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~~Proprietary Information Withhold Under 10 CFR 2.390~~

10 CFR 54

July 6, 2015
NRC-15-0066

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington D C 20555-0001

- References:
- 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43
 - 2) DTE Electric Company Letter to NRC, "Fermi 2 License Renewal Application," NRC-14-0028, dated April 24, 2014 (ML14121A554)
 - 3) NRC Letter, "Requests for Additional Information for the Review of the Fermi 2 License Renewal Application – Set 33 (TAC No. MF4222)," dated May 20, 2015 (ML15139A461)

Subject: Response to NRC Request for Additional Information
for the Review of the Fermi 2 License Renewal Application – Set 33

In Reference 2, DTE Electric Company (DTE) submitted the License Renewal Application (LRA) for Fermi 2. In Reference 3, NRC staff requested additional information regarding the Fermi 2 LRA. Enclosure 1 to this letter provides the DTE response to the request for additional information (RAI).

Enclosure 1 contains proprietary information as defined by 10 CFR 2.390. General Electric – Hitachi (GEH) and Electric Power Research Institute (EPRI), as the owners of the proprietary information, have executed the affidavits in Enclosures 3 and 4, respectively, which identify that the enclosed proprietary information has been handled and classified as proprietary, is customarily held in confidence, and has been withheld from public disclosure. The proprietary information was provided to DTE by transmittals between DTE, GEH, and EPRI that are referenced by the affidavits.

~~Enclosure 1 contains Proprietary Information – Withhold Under 10 CFR 2.390.~~
~~When separated from Enclosure 1, this document is decontrolled.~~

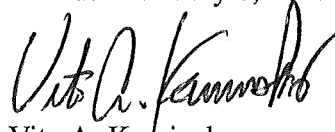
The proprietary information has been faithfully reproduced in the enclosed documentation such that the affidavits remain applicable. GEH herein requests as set forth in the enclosed affidavit of Lisa K. Schichlein (Enclosure 3) that the enclosed proprietary information be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390. Similarly, EPRI herein requests as set forth in the enclosed affidavit of Neil Wilmshurst (Enclosure 4) that the enclosed proprietary information be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390. A non-proprietary version of the RAI response in Enclosure 1 is provided in Enclosure 2.

No new commitments are being made in this submittal.

Should you have any questions or require additional information, please contact Lynne Goodman at 734-586-1205.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on July 6, 2015



Vito A. Kaminskas
Site Vice President
Nuclear Generation

- Enclosures:
- 1) DTE Response to NRC Request for Additional Information for the Review of the Fermi 2 License Renewal Application – Set 33 – PROPRIETARY
 - 2) DTE Response to NRC Request for Additional Information for the Review of the Fermi 2 License Renewal Application – Set 33 – NON-PROPRIETARY
 - 3) GE-Hitachi Nuclear Energy Americas LLC Affidavit
 - 4) EPRI Affidavit

cc w/ all Enclosures:

NRC Project Manager
NRC License Renewal Project Manager
NRC Resident Office
Reactor Projects Chief, Branch 5, Region III
Regional Administrator, Region III

cc w/o Enclosure 1:

Michigan Public Service Commission,
Regulated Energy Division (kindschl@michigan.gov)

**Enclosure 2 to
NRC-15-0066**

**Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43**

**DTE Response to NRC Request for Additional Information for the
Review of the Fermi 2 License Renewal Application – Set 33
– NON-PROPRIETARY**

Set 33 RAI 4.1-4a

Background

The response to Request for Additional Information (RAI) 4.1-4, dated February 5, 2015, states that the standby liquid control (SLC)/core ΔP lines internal to the reactor pressure vessel (RPV) do not perform a license renewal intended function. A proprietary response to RAI 4.1 4, Part 2, which requested a clarification on whether the current licensing basis included any analyses for the internal portions of the SLC system that would need to be identified as time-limited aging analyses (TLAAs), was also provided.

