the transformers that supply power to the onsite distribution system). An open phase condition causes unbalanced voltages and currents to be applied to the plant operating electrical loads (e.g., pumps, motors) and, if not detected and isolated, could damage the already operating loads and prevent other loads from starting upon demand. The Byron station's protective relaying scheme was not designed to monitor for the particular open phase condition that occurred. Because it was undetected, the open phase condition resulted in neither the onsite nor offsite electric power system being able to perform its intended safety functions (i.e., respond to electric power to the Engineered Safety Features buses with sufficient capacity and capability to permit functioning of structures, systems, and components important to safety). Bulletin 2012-01 was developed and issued to assist the staff with evaluating this situation. Licensee and applicant responses to the NRC Bulletin and requests for additional information to the new reactor design applicants confirmed that this design vulnerability exists across the operating nuclear power reactor fleet and the new reactor designs.

Since open phase conditions present a problem if undetected, the staff developed a position (currently in the rulemaking process) that would require a detection scheme such that degraded power will not be supplied to plant electrical loads over a duration long enough that would cause damage to those loads. The staff approved the design presented by the ESBWR for detecting and providing alarms under open phase conditions, including specific ITAAC and COL information items. Fermi 3 incorporated by reference the ESBWR design solution and accompanying ITAAC. Fermi 3 also responded to the COL information items in the ESBWR by committing to develop training and procedures for both the operations and maintenance staff

prior to fuel loading. Therefore, the staff concluded that the open phase circuit design vulnerability has been addressed in the licensing review of the Fermi 3 design.

26. Section 9.5.4 of the FSER notes that a 7-day fuel oil inventory is specified for the diesel generator fuel oil storage and transfer system. Section 9.5.7 does not discuss diesel generator lubricating system inventories. Does the Fermi Unit 3 COL FSAR specify a 7-day lubricating oil inventory with sufficient margin for the diesel generators? If not, what is the basis for not also requiring a 7-day lubricating oil inventory for the diesel generators?

Staff Response: No, the Fermi 3 FSAR does not specify a lubricating oil inventory for the diesel generators. FSAR Section 9.5.7 incorporates by reference the ESBWR plant design, which also does not specify the diesel generators lubricating system inventories. The ESBWR plant design incorporates passive safety systems that provide core, containment, and spent fuel pool cooling capabilities for 72 hours with no reliance on ac power or operator action. The staff agrees with the applicant that this level of detail for the lubricating oil inventory for the diesel generators does not need to be in the FSAR.

The ESBWR DCD specifies a 7-day mission time for these diesel generators. The engine lubricating oil sump is provided with level indication and can be manually replenished. The lubricating oil may be added to the engine oil sump during engine operation. The staff concludes that the applicable support systems need to have adequate supply, including lubricating oil, to support the 7-day mission time for diesel generator operation.

27. The Fermi Unit 3 COL application identified one departure from the ESBWR design (EF3 DEP 11.4-1 Long-Term, Temporary Storage of Class B and C Low-Level Radioactive Waste), which is described in Section 11.4 of the FSER. The departure involves a redesign of the Radwaste Building that affects the arrangement of systems and components within the building volume, but does not affect offsite dose rates or the integrity of waste containers in storage. Is prior NRC approval needed for the proposed storage plan? If not, why not?

Staff Response: No. This Tier 2 departure was identified in FSAR Chapters 1, 11, and 12; FSAR Tables in Chapters 9, 11, and 12; and FSAR Figures in Chapters 1, 9, 11 and 12. As defined in 10 CFR 52 Appendix E, Section II. E, Tier 2 information is the portion of design-related information contained in the DCD that is approved but not certified by NRC regulation. In accordance with 10 CFR 52 Appendix E, Section VIII.B.5 and RG 1.206, Section C.IV.3.3, this departure does not require prior NRC approval or an exemption from 10 CFR Part 52, Appendix E. Notwithstanding the determination that the redesign of the Radwaste Building was a Tier-2 departure not requiring prior approval, the applicant submitted detailed information to support its conclusion that the design change did not affect offsite dose rates or integrity of the waste containers in storage. The staff reviewed the information provided and confirmed that the potential for increased radiation exposure to members of the public is not created and the integrity of waste containers in storage is not affected. The applicant's process for evaluating departures and other changes to the DCD is subject to NRC inspections.

28. Section 14.3.1 of the FSER states that "Section 14.3 of the FSAR discusses the criteria and methodology for selecting the [systems, structures, and components (SSCs)] to be included in the ITAAC." Please describe the bases for the criteria and methodology and discuss any material differences between these criteria and methodology and those for previously issued COLs.

Staff Response: ITAAC provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the combined license, the provisions of the Atomic Energy Act of 1954 as amended, and NRC regulations. In general, ITAAC are developed to verify the principal performance characteristics and safety functions of design-specific and unique features of the facility. As described in SECY 90-377, "Requirements For Design Certification Under 10 CFR Part 52" (ADAMS Accession No. ML003707889), the criteria and methodology for selecting ITAAC are based on a graded approach commensurate with the safety significance of the structures, systems, and components for the design. NUREG-0800, Section 14.3, "Inspections, Tests, Analyses, and Acceptance Criteria," and RG 1.206, Section C.II.1, "Inspections, Tests, Analyses, and Acceptance Criteria," provide specific guidance on this graded approach methodology.

The Fermi 3 COL application includes ITAAC in four parts: (1) Design Certification ITAAC, (2) Emergency Planning ITAAC, (3) Physical Security ITAAC, and (4) Site-Specific ITAAC. The Design Certification ITAAC are incorporated by reference from the ESBWR DCD, which was certified through rulemaking. The Emergency Planning ITAAC are consistent with the NRC-approved generic ITAAC described in SRM-SECY-05-0197, "Staff Requirements - SECY-05-0197 – Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria," (ADAMS Accession No. ML060530316). The Physical Security ITAAC and Site-Specific ITAAC are consistent with the guidance of NUREG-0800 and RG1.206. The ITAAC in the Fermi 3 COL were developed, reviewed, and approved in accordance with NRC guidance and requirements, and used criteria and methodology consistent with ITAAC in previously issued COLs.

As part of its reviews of ITAAC in the ESBWR design certification and Fermi COL applications, the staff held public meetings with applicants to discuss NRC Regulatory Issue Summary 2008-05, Revision 1, "Lessons Learned to Improve Inspections, Tests, Analyses, and Acceptance Criteria Submittal." This effort resulted in improved clarity and inspectability of some ITAAC in the ESBWR and Fermi applications. Additionally, while the Fermi 3 ITAAC comport with the staff's established criteria and methodology, the staff continues to pursue enhancements to the ITAAC process, such as the development of standardized ITAAC and updates to applicable regulatory guidance, such as NUREG-0800 and RG 1.206.

29. To address Near Term Task Force (NTTF) Recommendation 2.1, the Staff requested the applicant to evaluate the potential impacts of the NUREG-2115 seismic source model on the Fermi Unit 3 seismic hazard and to modify the site-specific ground motion response spectra (GMRS) and foundation input response spectra (FIRS) as necessary. In response, the applicant updated its PSHA and respective GMRS and FIRS reflecting the use of the NUREG-2115 seismic source model. In this update, the applicant used the Electric Power Research Institute (EPRI) 2004/2006 ground motion model (GMM). In 2013, EPRI published an update to the 2004/2006 ground motion model called the EPRI 2013 GMM. The EPRI 2013 GMM is currently being used by licensees in their assessments related to NTTF Recommendation 2.1. Describe how the Staff verified the adequacy of the use of the 2004/2006 EPRI GMM instead of the 2013 EPRI GMM to address NTTF Recommendation 2.1 for Fermi Unit 3.

Staff Response: In response to RAI 01.05-1, the applicant provided an evaluation of the potential impacts of the NUREG-2115 seismic source model on the Fermi 3 seismic hazard, on March 15, 2013. The response included an updated Probabilistic Seismic Hazards Analysis (PSHA) with a revised Ground Motion Response Spectra (GMRS) and Foundation Input Response Spectra (FIRS). The applicant's revised GMRS and FIRS utilized the new NUREG-2115 seismic source model and the Electric Power Research Institute (EPRI) 2004/2006 ground motion model (GMM). An updated version of the EPRI 2004/2006 GMM (EPRI 2013) was later endorsed by the NRC on August 28, 2013 (ADAMS Accession No. ML13233A102).