Updated Final Safety Analysis Report (UFSAR) Section 4.5.1.2.11 indicates that the internal portions of the SLC/core ΔP piping consists of two concentric pipes that enter into the RPV lower plenum area and that the inner piping serves the following objectives: (a) facilitates good mixing and dispersion of the sodium pentaborate in the SLC system, and (b) reduces thermal shock to the RPV nozzle should the SLC system be actuated. UFSAR Section 4.5.2.4.1 states that the SLC system supports a number of design bases, including the design basis that the “neutron absorber shall be dispersed with the reactor core in sufficient quantity to provide a reasonable margin for leakage or imperfect mixing.”

Issue

Based on information provided in UFSAR Sections 4.5.1.2.11 and 4.5.2.4.1, the staff has concluded that internal portions of the SLC line (i.e., the portions of the line inside of the reactor pressure vessel) need to be included within the scope of license renewal in accordance with either: (a) Title 10 of the Code of Federal Regulations (10 CFR) 54.4(a)(2), where its failure could potentially impact the ability of the SLC/core ΔP nozzle to achieve its reactor coolant pressure boundary function, or (b) 10 CFR 54.4(a)(3) for mitigating the consequences of anticipated transients without scram (ATWS) events.

Request

- a. Justify why the structural integrity of the internal portions of the SLC/core ΔP line has not been identified as an intended function for the LRA and why the internal portions of the SLC/core ΔP line have not been identified as being within the scope of license renewal in accordance with 10 CFR 54.4(a)(2). In addition, justify why the internal portions of the SLC/core ΔP line would not need to be within the scope of license renewal in accordance with the requirement in 10 CFR 54.4(a)(3).*
- b. If it is determined that the internal portions of the SLC/core ΔP line do serve license renewal intended functions, justify why the application would not need to be amended to include the internal portions of the SLC line as a component that needs to be within the scope of license renewal in accordance with the requirements in 10 CFR 54.4(a)(2) or 10 CFR 54.4(a)(3) for regulated ATWS events.*

- c. *State the applicable aging effects requiring management that apply to the components and state (with justification) how these aging effects will be managed during the period of extended operation. Otherwise, justify why the applicable aging effects do not need to be age-managed if condition monitoring activities (i.e., inspections) will not be performed on the internal portions of the SLC during the period of extended operation.*

Response:

- a. The scope of license renewal is defined in 10 CFR 54.4(a). The Fermi 2 scoping methodology is described in LRA Section 2.1.1 which states that scoping is performed at a system level, consistent with NEI 95-10. The standby liquid control (SLC) system is in scope for license renewal as indicated in LRA Table 2.2-1. LRA Section 2.3.3.2 also indicates that the SLC system is in scope and has intended functions per 10 CFR 54.4(a). Although the scoping is performed at a system level, screening is performed at a component level. The Fermi 2 screening methodology is described in LRA Section 2.1.2. As defined in 10 CFR 54.21(a)(1), components subject to an aging management review are those that (i) perform an intended function per 10 CFR 54.4(a) without moving parts or without a change in configuration or properties, and (ii) are not subject to replacement based on a qualified life or specified time period. The SLC/core ΔP line internal to the vessel is not subject to replacement based on a qualified life or specified time period and therefore meets the second criterion in 10 CFR 54.21(a)(1). However, the SLC/core ΔP line internal to the vessel does not perform an intended function per 10 CFR 54.4(a) and therefore does not meet the first criterion in 10 CFR 54.21(a)(1). Justification for why the SLC/core ΔP line internal to the vessel does not perform an intended function is provided below. So although the SLC system is in scope, the SLC/core ΔP line internal to the vessel is not subject to aging management review since it does not meet the criteria in 10 CFR 54.21(a)(1). This is consistent with what is stated in LRA Section 2.3.1.1.2 under the "Differential Pressure (ΔP) and Standby Liquid Control (SLC) Line" subsection. For this reason, the SLC/core ΔP line internal to the vessel performs no license renewal intended function and is not subject to aging management review.