Whenever new seismic information, including newer models, becomes available, consistent with RG 1.208, the staff considers whether the applicant's use of an older model remains acceptable. The staff found DTE's use of the EPRI 2004/2006 GMM acceptable based on comparisons of the EPRI 2004/2006 model to more recent models. DTE had previously submitted sensitivity analyses in response to an earlier RAI (RAI 02.05.02-4 issued on November 12, 2009), comparing the EPRI 2004/2006 GMM results to other newer ground motion models available at that time. The applicant concluded, and the staff agrees, that the median ground motions obtained using the newer ground motion prediction equations—specifically Silva et al. (2003), Atkinson and Boore (2011), and Pezeshk et al. (2011)—produce similar or lower ground motion amplitudes compared to the EPRI (2004) GMMs, and are thus in general likely to produce lower hazard levels for a site. Further, the staff considered hazard calculations performed at seven test sites detailed in Chapter 8 of the EPRI (2013) report comparing the updated EPRI (EPRI 2013) GMM results to EPRI 2004/2006 GMM results. One of the seven test sites is the Central Illinois test site, which is the closest test site to the Fermi 3 site. The EPRI (2013) report demonstrates that the updated EPRI (EPRI 2013) GMM produces equivalent or lower seismic hazard results when compared to the EPRI 2004/2006 GMM at all seven test sites. Therefore, the staff concluded that the seismic hazard submitted by DTE using the EPRI 2004/2006 GMM is equivalent or higher (more conservative) than would be calculated from the updated EPRI (EPRI 2013) GMM at the Fermi 3 site.

Subsequent to finalization of its technical input to Section 2.5 of the Fermi SER, the staff conducted additional confirmatory analysis, to directly compare the site-specific seismic hazard results obtained using the EPRI 2004/2006 GMM with those obtained using the updated EPRI (EPRI 2013) GMM. These results confirm that, for the Fermi 3 site, the updated EPRI (EPRI 2013) GMM produces generally lower seismic hazard results than the EPRI 2004/2006 GMM. These confirmatory analysis results are shown in the figure below as the green curve labeled "NRC GMRS". The blue curve labeled "Applicant GMRS" is DTE's hazard results calculated using the EPRI 2004/2006 GMM. These results continue to indicate that DTE's use of the EPRI 2004/2006 GMM is conservative, and therefore acceptable.

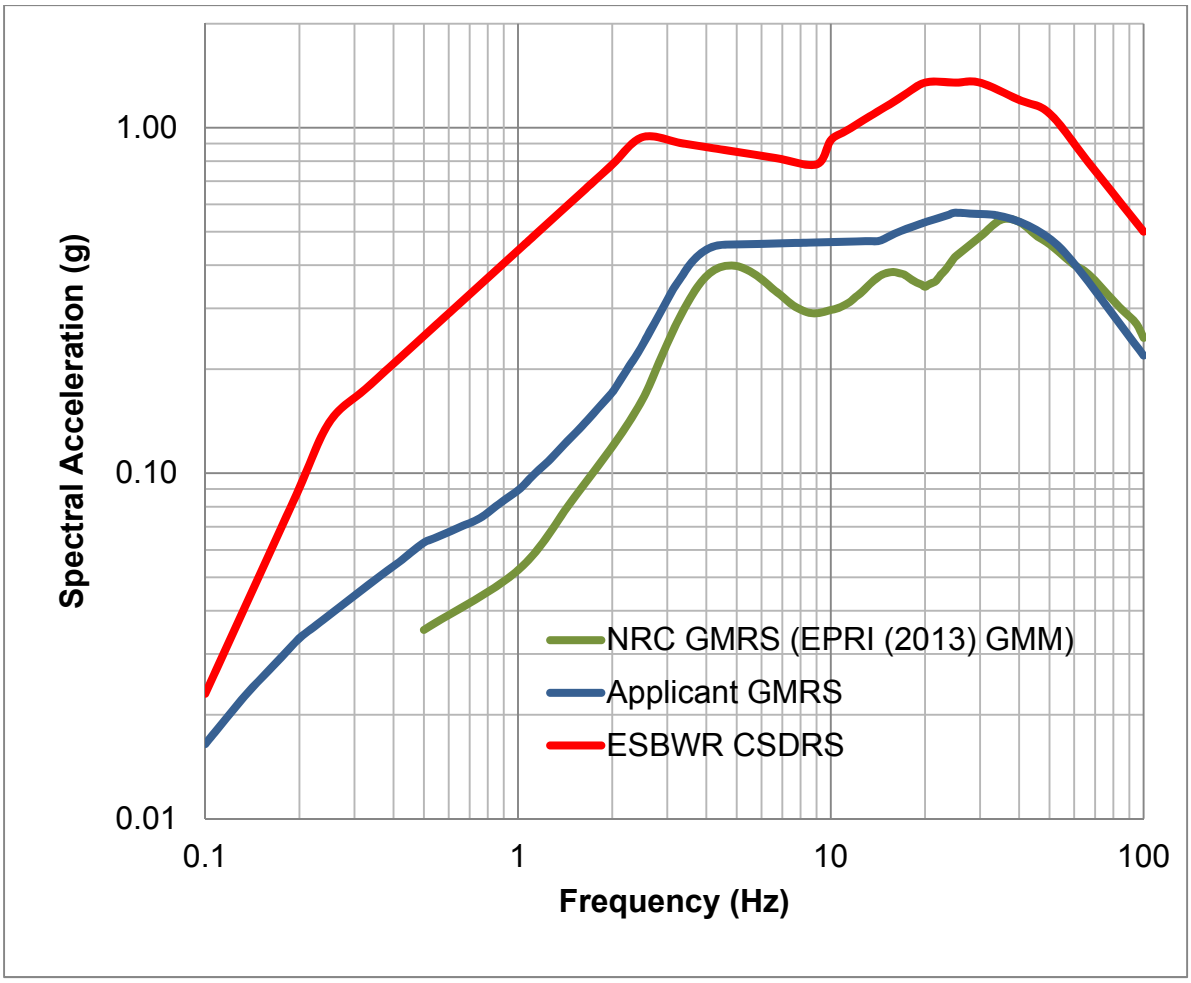

Figure Q-29. Comparison of ESBWR design spectrum (red curve) to the Applicant (blue curve) and NRC confirmatory (green curve) site-specific ground motion response spectrum. The applicant GMRS was developed using the 2004/2006 EPRI ground motion model while the NRC GMRS was developed using the 2013 EPRI ground motion model. Note that the ESBWR CSDRS bounds the GMRS at all spectral frequencies.

30. Section 20.2 of the FSER states that the ESBWR design includes installed ancillary equipment (RTNSS equipment) that could potentially extend the time period for transition from initial phase mitigation to final phase mitigation. The NRC Staff also states in Section 20.2 that the ESBWR RTNSS program includes an evaluation of the augmented design standards for RTNSS equipment to withstand external events such as earthquakes, hurricanes, tornadoes, and floods. As described in Section 3.8.4.4 of the FSER, certain RTNSS equipment for Fermi Unit 3 is installed in seismic category NS and seismic category II buildings that are not tornado missile protected as described in SER Section 3.8.4.4.

(a) Please describe if the RTNSS equipment referred to in Section 20.2 will be contained in buildings that are protected from tornado missiles, the reevaluated seismic hazard, and the calculated flood hazard for Fermi Unit 3. If not, please provide further technical justification for why NTTF Recommendation 4.2 is met.

Staff Response: The ESBWR plant design meets the underlying purpose of Order EA-12-049, "Order to Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12054A735) by including passive safety systems that provide core, containment, and spent fuel pool cooling capabilities for 72 hours, with no reliance on ac power or operator action. This 72-hour mitigation capability addresses the initial phase mitigation for ESBWR plants such as Fermi Unit 3, and this mitigation capability provides adequate time to transition to final phase mitigation without necessarily relying upon a transition phase. RTNSS equipment (if available following a beyond design basis event) may be used to support post 72-hour operations, but is not necessary since 72 hours is sufficient time to identify and bring in any offsite resources needed to assure that core cooling, containment, and spent fuel pool cooling capabilities are maintained or restored.

The RTNSS equipment referred to in FSER Section 20.2 could replenish the cooling water used by the passive safety systems, therefore providing support to the operation of the passive safety systems beyond 72 hours. Most of the RTNSS equipment is located in the fire pump enclosure, which is a seismic category I structure, designed to provide protection from design-basis storms, tornados, and floods as indicated in FSAR Section 9A.4.11, "Fire Pump Enclosure." That equipment includes two RTNSS fire pumps (motor-driven and diesel-driven) and the associated support equipment, including a fuel oil tank and fuel oil transfer pumps. Makeup water to the passive safety systems, after the initial phase mitigation, can be provided by the diesel-driven or motor-driven fire pump. The ancillary diesel, which may be used to power the motor-driven fire pump, is located in the ancillary diesel building, which is a seismic category II structure. If the ancillary diesel is not available as a result of the external event, diesel pumps or power sources brought from offsite to support final phase mitigation can be used.

(b) Is the onsite equipment for 10 C.F.R. § 50.54(hh)(2) stored in structures designed to withstand external events such as earthquakes, tornadoes, and floods for Fermi Unit 3? If not, please explain the use of this equipment in the context of NTTF Recommendation 4.2.

Staff Response: The Fermi 3 mitigation strategy for beyond-design basis events (under Order EA-12-049, ADAMS Accession No. ML12054A735) does not rely on the equipment relied upon to meet Section 50.54(hh)(2). The ESBWR passive safety systems provide adequate core, spent fuel pool, and containment cooling for 72 hours following the loss of all ac power and normal access to the normal heat sink. Subsequently, final phase mitigation can be provided by offsite equipment and resources.

31. Please explain the relationship between conditions 2.B.(1)(a) and (b) in the draft COL. Condition (a) appears to grant DTE Electric Company authority to operate the facility, while condition (b) appears to remove that same authority. When the owner and operator of the facility are the same company– as is the case here – is it necessary to include condition (b) in the COL?

Staff Response: The staff believes that it is not necessary to include condition (b) because DTE Electric Company is the Fermi 3 owner and operator. Therefore, the staff proposes to remove this condition from the Fermi 3 COL prior to the issuance of the license. As clarification

unrelated to this license condition, the staff also proposes to modify Exemption 2.F.(2) to insert the publication date of the SER, November 18, 2014.

32. Please describe in more detail the timeline for implementing the fire protection program elements listed in condition 2.D(10)(e) in the draft COL. It is unclear to what information the parenthetical in condition 2.D(10)(e) refers. As part of the description, please explain whether it is clearly understood what elements of the fire protection program are "necessary to support the receipt and storage of fuel?"

Staff Response: There are four fire protection program sub-parts in the proposed license condition.

Sub-part 1 involves fire protection measures, for designated storage building areas, that need to be implemented before initial receipt of byproduct or special nuclear materials other than nuclear fuel. There is no set timeline for implementation, other than prior to initial receipt of the byproduct or special nuclear materials.

Sub-part 2 involves fire protection measures, for the new fuel storage area, that need to be implemented before receipt of nuclear fuel onsite. As described in Table 13.5-202 of the Fermi 3 FSAR, these fire protection measures will be in effect 6 months before nuclear fuel receipt.

Sub-part 3 involves establishing agreements with the local fire department before receipt of nuclear fuel onsite specifying the arrangements in support of the fire protection program. There is no set timeline for implementation, other than prior to receipt of nuclear fuel onsite.

Sub-part 4 involves implementation of fire protection measures required before initial fuel load. As described in Table 13.5-202 of the Fermi 3 FSAR, these fire protection measures will be in effect 6 months before fuel load.

Regarding the parenthetical information in Condition 2.D.(10)(e), the staff agrees that it would improve the clarity of the condition to omit the parenthetical clause and the phrase after it. Therefore, the staff proposes to retitle this license condition as "Fire Protection Program," prior to issuance of the license.

The elements of the fire protection program that are "necessary to support the receipt and storage of fuel" are described in Regulatory Guide 1.189, "Fire Protection for Nuclear Power Plants." Thus, the staff believes this is clearly understood by individuals responsible for developing, reviewing, and implementing fire protection programs.

33. The Commission has long held that license conditions must be "precisely drawn so that the verification of compliance becomes a largely ministerial act." *Private Fuel Storage, LLC* (Independent Spent Fuel Storage Installation), CLI-00-12, 52 NRC 23, 34 (2000). License condition 2.D.(12)(g)2 regarding Mitigation Strategies for Beyond-Design-Basis External Events, states that the overall integrated plan must include provisions to ensure that all accident mitigation procedures and guidelines are "coherent and comprehensive." Please explain how this condition meets the Commission's requirements regarding license conditions and what acceptance criteria the Staff will use to determine whether the plans are "coherent and comprehensive."

Staff Response: The applicant has committed to developing the Fermi 3 overall integrated plan in accordance with the guidance provided in NRC's JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," (ADAMS Accession No. ML12143A232), which endorses NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide." The approach described in NEI 12-06 is to ensure that the "overall strategies are coherent and comprehensive" and that FLEX Support Guidelines will support emergency operating procedures, extensive damage management guidelines, and severe accident management guideline strategies. By adhering to the staff-endorsed guidance in NEI 12-06, the staff is assured that the applicant will properly integrate the accident mitigation procedures with other emergency procedures and standards. Condition 2.D.(12)(g)(2) is intended to require this integration.

Accordingly, although the phrase "coherent and comprehensive" is used in NEI 12-06 to describe the overall purpose of the guidance, the staff considers that omitting that term from the license condition would improve the clarity of the license condition and make it consistent with other procedure-related license conditions imposed on Fermi 3. Therefore, the staff proposes to remove this phrase prior to issuance of the license.

As such, the staff proposes that Item 2 of the license condition be changed to:

> *The overall integrated plan required by this condition must include guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities. The overall integrated plan must include provisions to address all accident mitigation procedures and guidelines (including the guidance and strategies required by this section, emergency operating procedures, abnormal operating procedures, and extensive damage management guidelines).*

34. Section 103c. of the Atomic Energy Act states that the NRC may issue a license for up to 40 years from the "authorization to commence operations." Currently, the applicant has not made a final decision about whether to build Fermi Unit 3. Therefore, the date of a decision on whether to authorize the commencement of operations could be long-delayed. Please explain how the Staff and the applicant will ensure that the information in the FSAR and the COL remains current should there be an extended time between license issuance and potential construction and operation.

Staff Response: Even if there is an extended time between license issuance and construction and operation, there are a number of requirements, obligations, and oversight mechanisms that ensure licensing information is kept current and that there will be rigorous and predictable oversight and disposition of potential safety issues. 10 CFR Part 52, Appendix E, "Economic Simplified Boiling Water Reactor Design Certification", Section X, "Records and Reporting," contains FSAR update requirements for applicants and licensees that reference Appendix E. These requirements specify that:

1. A report must be submitted to the NRC in accordance with the filing requirements applicable to reports in 10 CFR 52.3 containing a brief description of any plant-specific departures from the DCD and a summary evaluation. This report must be submitted semi-annually until the Commission makes its findings required by 10 CFR 52.103(g).

2. The applicant or licensee is also required to submit updates to its DCD, which reflect the generic changes to and plant-specific departures from the generic DCD made under Section VIII of Appendix E. These updates to the plant-specific DCD must be submitted annually until the Commission makes the findings required by 10 CFR 52.103(g) per the filing requirements applicable to FSAR updates in 10 CFR 52.3 and 50.71(e).

3. After the Commission makes the finding required by 10 CFR 52.103(g), the reports must be submitted at intervals not to exceed 24 months as required by 10 CFR 50.59(d)(2). The updates to the site-specific DCD must be submitted, along with updates to the site-specific portion of the FSAR for the facility, annually or 6 months after each refueling outage provided the interval between successive updates does not exceed 24 months as required by 10 CFR 50.71(e)(4).

In addition, the NRC has the ability to inspect or audit the licensee at any time (independent of its scrutiny of these required submissions of records and reports). The Commission also has the ability to issue Orders or 50.54(f) letters in the event safety concerns are identified in the future regarding a certified design or the COL. The Environmental Protection Plan (EPP), which is included in Appendix B of the license, also includes reporting requirements that ensure the NRC will receive updates on relevant environmental information.

35. Did the applicant propose any novel environmental approaches in the environmental portion of its application? How did the Staff address these approaches?

Staff Response: No. The applicant did not propose any novel environmental approaches in the environmental portion of the application. The staff followed the guidance in NUREG-1555, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants" and other applicable guidance documents, as discussed in the answer to in Question 36.

36. The Staff's environmental standard review plan was last updated in 2007. What guidance is available for meeting environmental requirements established after 2007?

Staff Response: As a matter of practice, the staff maintains awareness of changes to environmental laws and regulations on an ongoing basis. The staff assesses changes that are identified to determine their legal and programmatic implications for the agency's environmental programs, and it updates regulatory guidance as appropriate. For example, the Division of Site and Environmental Reviews, Office of New Reactors, issued supplemental guidance to the staff for developing Environmental Impact Statements (EISs) for new reactor applications in a memorandum entitled, "Revision 1 – Addressing the Construction and Preconstruction Activities, Greenhouse Gas Issues, General Conformity Determinations, Environmental Justice, the Need for Power, Cumulative Impact Analysis and Cultural/Historical Resources Analysis Issues in Environmental Impact Statements," March 4, 2011 (ADAMS Accession No. ML110380369) (Flanders Memo). The Flanders Memo included guidance on a range of issues, including assessment of construction impacts consistent with the Limited Work Authorization (LWA) rule promulgated on October 9, 2007 (72 FR 57416), consideration of greenhouse gases and climate change, conduct of general conformity determinations consistent with the Clean Air Act, and assessment of environmental justice impacts, need for power, historic and cultural resource impacts, and cumulative impacts. As noted in Section 1.1.1.1 of the final EIS (FEIS), the staff relied in part on the Flanders Memo to guide the conduct of its environmental review of the Fermi 3 COL application. In addition, the division issued guidance for project managers

entitled “Staff Guidance for Compliance with Environmental Statutes and Executive Orders Associated with the Issuance of New Reactor Licenses or Permits” March 1, 2012. This document provides guidance on compliance with regulatory authorities other than the National Environmental Policy Act of 1969 (NEPA).