Applicability of Intended Function per 10 CFR 54.4(a)(2)

As indicated in this RAI, the NRC staff concluded that the SLC/core ΔP line internal to the vessel performs an intended function per 10 CFR 54.4(a)(2) based on statements in the Fermi 2 UFSAR Section 4.5.1.2.11. However, DTE has evaluated the SLC/core ΔP line internal to the vessel and determined that it does not perform an intended function per 10 CFR 54.4(a)(2). The original fatigue analysis for Fermi 2, with respect to the core ΔP nozzle, stated that "the structure considered in the analysis includes the nozzle-vessel intersection region and the nozzle outboard of the intersection region." An updated fatigue analysis in support of power uprate also addressed fatigue at the core ΔP nozzle. The current fatigue analysis is calculation DC-6222 Rev. A. A review of the calculations has confirmed that the two-concentric-pipe configuration is credited as providing a fatigue benefit to the core ΔP nozzle. However, the analysis stops at the nozzle and does not include the piping

inside the reactor pressure vessel (RPV). No credit is taken for the piping inside the RPV as providing thermal shock protection for the RPV or penetration. The statement in UFSAR Section 4.5.1.2.11 that the two-concentric pipe configuration reduces thermal shock to the core ΔP nozzle is correct as a general statement. The calculations confirm that the UFSAR statement is applicable to the piping connecting to the core ΔP nozzle but not applicable to the piping inside the RPV. In addition, there is another fatigue calculation for SLC piping inside the primary containment which states that it addresses "the analysis of the SLCS piping system from the reactor nozzle to the drywell penetration including the 1-in. instrumentation and control line terminating at two anchor locations within the primary containment building." None of the calculations address the SLC/core ΔP line internal to the vessel. Therefore, the SLC/core ΔP line internal to the vessel does not perform an intended function per 10 CFR 54.4(a)(2). LRA Section 2.3.1.1.2, under the "Differential Pressure (ΔP) and Standby Liquid Control (SLC) Line" subsection, contains a statement similar to the UFSAR statement but will be revised for clarity as indicated in the "LRA Revisions" section of this response.

Applicability of Intended Function per 10 CFR 54.4(a)(3)

As indicated in this RAI, the NRC staff concluded that the SLC/core ΔP line internal to the vessel performs an intended function per 10 CFR 54.4(a)(3) (i.e. to facilitate boron mixing to shut down the core during an ATWS) based on statements in the Fermi 2 UFSAR Sections 4.5.1.2.11 and 4.5.2.4.1. However, DTE has evaluated the SLC/core ΔP line internal to the vessel and determined that it does not perform an intended function per 10 CFR 54.4(a)(3). This conclusion is supported by the Fermi 2 UFSAR, the Fermi 2 SLC design basis document, NUREG-1801, and multiple BWRVIP documents that are approved by the NRC and applicable to Fermi 2.

UFSAR Section 4.5.2.4.1 states that one design basis of the SLC system is that the neutron absorber shall be dispersed with the reactor core in sufficient quantity to provide a reasonable margin for leakage or imperfect mixing.

UFSAR Section 4.5.2.4.3 states that Fermi 2 meets the requirements of 10 CFR 50.62 by increasing the enrichment of boron-10 to a minimum of 65 atom percent. It also states that the specified minimum average concentration of natural boron is increased by 25% to allow for imperfect mixing and leakage. In addition, it further states that power cyclic oscillations from uneven mixing of boron in the core is not a concern because of the steady boron concentration buildup observed in mixing tests, as documented in NEDC-30921.

UFSAR Section 4.5.2.4.4 describes the inspection and testing of the SLC system but does not discuss the need for any inspection or testing of the SLC/core ΔP line internal to the vessel.

Although UFSAR Section 4.5.1.2.11 indicates that the location of the SLC/core ΔP line internal to the vessel inner pipe *facilitates* good mixing and dispersion, none of the discussions in UFSAR Section 4.5.2.4 indicate that the SLC/core ΔP line internal to the vessel is *required* for mixing. In fact, the discussions in UFSAR Section 4.5.2.4 indicate that

mixing (or lack thereof) is not a concern based on test results and other bounding calculation assumptions.

The SLC system design basis document provides some additional detail regarding the required injection location. The design basis document states that the primary injection point shall be a RPV nozzle near the bottom of the core shroud and that injection at that point mixes the solution with the coolant as it rises. The Fermi 2 design is such that in the event of a failure of the SLC/core ΔP line internal to the vessel, the SLC injection would still occur near the bottom of the core shroud due to the injection location through the core ΔP nozzle. This design basis document confirms the fact that the SLC/core ΔP line at the nozzle does perform a license renewal intended function (and is subject to aging management review as identified in LRA Table 3.1.2-1) but does not indicate that the SLC/core ΔP line internal to the vessel performs a license renewal intended function.

NUREG-1801 Section XI.M9, "BWR Vessel Internals," states that the program includes inspection and flaw evaluations in conformance with the guidelines of applicable and NRC staff-approved BWRVIP documents. NUREG-1801 also states that the BWRVIP documents provide generic guidelines intended to present the applicable inspection recommendations to assure safety function integrity of the subject safety-related RPV internal components. Under "Scope of Program", numerous reactor vessel internal components are listed explicitly along with their applicable NRC-approved BWRVIP guidelines. The SLC/core ΔP line is not explicitly included in the list of components in the scope. There is a general category of "lower plenum components" which could encompass the SLC/core ΔP line. This category refers to BWRVIP-47-A as providing guidelines for inspection and evaluation. However, BWRVIP-47-A Section 1.2 states that the SLC/core ΔP systems are not included in the scope of BWRVIP-47-A but are addressed in separate inspection and evaluation guidelines.

Section 1.1 of the NRC's safety evaluation report (SER) for BWRVIP-47-A concurs that the SLC/core ΔP systems are addressed in separate guidelines. From a review of the BWRVIP guidelines, it is clear that the separate guideline which addresses the SLC/core ΔP systems is BWRVIP-27-A. BWRVIP-27-A is not discussed or referenced anywhere in NUREG-1801 Section XI.M9. Based on this, it is clear that the "BWR Vessel Internals" program in NUREG-1801 Section XI.M9 does not address aging management of the SLC/core ΔP line internal to the vessel. BWRVIP-27-A is only referenced in NUREG-1801 Section XI.M8, which is the "BWR Penetrations" program. In Section XI.M8, it is clear that the focus of that NUREG-1801 program is on the reactor vessel nozzles, not on the reactor vessel internals. As stated previously, the SLC/core ΔP nozzle is subject to aging management review as indicated in LRA Table 3.1.2-1 and the BWR Penetrations Program in LRA Section B.1.7 is used, consistent with NUREG-1801. Therefore, there is nowhere in NUREG-1801 that recommends inspection of the SLC/core ΔP line internal to the vessel or that indicates that the SLC/core ΔP line internal to the vessel is subject to aging management review.

BWRVIP-27-A, "BWR Vessel and Internals Project, BWR Standby Liquid Control System/Core Plate Delta-P Inspection and Flaw Evaluation Guidelines", is the NRC staff-

approved guideline for the SLC/core ΔP systems. The guideline applies to SLC systems that inject into the bottom head region of the RPV, which includes Fermi 2. Table 2-1 which addresses penetration designs explicitly lists Fermi 2. There are multiple descriptions in BWRVIP-27-A that indicate that the key feature with regards to the intended function in 10 CFR 50.54(a)(3) is not the configuration of the SLC/core ΔP line inside the vessel but is the SLC/core ΔP nozzle. These descriptions are presented below:

- Section 1.2 – “The objective of these guidelines is to show that boron can be successfully injected into the bottom head under the worst credible cracking conditions for the ΔP /SLC internals. The key to successful injection is to assure that the attachment of the external piping to the vessel will not fail in a way that the housing or nozzle is ejected from the vessel, preventing injection.”
- Section 2.0 – [[

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- [[

]] In addition, the discussion of boron mixing also referred to an actual BWR mixing test that was performed. The mixing test results are applicable to Fermi 2 as discussed later in this response.