Subsequent to the issuance of the Fermi FEIS, the contents of the Flanders Memo have been formalized as interim staff guidance (ISG). The ISG was subject to public comment and the final document, COL/ESP-ISG-026, “Environmental Issues Associated with New Reactors,” was issued on September 3, 2014 (79 FR 52373) (ISG-026). The staff intends to incorporate ISG-026 into the next revision of NUREG-1555, and related guidance documents.

37. Please highlight major themes from the comments on the Draft Environmental Impact Statement (DEIS), and generally describe the Staff’s responses to those comments.

Staff Response: The staff issued the Fermi 3 DEIS on October 28, 2011, for public comment. The staff held two transcribed public meetings in Monroe, MI on December 15, 2011, to collect comments from interested stakeholders in the vicinity of the proposed project. During the 75 day comment period, the staff received 66 letters and email messages with comments. In addition, 66 attendees at the public meetings provided oral comments.

With respect to comments on topics within the scope of the staff’s environmental review, the bulk of the comments were on the following themes: radiological health, aquatic and terrestrial ecology, surface water hydrology, need for power, benefit – cost balance, socioeconomics, and meteorology and air quality. Where comments provided additional information, the EIS was revised to address the information, to include additional information on consultation and documents completed after the DEIS was published, and to make editorial changes. Multiple comments related to Fukushima and the impending Waste Confidence Rule change were raised and subsequently addressed in Appendix E. Where the information provided in comments was already discussed in the EIS and did not have the potential to change the staff’s conclusion, the staff response indicated the section of the FEIS where the topic had been evaluated and resolved and indicated that no change was made as a result of the comment.

Some comments addressed topics and issues that are not part of the environmental review for this proposed action. These comments included questions about the NRC safety review, general comments in support or in opposition to nuclear power or the licensing action, observations regarding the uranium fuel cycle, and comments on the NRC regulatory process in general. With respect to these comments, the staff generally acknowledged the commenter’s position or explained why the matter raised was not within the scope of the staff’s environmental review.

38. SECY-14-0132 includes a draft Record of Decision. This Record of Decision is more comprehensive than the Records of Decision issued in previous COL proceedings. Please describe the reasons for the Staff’s change in approach on Records of Decision including the relationship between the draft Record of Decision and 10 C.F.R. § 51.102(c).

Staff Response: The draft Record of Decision (ROD) for the Fermi 3 COL reflects the NRC staff’s response to recommendations made in the Office of the Inspector General’s (OIG) audit report OIG-13-A-20, “NRC’s Compliance with 10 CFR Part 51 Relative to Environmental Impact Statements” (ADAMS Accession No. ML13232A192). One of OIG’s recommendations was to

implement agencywide guidance to increase consistency among the RODs prepared by different program offices. This recommendation was based on the OIG's statement that certain agency RODs did not meet all the criteria of 10 CFR 51.102 and 51.103, including RODs prepared for new reactor proceedings in accordance with 10 CFR 51.102(c). Although the NRC staff disagreed with the OIG's conclusion that previous agency RODs were insufficient under NEPA, it agreed with the OIG that the agency could improve consistency in the content of RODs.

The agency's NEPA Executive Steering Committee subsequently began developing draft guidance to implement the OIG recommendations. Consistent with preliminary guidance, the Staff expanded the Fermi 3 COL draft ROD to be a standalone document meeting the criteria of 10 CFR 51.103. In sum, while the RODs issued for the Vogtle and Summer COLs fully satisfied the requirements of 10 CFR Part 51 and NEPA, the changes implemented in response to the OIG recommendations improve cross-office consistency. Each office now issues a standalone concise ROD, enhancing openness and transparency. Moreover, for COL proceedings like Fermi 3, the draft ROD provided to the Commission prior to the mandatory hearing will be updated if necessary to comport with the final decision of the Commission, in accordance with the provisions of 10 CFR 51.102(c), before a notice of availability of the final ROD is published in the *Federal Register*.

39. The Northern Long-Eared Bat is currently a species that has been proposed to be listed as an endangered species by the U.S. Fish and Wildlife Service (USFWS) and it potentially occurs in areas affected by building and operating Fermi Unit 3.

(a) Please provide an update on when the Staff expects the USFWS to make a decision on whether to list this species on the endangered species list. (b) Should the Northern Long-Eared Bat be listed prior to a Commission decision on this application, what process would the Staff use to ensure compliance with the Endangered Species Act? Given the NRC's continuing responsibilities under Section 7 of the Endangered Species Act following the issuance of the combined license, describe any current (or planned) interactions or consultations with the USFWS in anticipation of the probable listing of the Northern Long-Eared Bat as an endangered species. (Final Environmental Impact Statement (FEIS) Chapters 1, 2, and Appendix F).

Staff Response:

(a) The NRC staff expects the USFWS listing of the Northern Long-eared Bat (NLEB) under the Endangered Species Act (ESA) on April 2, 2015.

(b) If the NLEB is listed prior to the issuance of the license for the Fermi 3 COL, then NRC staff will re-initiate the Section 7 consultation process. To expedite the consultation process, NRC staff plans to prepare a biological assessment (BA) that evaluates the potential suitability of habitat at Fermi 3 for foraging and roosting by the NLEB, and the staff will submit the BA to USFWS on the day the NLEB is listed. NRC staff has already discussed the timing of this submission with USFWS staff and confirmed that they agree with this approach. To support the staff's development of the BA, the applicant provided an evaluation of the suitability of habitat on the site for the NLEB.

(c) As noted in the answer to Question 39(b), if the NLEB is listed prior to the issuance of the license for the Fermi 3 COL, the staff plans to prepare a BA that evaluates the potential suitability of habitat at Fermi 3 for foraging and roosting by the NLEB, and the staff will submit the BA to USFWS on the day the NLEB is listed.

40. On December 11, 2014, the USFWS added the rufa red knot to the list of threatened and endangered species. Describe any ongoing activities or plans to reinitiate consultation with the service on this species pursuant to 50 C.F.R. § 402.16.

Staff Response: NRC initiated the Section 7 consultation process with the USFWS on the rufa red knot bird in December 2014. The applicant provided information to the staff to support the development of the BA, which the staff is currently preparing.

41. Given that Fermi Unit 3 is to be co-located with Fermi Unit 2 and Fermi Unit 1, information regarding any outreach to Indian Tribes during any NRC, United States Army Corps of Engineers (USACE), or other Federal agencies' National Historic Preservation Act (NHPA) Section 106 reviews related to these facilities and resulting information provided by Indian Tribes during these consultations would be useful to help the public understand the Indian Tribes' concerns and potential level of interest. Please explain the Staff's efforts to consult with federally-recognized Indian Tribes and to include Indian Tribes in surveys of the Area of Potential Effects, as well as the Staff's efforts to obtain and use information gathered during previous NRC or USACE Section 106 consultations for the Fermi plant to inform the Staff's National Environmental Policy Act of 1969 (NEPA)/NHPA Section 106 analyses. Also, please indicate whether the Staff has guidance on conducting Section 106 consultations, conducting NEPA analyses in lieu of Section 106, or delegating Section 106/NEPA consultation activities to a licensee, and please explain how this guidance was followed by the Staff. (FEIS Chapter 2 and Appendices E and F).

Staff Response: The staff's guidance for performing Section 106 consultation includes NUREG-1555, the Office of Nuclear Reactor Regulation Office Instruction LIC-203, "Procedural Guidance for Preparing Environmental Assessments, and Considering Environmental Issues" (ADAMS Accession No. ML080840323), the staff memorandum entitled: "Supplemental Staff Guidance to NUREG-1555, 'Environmental Standard Review Plan,' for Cultural and Historic Reviews," issued April 7, 2010 (ADAMS Accession No. ML100550730) (later included in the Flanders Memo), and the Flanders Memo. The staff followed this guidance in the environmental review for the Fermi 3 application.