- Section 3.1.1 – [[

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- Appendix B Section B.2 – “[[

]] The only ΔP /SLC components required to accomplish the intended function are the vessel penetration/nozzle and SLC external piping. The ΔP /SLC internals piping is not within the license renewal evaluation boundary because it is not required to accomplish the intended function. Therefore, an aging management review of the internals piping is not needed for license renewal. The ΔP /SLC vessel penetration/nozzle and safe-end are subject to aging management review in this Appendix. The individual applicants will provide an aging management review of the SLC external piping.” Consistent with this statement, aging management review of the penetration/nozzle and safe end is indicated in LRA Table 3.1.2-1 and screening of the SLC external piping is addressed in LRA Sections 2.3.1.2 and 2.3.3.2.

- Appendix C of BWRVIP-27-A is the NRC's SER. The SER states that it was written not to repeat information in the report that is proprietary and therefore does not discuss details. However, Section 1.2 states that, "The staff reviewed the BWRVIP-27 report to determine whether its guidance will provide acceptable levels of quality for inspection and flaw evaluation of the subject safety-related RPV internal components." Section 2.0 indicates that mixing and leakage issues were qualitatively and quantitatively addressed. In Section 3.0, the NRC staff concluded that the recommendations in BWRVIP-27-A are acceptable and may be applied at BWR facilities.
- Appendix D of BWRVIP-27-A is the NRC's acceptance of referencing the BWRVIP-27-A report for demonstrating compliance with the license renewal rule. Section 1.1 states that "If a license renewal applicant participating in the BWRVIP confirms that the BWRVIP-27 document applies to its facility and that the results of the Appendix B IPA and TLAA evaluation are in effect at its plant, then no further review by the NRC staff of the issues described in the documents is necessary, except as specifically identified by the staff in its safety evaluation below. With this exception, such an applicant may rely on BWRVIP-27 for the demonstration required by Section 54.21(a)(3) with respect to the components and structures within the scope of the report." Section 2.0 acknowledges that the report addresses issues related to boron mixing as it pertains to the SLC/core ΔP internals. Section 2.1 acknowledges that the intended function of the SLC/core ΔP system is to achieve safe shutdown of the reactor by injecting sodium pentaborate into the bottom head region of the vessel and that the SLC/core ΔP vessel penetration/nozzle and safe end extensions are subject to aging management review. It does not mention the SLC/core ΔP internals. In Section 4.0, the NRC staff concludes that the BWRVIP-27-A report provides an acceptable demonstration that licensees referencing the report will adequately manage the aging effects of reactor vessel components within the scope of the report to that there is reasonable assurance that the SLC/core ΔP vessel penetration/nozzle and safe end extensions will perform their intended functions in accordance with the CLB during the period of extended operation. The conclusion also notes that the BWRVIP-27-A program is identical for the current operating term and the extended license renewal term. Since no inspections of the SLC/core ΔP internals are recommended in BWRVIP-27-A, and no inspections are currently performed at Fermi 2, this would also apply to the extended license renewal term.
- There are four license renewal applicant action items associated with BWRVIP-27-A that are discussed in Appendix D. The four items are summarized as follows:
 - 1) Verify the plant is bounded by the report and commit to programs described as necessary in the report to manage the effects of aging on the functionality of the SLC/core ΔP vessel penetration/nozzle/safe end extensions. Any deviations would need to be addressed.
 - 2) The FSAR supplement needs to describe the programs and activities specified by the report.
 - 3) Any Technical Specification changes would need to be included.
 - 4) Projected fatigue cumulative usage factors are a potential TLAA issue.

- DTE has addressed each of these four action items in Appendix C of the LRA. The first three items were addressed in LRA Appendix C as common action items under the entries BWRVIP-All (1), BWRVIP-All (2), and BWRVIP-All (3), respectively. The fourth item was addressed under the entry BWRVIP-27-A (4). Since DTE has addressed the four applicant action items, DTE can rely on BWRVIP-27-A as indicated by the NRC staff's SER. Therefore, the BWRVIP-27-A position that the SLC/core ΔP internals are not subject to aging management review is applicable to Fermi 2. However, for clarity, the action item response for BWRVIP-27-A (4) in LRA Appendix C will be revised as indicated in the "LRA Revisions" section of this response.

In addition to BWRVIP-27-A, there are other NRC staff-approved BWRVIP documents that provide additional information regarding the SLC/core ΔP line internal to the vessel. BWRVIP-06-1-A is "BWR Vessel and Internals Project, Safety Assessment of BWR Reactor Internals" and is approved by the NRC. Section 2.2 addresses the SLC/core ΔP line internal to the vessel and the discussion is applicable to Fermi 2 since it is one of the applicable BWR types. Section 2.2.3 states that, [[

]] The NRC SER in Appendix A, Section 3.0, does discuss the evaluation of the SLC line inside the reactor vessel, but indicates that further review would be performed as part of BWRVIP-27. The NRC SER of BWRVIP-27-A was discussed previously.

BWRVIP-53-A is "BWR Vessel and Internals Project, Standby Liquid Control Line Repair Design Criteria" and is also approved by the NRC. Appendix A discusses abandoning the SLC/core ΔP internals in place if they have failed. Abandoning in place is considered acceptable since they are not necessary for plant safety and liquid control injection into the lower head without the piping and sparger is acceptable. The NRC SER in Appendix D also discusses boron mixing. The discussion of the staff evaluation of the BWRVIP response to Item 10 in Appendix D Section 3.1 states that "Item 8, boron mixing under various postulated accident conditions and power levels is addressed in BWRVIP-27 and the technical basis for the analysis is contained in Reference 4. Item 8 was reviewed by the staff and found acceptable in the initial SER for BWRVIP-53. Therefore, additional plant-specific analysis for boron mixing is not required."

Several of the BWRVIP documents (BWRVIP-06-1-A, BWRVIP-27-A, and BWRVIP-53-A) describe that the SLC system will be able to perform its intended function per 10 CFR 54.4(a)(3) (i.e. shut down the core during ATWS) as long as the boron is delivered into the bottom head. [[

]] DTE

implements and follows these EPGs, including those applicable to the ATWS event. Therefore, the conclusions in the BWRVIP documents do apply to Fermi 2.

DTE requested that GEH review the specific conclusions in BWRVIP-27-A that boron only needs to be successfully injected into the bottom head of the reactor vessel and that the only SLC/core ΔP components required to accomplish the intended function are the vessel penetration/nozzle/safe end extensions and the SLC external piping. GEH confirmed that these conclusions do apply to Fermi 2.

If it was to be considered that the SLC/core ΔP line internal to the vessel did perform an intended function, was subject to aging management review, and needed to be inspected, it would not be possible to reference one of the generic NUREG-1801 AMPs, since none of them address the SLC/core ΔP line internal to the vessel as discussed above. As a result, a plant-specific program would be required to implement inspections. Fermi 2 has had no plant-specific operating experience that would indicate that such a plant-specific aging management program is required. During a jet pump hold down beam replacement in 1994, an opportunistic inspection of the accessible SLC/core ΔP line below the core plate at 180° was performed. The visual inspection did not identify any indications.

In conclusion, the SLC/core ΔP line internal to the vessel does not perform a license renewal intended function per 10 CFR 54.4(a)(3) (i.e. for ATWS events). This conclusion is consistent with NUREG-1801 and is supported by the Fermi 2 UFSAR, SLC design basis document, and multiple NRC staff-approved BWRVIP documents which have been verified to be directly applicable to Fermi 2.

- b. As described in the response to request “a” above, the SLC/core ΔP line internal to the vessel does not perform a license renewal intended function and is not subject to aging management review. Therefore, the LRA does not need to be amended as indicated in request “b”.

However, the description in LRA Section 2.3.1.1.2 under the “Differential Pressure (ΔP) and Standby Liquid Control (SLC) Line” subsection will be revised to clarify that the portion of the inner pipe which reduces thermal shock to the RPV is the portion at the core ΔP nozzle (i.e. not the internal piping). In addition, LRA Appendix C will be revised to clarify the DTE response to BWRVIP-27-A applicant action item 4.