The NRC staff has guidance on coordinating NHPA Section 106 reviews through the NEPA review (see Section 5.2.5 of LIC-203, Rev 2), which was likewise followed during the Fermi review. The NRC staff does not delegate Section 106 consultation activities to license applicants, and therefore does not have guidance on delegating Section 106 consultation activities. However, potential license applicants are encouraged to engage with State Historic Preservation Officer (SHPOs)/Tribal Historic Preservation Officers or Tribes when gathering information needed to develop the environmental reports.

Staff did not look at previous Section 106 consultations, as this is not called for by the guidance listed above, and staff did not become aware of any previous consultation information during the review. Through a review of information gathered from the State of Michigan, the National Park Service, and the applicant, the staff identified 17 Federally-recognized Tribes that have ties to the

area of potential effects. The staff contacted the Tribes, the Advisory Council on Historic Preservation (ACHP), and the Michigan SHPO via letter (e.g. ADAMS Accession No. ML083530050) to inform them that the NRC staff will coordinate its NHPA Section 106 consultation through the NEPA process. As part of this outreach the staff also described the proposed project and area of potential effect; requested information relating to the identification of historic and cultural resources, including properties of traditional or religious importance to Federally-recognized Indian Tribes; and requested assistance with the assessment of effects on those properties and resolution of any adverse effects on historic properties. No comments were received from any Tribe during the scoping process.

After the scoping process, the staff followed up with a second letter (e.g. ADAMS Accession No. ML112660483) to the Tribes, ACHP, and Michigan SHPO forwarding the DEIS, inviting them to the public meetings, and soliciting comments on the draft document. The Delaware Nation of Oklahoma requested to be a consulting party on the project and was the only Tribe that made requests related to the proposed action (ADAMS Accession No. ML12180A621). To facilitate the Delaware Nation's review, by letter dated February 21, 2012, NRC staff forwarded all the requested surveys and reports along with a copy of the signed Memorandum of Agreement between the NRC and the Michigan SHPO regarding the demolition of Fermi 1. In this letter, NRC staff also recounted a telephone conversation with the Delaware Nation Preservation Clerk in which she informed the NRC staff that the Delaware Nation was only interested in archaeological (subsurface) sites (ADAMS Accession No. ML120230343).

The NRC staff was also contacted by the Walpole Island First Nation of Canada through the U.S. Department of State. The Walpole Island First Nation requested information regarding its environmental review of the Fermi 3 COL. While the Walpole Island First Nation is not a Federally-recognized tribe and was therefore not contacted by staff as part of its Section 106 consultation responsibilities, the staff responded by letter (ADAMS Accession No. ML12348A214) to the Canadian Embassy providing information about the Fermi 3 review.

As a cooperating agency on the EIS, the USACE also participated in the Section 106 process by conducting site visits, identifying relevant resources for review, and providing consultation input as necessary regarding impacts and adverse effect resolution and the development of the Memorandum of Agreement to address Fermi 1.

42. Because the NRC and the USACE have different agency missions, describe the regulatory challenges that arose during the joint review of DTE's application and the preparation of the Environmental Impact Statement (EIS).

Staff Response: While the NRC's focus is to ensure the safe use of radioactive materials for civilian purposes while protecting people and the environment, the USACE's focus is on any activities that would affect waters of the U.S. per the requirements of Section 404(b)(1) of the Clean Water Act and the Rivers and Harbors Act. While the two agencies have these distinct jurisdictions, given most potential new reactor sites' proximity to navigational waters and wetlands, most new reactor projects require permits from both agencies. In September 2008, the USACE and the NRC developed a Memorandum of Understanding (ADAMS Accession No. ML082540354) to streamline the respective regulatory processes associated with the authorizations required to construct and operate nuclear power plants. Through this effort, the NRC and USACE identified some consistencies between their processes, but they also identified some differences related to their regulatory authorities. Although these differences did result in some areas that required careful coordination and additional discussion (e.g. the USACE's substantive authority to regulate impacts to wetlands under the Clean Water Act),

none rose to the level that they would be considered a challenge. This coordination and cooperation between the agencies led to development of an FEIS that met both agency needs to the maximum extent possible.

43. Page J-2 of the FEIS states that "the USACE has not verified the adequacy of [DTE's] proposed 'Least Environmentally Damaging Practicable Alternative' (LEPDA) at this time." In the FEIS it is unclear when the USACE will make its determination. When is a decision expected? What would the implications be if the USACE were to determine that the Greenwood Energy Center Site is the LEDPA?

Staff Response: USACE identification of the least environmentally damaging practicable alternative (LEDPA) is the first step in determining compliance with the Clean Water Act Section 404(b)(1) Guidelines. The LEDPA determination is not an NRC finding; it is a determination made by USACE. The USACE had progressed through this step prior to issuance of the FEIS and determined that the LEDPA was located at the Fermi site. At the time the FEIS was issued, the LEDPA could not be finalized because the USACE was still in the process of determining whether the potential aquatic resource impacts would be avoided to the maximum extent practicable and remaining unavoidable impacts would be mitigated to the extent appropriate and practicable. Since USACE has identified the LEDPA at the Fermi site, speculating as to the implications of choosing the Greenwood Energy site as the LEDPA is unnecessary.

44. The NRC's change to the definition of construction and the resulting change to the way construction impacts are addressed in the NRC's NEPA documents is a controversial issue. The FEIS states (page 4-3) that "For most resource areas, the majority of the impacts would occur as a result of preconstruction activities." However, Table 4-23 (page 4-128) seems to indicate that there is no difference between the magnitude of the impacts from construction activities alone compared with construction impacts and preconstruction impacts combined. Please explain the methodology for addressing construction impacts in the FEIS, including the added complexity of having a cooperating agency that treats all construction impacts as direct impacts.

Staff Response: On October 9, 2007, the NRC issued revisions to its rules related to LWAs, "Limited Work Authorizations for Nuclear Power Plants; Final Rule," 72 FR 57416 (Oct. 9, 2007) (LWA Rule). Under the revised LWA Rule, the NRC authorization would be required only before undertaking activities that have a reasonable nexus to radiological health and safety and/or common defense and security. The LWA Rule is codified as 10 CFR 50.10. The definition of "construction" is set forth in 10 CFR 50.10(a)(1), and the list of activities not included in the definition of "construction" is set forth in 10 CFR 50.10(a)(2). These definitions are incorporated into NRC's environmental regulations in 10 CFR 51.4, and 10 CFR 51.45(c) uses the term "preconstruction" to refer to those activities excluded from the definition of "construction."

Guidance related to the definition of "construction" is found in COL/ESP-ISG-4, "Interim Staff Guidance on the Definition of Construction and on Limited Work Authorizations," February 23, 2009) (ADAMS Accession No. ML082970729) (ISG-4). Additional guidance applying the changes made by the LWA Rule to NRC environmental reviews is found in the Flanders Memo. The Flanders Memo was intended to provide additional guidance regarding issues that have evolved since the last update of NUREG-1555 or were identified during reviews of the first few Early Site Permit (ESP) and COL applications, and it was used on an interim basis before ISG-026 was issued. It will be incorporated into the next revision of NUREG-1555.

The guidance in the Flanders Memo states that preconstruction impacts are to be evaluated as cumulative impacts and not as direct impacts resulting from NRC's Federal action. The Flanders Memo also provides guidance for reviews in which the USACE is a cooperating agency under the terms of the Memorandum of Understanding referenced in the answer to Question 42 above. The USACE considers all impacts from construction and preconstruction to be direct impacts resulting from the USACE's federal action. Accordingly, the Flanders Memo directs staff that:

> when the Corps is a cooperating agency, the impacts from preconstruction are initially discussed in detail in EIS Chapter 4 to satisfy the Corps' needs and then are also addressed in the cumulative impacts analysis in Chapter 7 for the NRC's needs. Absent the Corps' involvement as a participating agency the NRC would address the impacts of preconstruction only in Chapter 7.

The Flanders Memo is based on the assumption that the USACE will be a cooperating agency for the majority of NRC new reactor application environmental reviews, and it provides chapter-by-chapter guidance to NRC reviewers based on that assumption.

For the Fermi 3 review, in which the USACE is a cooperating agency, Chapter 4 of the EIS includes a discussion of impacts of both construction activities, as defined in 10 CFR 50.10(a)(1) and 10 CFR 51.4, and preconstruction activities that the USACE considers to result from its federal action. Following guidance in the Flanders Memo, a review team representing both the USACE and the NRC first determines the overall impact level of combined construction and preconstruction activities. In the event that the combined impact level is determined to be SMALL, according to the impact level definitions described in the EIS (FEIS at 1-4), "no further breakdown of impacts between construction and preconstruction is needed and the NRC staff will conclude the impact from NRC authorized construction activities is SMALL." However, in the event that the combined impact of construction and preconstruction activities is MODERATE or LARGE, "a statement concluding the impact level for the NRC authorized construction activities and the basis for the staff's conclusion must be presented."