- c. As described in the response to request “a” above, the SLC/core ΔP line internal to the vessel does not perform a license renewal intended function and is not subject to aging management review. Therefore, determination of aging effects requiring management was not necessary.

LRA Revisions:

LRA Section 2.3.1.1.2 and LRA Appendix C are revised as shown on the following pages. Additions are shown in underline and deletions are shown in strike-through.

2.3.1.1.2 Reactor Vessel Internals

Differential Pressure (ΔP) and Standby Liquid Control (SLC) Line

The differential pressure and SLC line serves two functions: to sense the differential pressure across the core support plate and to provide a path for the injection of the liquid control solution into the coolant stream. The instrumentation lines provide information on core flow performance for diagnostic purposes, CRD system water differential pressure indication, and core spray piping break detection. This line enters the RPV at a point below the core shroud as two concentric pipes. In the lower plenum, the two pipes separate. If the standby liquid control system actuates, the inner pipe at the nozzle reduces thermal shock to the RPV nozzle. The outer pipe terminates immediately above the core support plate and senses the pressure in the region outside the fuel assemblies.

Appendix C
Response to BWRVIP Applicant Action Items

Action Item Description	Response
<p>BWRVIP-27-A (4)</p> <p>Due to the susceptibility of the subject components to fatigue, applicants referencing the BWRVIP-27 report for license renewal should identify and evaluate the projected fatigue cumulative usage factors as a potential TLAA issue.</p>	<p>The BWRVIP-27-A fatigue analysis of the SLC/core ΔP line for 60 years of operation is a TLAA. The NRC SER (BWRVIP-27-A, Appendix D) states that fatigue and the projected CUF should be addressed by each applicant for license renewal but recognizes that this fatigue analysis is not required for all SLC/core ΔP configurations. <u>Refer to Section 4.3 and Table 4.3-2 for the fatigue TLAA evaluation of the SLC/core ΔP nozzle. Consistent with BWRVIP-27-A, At Fermi 2, the SLC/core ΔP lines inside the reactor vessel are not subject to aging management review at Fermi 2. The aging management review results for the SLC/core ΔP nozzle and safe end are provided in LRA Table 3.1.2-1.</u></p> <p>Refer to LRA Section 4.3.1.4 for further discussion of fatigue and CUFs for the reactor vessel internals for the period of extended operation.</p>

**Enclosure 3 to
NRC-15-0066**

**Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43**

GE-Hitachi Nuclear Energy Americas LLC Affidavit

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, **Lisa K. Schichlein**, state as follows:

- (1) I am a Senior Project Manager, NPP/Services Licensing, Regulatory Affairs, GE-Hitachi Nuclear Energy Americas LLC (GEH), and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.
- (2) The information sought to be withheld is contained in Enclosure 1 of GEH letter 318178-17, "GEH Response to Fermi 2 License Renewal Application RAI 4.1-4a," dated June 17, 2015. The GEH proprietary information in Enclosure 1, which is entitled "Response to RAI 4.1-4a," is identified by a dotted underline inside double square brackets. [[This sentence is an example.⁽³⁾]] In each case, the superscript notation ⁽³⁾ refers to Paragraph (3) of this affidavit, which provides the basis for the proprietary determination.
- (3) In making this application for withholding of proprietary information of which it is the owner or licensee, GEH relies upon the exemption from disclosure set forth in the *Freedom of Information Act* ("FOIA"), 5 U.S.C. Sec. 552(b)(4), and the *Trade Secrets Act*, 18 U.S.C. Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), and 2.390(a)(4) for trade secrets (Exemption 4). The material for which exemption from disclosure is here sought also qualifies under the narrower definition of trade secret, within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975 F.2d 871 (D.C. Cir. 1992), and Public Citizen Health Research Group v. FDA, 704 F.2d 1280 (D.C. Cir. 1983).
- (4) The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4)a. and (4)b. Some examples of categories of information that fit into the definition of proprietary information are:
 - a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by GEH's competitors without license from GEH constitutes a competitive economic advantage over other companies;
 - b. Information that, if used by a competitor, would reduce their expenditure of resources or improve their competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;
 - c. Information that reveals aspects of past, present, or future GEH customer-funded development plans and programs, resulting in potential products to GEH;
 - d. Information that discloses trade secret or potentially patentable subject matter for which it may be desirable to obtain patent protection.
- (5) To address 10 CFR 2.390(b)(4), the information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GEH, and is in fact so held. The information sought to be withheld has, to the best of my