The NRC's subject matter experts used the approach set forth in the Flanders Memo, along with factual reference materials and their expert judgment, to determine environmental impacts from NRC-licensed construction activities in Chapter 4 of the FEIS.

If the USACE had not been a cooperating agency, preconstruction activities such as site clearing, grading, and excavation would have been considered only as cumulative impacts in Chapter 7 of the EIS and would not have been addressed in Chapter 4. In such a case, Chapter 4 would only address only NRC-authorized construction. The added complexity in preparing the EIS is a result of each agency having a different regulatory approach to treatment of preconstruction/construction activities. In some instances, the USACE had to develop separate language for the EIS to address the USACE's differing definition of what constitutes construction. However, even without the USACE as a cooperating agency, the NRC would still explain in the EIS why activities such as site preparation are defined as preconstruction and are treated as cumulative impacts.

45. Please explain the methodology for determining which activities to include/exclude as construction activities and the decision not to provide explicit information within the discussion of impacts for each resource area to help the public understand which activities in particular are included in the definition of construction and which are not included.

Staff Response: As described in the answer to Question 44, the definition of "construction" and the list of activities excluded from that definition (referred to as "preconstruction" in the EIS) are found in NRC regulations at 10 CFR 50.10 and 10 CFR 51.4. In addition, the staff relied on guidance in ISG-4, and the Flanders Memo described in the answer to Question 44. The ISG provides guidance regarding the definition of construction including the delineation of preconstruction activities and the identification of those construction activities requiring prior NRC approval. The Fermi EIS describes the construction/preconstruction distinction in Chapter 1 (FEIS at 1-6 to 1-7) and again at the beginning of Chapter 4 (FEIS at 4-2 to 4-3). Since this discussion is relevant to most resource areas, the staff decided to place it in the introductory material rather than repeating it for each resource area in Chapter 4.

46. Please describe how public feedback affected or informed the Staff's approach to addressing construction impacts and how construction impacts would have been addressed if the USACE were not a cooperating agency. (FEIS Chapters 1, 3, and 4)

Staff Response: As described in the answers to Questions 44 and 45, the staff's approach to addressing construction impacts follows NRC regulations and staff guidance applicable to all COL environmental reviews. To the extent that public comments challenged the LWA Rule and its definition of construction, they did not affect the staff's review because the staff is required to follow NRC regulations.

There were scoping comments and comments on the DEIS that NRC's treatment of preconstruction and construction activities violated NEPA. These comments were similar to those raised when the LWA Rule was promulgated in 2007. Since these public comments were a challenge to an NRC rule, which the staff is required to follow, they did not affect the staff's approach to addressing construction impacts.

As described in the answer to Question 44 above, if the USACE was not a cooperating agency, then only the NRC-authorized construction impacts would be discussed in Chapter 4 and preconstruction impacts would be discussed in Chapter 7.

47. Please explain the usefulness of separating preconstruction and construction impacts in the FEIS given that Table 4-23 (page 4-128) seems to indicate that there is no difference between the magnitude of the impacts from construction activities alone compared with the magnitude of those from construction activities and preconstruction activities combined.

Staff Response: As discussed in the answer to Question 44 above, staff guidance in the Flanders Memo describes the process for evaluating impacts from combined construction and preconstruction activities when the USACE is a cooperating agency, as well as for breaking out the impacts of NRC-licensed construction activities when necessary. Guidance directs staff that impacts attributable to NRC-licensed construction activities do not need to be broken out separately when the combined impact level for preconstruction and construction is SMALL. The impact levels of SMALL, MODERATE, and LARGE represent ranges rather than single values, and it is possible for preconstruction to account for the majority of an impact even when the combined impact is SMALL.

Most of the combined impact levels identified in Chapter 4 of the Fermi EIS are SMALL, and a specific discussion of the portion related to NRC-licensed activities is therefore not needed. Impacts greater than SMALL are either beneficial, for example increased tax receipts, or are

impacts whose impact levels would not change regardless of whether an activity is NRC-licensed. Examples of the latter include vehicle traffic, impacts to the eastern fox snake (including impacts due to vehicle traffic), and demolition of the Fermi 1 outer structure following decommissioning. In the Fermi EIS, there are no resource areas that show different impact levels for combined construction and preconstruction activities as opposed to NRC-licensed construction activities alone. Such differences may occur in the environmental reviews of other COL applications, however, and any such difference would be identified in a table such as Table 4-23.

48. Describe when the NRC will perform a Clean Air Act (CAA) section 176 air conformity applicability analysis pursuant to 40 C.F.R. Part 93, Subpart B and what, if any, actions the analysis may result in. (FEIS page 4-104)

Staff Response: The NRC's CAA Section 176 Air Conformity Applicability Analysis was completed in February 2013 and made publicly available in March 2013 (ADAMS Accession No. ML12291A554). The Air Conformity Applicability Analysis found that the projected emissions for the pollutants of concern resulting from construction and operation of Fermi 3 would be below *de minimis* emission levels specified in 40 CFR 93.153(b). This means that no other actions are required on the part of the NRC pursuant to 40 CFR Part 93, Subpart B and additional mitigation measures are not warranted. The conclusion of the CAA analysis had no impact on the conclusions in the FEIS.

49. The Staff concludes that the "risks associated with severe accidents if an ESBWR were to be located at the Fermi site would be small when compared with the risks associated with operation of the current generation reactors at other site." In other EISs, how has the Staff characterized the environmental impacts of severe accident risk at those sites, e.g. license renewal EISs? (FEIS page 5-140)

Staff Response: The Fermi EIS discussion of severe accident risk is consistent with the approach used in other COL EISs and follows the analysis process described in NUREG-1555. The environmental review of severe accidents is also informed by the review of the DCD environmental report and the COL probabilistic risk assessment (PRA) safety review that follows the guidance of NUREG-0800 Chapter 19, "Probabilistic Risk Assessment and Severe Accident Evaluation for New Reactors."

As discussed in the Fermi COL FEIS, the characterization of the environmental impacts of severe accident risks for current generation reactors is provided in the 1996 version of NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants." These results are codified in 10 CFR 51, Appendix B, Table B-1 "Summary of Findings on NEPA Issues for License Renewal of Nuclear Power Plants." The assessment of postulated accidents, including severe accidents, is provided in Chapter 5 of the 1996 NUREG-1437, and Table B-1 provides an environmental impact finding of SMALL. Since the publication of the Fermi COL FEIS, the staff published a revised version of NUREG-1437, in June of 2013 where new information for severe accidents, since the 1996 NUREG-1437 was assessed and the staff found that "the findings in the 1996 NUREG-1437 remain valid." For the Fermi COL, the severe accident risks of the ESBWR design at the Fermi site are compared to the current generation reactor risks as documented in NUREG-1437 and NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants," which form the basis of the current reactor risk values in Tables 5-35 and 5-34, respectively, of the Fermi COL FEIS. These values demonstrate that the environmental risks of a severe accident for the ESBWR at the Fermi site are lower than for comparable current generation reactors.

50. Please explain the Staff's decision not to address the cumulative impacts of Fermi Unit 3 operation with concurrent decommissioning of Fermi Unit 2 in the FEIS.

Staff Response: In Chapter 7 of the FEIS, Table 7-1 lists all of the past, present and reasonably foreseeable future projects considered in the cumulative impacts analysis. Fermi 2 is currently operational, with a license that expires in 2025. In 2011, DTE had provided a notice of intent to submit a license renewal application for Fermi 2 in 2014 and did so on April 30, 2014. The staff is unaware of DTE's timeframe and plans for decommissioning Fermi 2. In contrast, the continued operation of Fermi 2 and the decommissioning of Fermi 1 do appear in Table 7-1 because the staff was aware of specific plans for these actions. Pages 7-2 to 7-3 of the FEIS discuss the method staff used to identify projects in the area, including reasonably foreseeable future projects. The staff used this method to avoid speculating on what future projects could possibly occur, including, for example, a second license renewal or decommissioning prior to license expiration.

Given the degree of uncertainty about the likelihood or timing of potential future licensing actions such as a second license renewal or decommissioning prior to license expiration, as well as the associated uncertainties about DTE's plans for decommissioning Fermi 2, the staff determined that discussion of cumulative impacts from decommissioning would necessitate undue speculation and would not meaningfully inform the NEPA analysis. In any event, for reasons explained in NUREG-0586, "Environmental Impact Statement on Decommissioning of Nuclear Facilities," impacts from decommissioning activities are generally SMALL and would not be expected to result in significant cumulative impacts.

51. Why did the Staff compare the cumulative impacts of the alternatives with the cumulative impacts of Fermi Unit 3, as opposed to the direct impacts, as was done with Vogtle and most license renewals? Would a comparison of the direct impacts have resulted in a different balancing result?

Staff Response: Subsequent to the promulgation of the LWA Rule, which directed that preconstruction impacts be addressed as cumulative impacts, the staff updated its guidance for the alternative sites analysis to include consideration of cumulative impacts. The staff's guidance on comparing the proposed and alternative sites, as provided in an April 26, 2010, memorandum, entitled "Supplemental Staff Guidance to NUREG 1555 'Environmental Standard Review Plan'," (ESRP) for Alternatives Review" (ADAMS Accession No. ML100840031) (later included in the Flanders Memo), states:

> In order for the staff to perform its evaluation, and conduct a reasonable comparison of sites, the staff has determined that it will perform a cumulative impacts analysis for each of the resource areas at each alternative site in the comparison process. This will put the analysis of the alternative sites in Chapter 9 on an equal footing with the analysis of the cumulative impacts at the proposed site in Chapter 7. A key difference is that the analysis of the alternative sites will be performed at a reconnaissance level, as is already discussed in ESRP Section 9.3.

The staff's approach is also consistent with a June 24, 2005, Council on Environmental Quality (CEQ) Memorandum entitled "Guidance on the Consideration of Past Actions in Cumulative Effects Analysis" (ADAMS Accession No. ML12088A268). Throughout the memorandum, CEQ discusses the cumulative effects analysis in the context of both the proposed action and its alternatives.

This is the approach used for Fermi 3 and is consistent with the approach used during the review of the Summer COL application. The approach described above differs somewhat from the Vogtle environmental review because the DEIS for the Vogtle ESP was developed prior to promulgation of the LWA Rule. For license renewal actions, the NRC considers cumulative impacts for the existing plant site, as is done for review of proposed new reactor sites; however, no alternative sites are assessed in license renewal reviews, as the reactor is already constructed at the existing site.

While speculative in the absence of a detailed analysis, the staff would not expect the alternatives analysis to provide a significantly different result for Fermi 3 if the cumulative impacts were not considered. In this particular case the differences in the cumulative impacts between the sites were all driven by the impacts of the project if it was built at those sites. In other words, the differences were not driven by past, present and reasonably foreseeable impacts of other activities in the area that were affecting the same resources.

52. Clarify what role energy diversity and price stability played in the Staff's final, qualitative balancing of the costs and benefits of Fermi Unit 3.

Staff Response: The primary benefit of a nuclear power generating facility is the power itself, as described in SECY-02-0175, "Denial of Petition for Rulemaking to Eliminate Review of Alternative Sites, Alternative Energy Sources and Need for Power Reactor Siting and Licensing Reviews (PRM-52-2)." Chapter 8 of the FEIS demonstrates the need for power in the region of interest and thereby establishes the primary benefit of the proposed project. Energy diversity and price stability are among the secondary benefits identified by the staff, and they were considered qualitatively in the analysis. While these benefits are important, they are of lesser importance compared to the need for power in that without the need for power, these secondary benefits would not exist. NUREG-1555 says that the level of detail employed for each of the benefit categories should be established "according to the anticipated magnitude of the potential impacts" of each benefit (10.4.1). Consequently, the staff, in its benefit assessment, weighed all of the costs of the proposed action against all of the benefits—including these secondary benefits—and determined that the benefits of the proposed project outweighed its costs.

53. The Summary of Benefits and Costs in section 10.6.3 of the FEIS states that Fermi Unit 3 would help meet increasing baseload demand in the region by supplying annual electricity generation of about 12,000,000 megawatt-hours (MWh). If this baseload need were to be supplanted by a proliferation of new gas generating facilities, would the Staff's benefit-cost conclusions still be supported?

Staff Response: The overriding benefit in the staff's benefit-cost assessment is the need for the power. As long as there is a positive need for power determination, the introduction of new generating facilities would not change the staff's benefit-cost conclusions. Staff performed a need for power assessment for the proposed Fermi 3 facility by following its guidance found in NUREG-1555, Section 8.4, "Assessment of Need for Power." The staff relied upon the Base Case Scenario from the 2007 Michigan Public Services Commission (MPSC) Plan, which staff determined was reliable under the acceptability criteria in NUREG-1555. The staff independently confirmed the conclusions of the MPSC Plan that the DTE service area would need about three-and-one-half times the capacity of the proposed Fermi 3 and that the need for baseload supply would become a critical issue by 2015 to "preserve adequate reserve margins" (FEIS at 8-25).

The staff also considered the environmental impacts of energy alternatives capable of producing baseload power, including natural gas-fired generation, as part of its alternatives analysis in Chapter 9 of the FEIS. The staff concluded that, from the perspective of environmental impacts, none of the viable energy alternatives was clearly preferable to building a new baseload nuclear power plant at the Fermi site.

To consider the hypothetical scenario posed in this question, staff would need to revisit the Fermi 3 need for power assessment, which would require the applicant to develop a series of assumptions extending out to 2065 on issues such as:

- future natural gas prices, distribution infrastructure and availability;
- which natural gas generating technologies would be used and how often the hypothetical units would need to be replaced;
- whether new gas plants would result in the retirement of older coal units or serve solely as new capacity; and
- the impact of air pollution and greenhouse gas emissions and regulations on the hypothetical units' availability and operation.

Predicting the outcome of a hypothetical need for power analysis based on a proliferation of new gas units would be difficult given these and other factors that affect the analysis. If the staff were to perform such an analysis, however, it would follow guidance in NUREG-1555 and ISG-026.

54. The FEIS was published before the Commission issued its revised continued storage rule. To account for the impacts of continued storage, the Staff considered whether the impacts in NUREG-2157 were significant enough to warrant the publication of a supplement to the FEIS. The Staff concluded that the information in NUREG-2157 does 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 for Fermi Unit 3.

(a) Given that by rule, NUREG-2157 was deemed incorporated into the Fermi FEIS (i.e., in effect supplementing the FEIS, see CLI-12-5), why was the focus of the Staff's analysis whether NUREG-2157 or the revised rule were new and significant information? Please provide more detail on the Staff's conclusion that the revised continued storage rule and NUREG-2157 do not alter the Staff's recommendation that the COL be issued.

Staff Response: While by rule the impacts described in NUREG-2157, "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel," are deemed incorporated into a COL EIS, and are thus not re-considered in individual proceedings, neither the rule nor NUREG-2157 specifies how those impacts might affect the staff's evaluation and recommendation for a specific project when considered together with the other impacts of the project (i.e., other than those from continued storage). For an FEIS that was published before the rule and NUREG-2157 became final, the staff must consider whether this information might change the outcome of its evaluations in the FEIS. Such a consideration is required by 10 CFR 51.92(a). The Office of New Reactors (NRO) staff recently developed guidance regarding reviews of new information entitled "Staff Process for Determining if a Supplement to an Environmental Impact Statement is Required in Accordance with Title 10 of the *Code of Federal Regulations,* Part 51.92(a) or 51.72(a)" (ADAMS Accession No. ML13199A170) (New and

Significant Process) and applied this guidance in its consideration of the new information associated with the Continued Storage Rule and NUREG-2157 for the Fermi 3 FEIS.

In its November 20, 2014, analysis (ADAMS Accession No. ML14318A477) of this new information for the Fermi 3 COL, the staff considered whether the new information regarding the impacts of continued storage described in NUREG-2157 warranted a supplement to the Fermi 3 FEIS. Continued storage impacts are one aspect of fuel cycle impacts. Considering the analysis in NUREG-2157, the staff concluded that the impacts of continued storage for Fermi 3 are expected to be SMALL. While some impacts that are greater than SMALL are possible, as discussed in NUREG-2157, there are significant uncertainties associated with such impacts. Overall, the staff concluded that the information provided by NUREG-2157 did not present a seriously different picture of the impacts of the proposed action. Based on this conclusion, the staff determined that a supplement to the Fermi 3 FEIS was not required. Putting it another way, the staff concluded that the description of the impacts of the proposed action in the Fermi 3 FEIS were not changed in a meaningful way by the new information. As a result, the new information did not change the staff's recommendation that the COL be issued.

(b) Please explain how, if at all, the Staff's balancing and/or cost-benefit analysis and the comparison among alternatives under 10 C.F.R. § 51.107(a)(ii)-(iii) was impacted by the incorporation of the impacts of continued storage.

Staff Response: In its November 20, 2014, analysis of this new information for the Fermi 3 COL, the staff concluded that the new information in NUREG-2157 "does not present a seriously different picture of the environmental impacts compared to the staff's analysis of the impacts from issuance of the Fermi 3 COL attributable to radiological wastes from the fuel cycle (which includes the impacts associated with spent fuel storage)." Since the new information did not change in a meaningful way the staff's conclusions regarding fuel cycle impacts for the project, there was no need to modify or reconsider the staff's previous evaluation of alternatives or the cost-benefit balancing that had been performed in the Fermi 3 FEIS. There were no changes needed to these FEIS analyses based on the staff's November 20, 2014, analysis.

(c) The Staff's analysis accounting for the impacts of continued storage is in an internal note to file. Why did the Staff choose to do a note to file instead of in the Record of Decision, as the Staff did in the *Limerick* license renewal proceeding? Will the Staff's note to file be widely-distributed to inform the public and enhance transparency? Does the Record of Decision reflect a consideration of the impacts of continued storage? How could the Record of Decision be modified to account for the impacts of continued storage?

Staff Response: The staff prepared a memorandum to document its analysis, conducted pursuant to 10 CFR 51.92(a), that the new Continued Storage Rule and NUREG-2157 did not necessitate a supplement to the FEIS. This approach, and the conclusion that no supplement was necessary, is consistent with the NRO staff New and Significant Process. This memorandum is publicly available to ensure transparency regarding the staff's rationale; furthermore, the staff has identified the analysis of these continued storage impacts as a novel or non-routine issue that will be presented by the staff in the Fermi 3 COL mandatory hearing, which will provide additional transparency. (For future new reactor applications or pending applications for which an FEIS has not been issued, such a memorandum will not be necessary because the staff can simply describe in the EIS the environmental significance of incorporating the impacts from the continued storage GEIS.) The staff considers these steps to be consistent with NEPA and the NRC's principles of disclosure, openness, and transparency.

In this proceeding, the staff's memorandum includes its consideration of the significance of incorporating the continued storage impacts for Fermi 3 and its conclusion that the fuel cycle impacts previously analyzed in the FEIS for the Fermi 3 project are not materially changed. Since the staff concluded that continued storage impacts were not significant in the context of fuel cycle impacts for the Fermi 3 COL, the staff concluded that they likewise do not affect the consideration of alternatives in the FEIS. Thus, there is no need to modify the Fermi 3 ROD to explicitly discuss continued storage impacts because they were indeed considered during the development of the ROD, but they did not alter the decision or the alternatives considered. In sum, the ROD already implicitly takes those impacts into account.

55. Describe the Staff's process for considering new and significant information with respect to the Fermi Unit 3 FEIS.

Staff Response: The NRO staff's New and Significant Process applies after the FEIS for a COL application is issued until the issuance of the license. This process explains how environmental project managers and environmental technical staff supporting new reactor licensing projects identify potentially significant new information after the DEIS or FEIS is issued, determine its significance, and consider whether this information requires supplementation of the DEIS or FEIS in accordance with 10 CFR 51.72(a) or 10 CFR 51.92(a).

The three phases of this process are: (1) identify new information, (2) evaluate and document the new information to determine if it is significant, and (3) determine whether supplementation is required.

In the first phase, the staff identifies information in several ways including but not limited to: (1) sending a letter to the applicant requesting that they copy the environmental project manager on letters being sent to other agencies and to make the environmental project manager aware of new information;(2) review application updates to determine if the FEIS is impacted; and (3) keeping up with changes in regulation and policy in areas of expertise that could affect the FEIS.

The second phase of the process is implemented if the new information could affect the previously determined environmental impact or if the new information was not previously analyzed and is viewed as having potential environmental impact. When new information is identified, analysis is performed to determine if the information is significant. New information is significant when it presents a "seriously different picture of the environmental impact" of the Federal action or reveals previously unanalyzed impacts. The result of analysis for all new information identified is tracked in a table and the analyses memos (for potentially significant new information) are saved in ADAMS.

In the third phase, once the analysis is complete, the results are presented to management and a determination is made as to whether the EIS should be supplemented. 10 CFR 51.92 requires that the EIS be supplemented if there are substantial changes in the proposed action that are relevant to environmental concerns or if there are new and significant circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. The NRC also has discretion to supplement when the staff determines preparation of a supplement will further the purposes of NEPA. As noted in response to Questions 54 and 57, after following the New and Significant Process, the staff determined that it had not identified new information that warranted a supplement to the Fermi COL FEIS.

56. The Staff notes that it has a generic process to address circumstances in which there is an extended delay between the issuance of the FEIS for a particular license application review and the start of that proceeding's mandatory hearing phase. What is considered an extended delay? If there is no extended delay, what process is used to address any new and significant information?

Staff Response: 10 CFR 51.92 requires that a supplement to the EIS be developed if the action has not been taken and there are substantial changes in the proposed action that are relevant to environmental concerns or if there are new and significant circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. If the NRC becomes aware of new information, it is obligated to consider the significance of that information and determine if a supplement is required. An extended delay would increases the likelihood of new and significant information emerging. The staff process defines extended delay as greater than a year from when the FEIS was issued to when the license would be issued. Since both the FEIS and the FSER are required to be complete before the agency action can be taken, this estimate for the delay is based on the projected schedule to complete the safety portion of the review – i.e., from when the FEIS is published to the projected completion of the safety review.

The process is implemented whether or not there is an extended delay. If an extended delay is not expected, the assigned environmental project manager and the environmental subject matter experts are responsible for ensuring new information and changes are addressed. To meet this expectation, the environmental project manager maintains contact with other agencies and the applicant to keep aware of changes. Environmental subject matter experts keep abreast with their areas of responsibility with regard to changes in policy and regulation and make the environmental project manager aware of changes that could affect the project.

If staff predicts an extended delay, they work with management to define a frequency for having staff formally look to see if there is new information for the project. On that set frequency, the environmental project manager would work with subject matter experts who worked on the project to identify whether new information is available.

57. Has the Staff prepared any documents addressing new and significant information for Fermi Unit 3 beyond the note to file providing the consideration of the impacts of continued storage referenced in SECY-14-0132?

Staff Response: For Fermi 3, only one other document was prepared addressing new and significant information. That document was an internal memorandum prepared in accordance with the New and Significant Process guidance to inform the decision maker on staff's readiness to proceed with the Fermi 3 mandatory hearing. It documented that there had only been one such analysis as of that date, and it concluded based on that analysis that no supplement to the Fermi COL FEIS was warranted.

58. Section 2.1 of Appendix B of the License, the Environmental Protection Plan (EPP), requires the licensee to "inform the NRC of events or situations concerning aquatic resources pursuant to 10 C.F.R. § 50.72(b)(2)(xi), and this EPP does not expand any reporting requirement by that regulation." Section 2.2 imposes a similar condition with respect to terrestrial resources. Explain how 10 C.F.R. § 50.72(b)(2)(xi) currently requires licensees to report on "events or situations concerning aquatic resources." Specifically, to which other government agencies must licensees report such events?

Staff Response: 10 CFR Part 50.72(b)(2)(xi) requires a 4-hour report to the NRC by holders of each nuclear power reactor license of any event or situation related to the protection of the environment for which a news release is planned or a notification is made or will be made to other government agencies. The intent of this requirement is to keep the NRC staff informed of events and situations occurring at NRC licensed facilities. "Other government agencies" are not identified in the rule and neither is the type of agency. More detailed guidance is provided in NUREG-1022, Revision 3, "Event Report Guidelines 10 CFR 50.72(b)(3)(xiii)."

Examples of events or situations involving aquatic resources that have been reported include the following: a "take" of a protected species, which is reported to either the USFWS or National Marine Fisheries Service depending on jurisdiction; a fish kill, which would be reported to the state resource agency, typically fish and game or the department of natural resources; or a noncompliance with the station's National Pollutant Discharge Elimination System (NPDES) permit, which would be reported to either the state or the U.S. Environmental Protection Agency (EPA) depending on whether the authority for the NPDES program has been delegated by EPA to the state. It is important to note that 10 CFR Part 50.72(b)(2)(xi) does not require licensees to notify state and Federal agencies of any events or situation related to the protection of the environment. Notifications by the licensee to state and Federal agencies of environmental events is initiated or prompted by the requirements of the environmental permits or regulations issued by those agencies.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of	)	
	)	
	)	
DETROIT EDISON CO.	)	Docket No. 52-033
	)	
	)	
(Fermi Nuclear Power Plant, Unit 3)	)	

CERTIFICATE OF SERVICE

I hereby certify that the document entitled NRC STAFF RESPONSES TO COMMISSION'S PRE-HEARING QUESTIONS, dated January 14, 2015, has been filed through the E-Filing system this 14th day of January, 2015.

/Signed (electronically) by/
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Dated at Rockville, Maryland
This 14th day of January, 2015