GE-Hitachi Nuclear Energy Americas LLC

knowledge and belief, consistently been held in confidence by GEH, not been disclosed publicly, and not been made available in public sources. All disclosures to third parties, including any required transmittals to the NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary or confidentiality agreements that provide for maintaining the information in confidence. The initial designation of this information as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in the following paragraphs (6) and (7).

- (6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, who is the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge, or who is the person most likely to be subject to the terms under which it was licensed to GEH.
- (7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist, or other equivalent authority for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GEH are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary or confidentiality agreements.
- (8) The information identified in paragraph (2), above, is classified as proprietary because it contains details on the effects of Emergency Procedure Guideline (EPG) compliance on the degradation of core plate differential pressure and standby liquid control piping for boiling water reactors (BWRs) during an Anticipated Transient Without Scram (ATWS). Development of these methods, techniques, and information and their application for the design, modification, and analyses methodologies and processes was achieved at a significant cost to GEH.

The development of the evaluation processes along with the interpretation and application of the analytical results is derived from the extensive experience databases that constitute a major GEH asset.

- (9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GEH's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GEH's comprehensive BWR safety and technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical and NRC review costs comprise a substantial investment of time and money by GEH. The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial. GEH's competitive advantage will be lost if its

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competitors are able to use the results of the GEH experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GEH would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GEH of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing and obtaining these very valuable analytical tools.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 17th day of June 2015.



Lisa K. Schichlein
Senior Project Manager, NPP/Services Licensing
Regulatory Affairs
GE-Hitachi Nuclear Energy Americas LLC
3901 Castle Hayne Road
Wilmington, NC 28401
Lisa.Schichlein@ge.com

**Enclosure 4 to
NRC-15-0066**

**Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43**

EPRI Affidavit



NEIL WILMSHURST
Vice President and
Chief Nuclear Officer

Ref. EPRI Project Number 669

June 24, 2015

Document Control Desk
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Request for Withholding of the following Proprietary Information Included in:

DTE Energy Transmittal to NRC on "Response to NRC Request for Additional Information for the Review of the Fermi 2 License Renewal Application-Set 33" containing Enclosure 1 "DTE Response to NRC Request for Additional Information for the Review of the Fermi 2 License Renewal Application-Set 33- Proprietary"

To Whom It May Concern:

This is a request under 10 C.F.R. §2.390(a)(4) that the U.S. Nuclear Regulatory Commission ("NRC") withhold from public disclosure the report identified in the enclosed Affidavit consisting of the proprietary information owned by Electric Power Research Institute, Inc. ("EPRI") identified in the attached report. Proprietary and non-proprietary versions of the Response and the Affidavit in support of this request are enclosed.

EPRI desires to disclose the Proprietary Information in confidence to assist the NRC review of the enclosed submittal to the NRC by DTE Energy. The Proprietary Information is not to be divulged to anyone outside of the NRC or to any of its contractors, nor shall any copies be made of the Proprietary Information provided herein. EPRI welcomes any discussions and/or questions relating to the information enclosed.

If you have any questions about the legal aspects of this request for withholding, please do not hesitate to contact me at (704) 595-2732. Questions on the content of the Report should be directed to Andy McGehee of EPRI at (704) 502-6440.

Sincerely,

A handwritten signature in black ink, appearing to read "Neil", is written over the word "Sincerely,".

Attachment(s)

c: Sheldon Stuchell, NRC (sheldon.stuchell@nrc.gov)

Together . . . Shaping the Future of Electricity

1300 West W.T. Harris Boulevard, Charlotte, NC 28262-8550 USA • 704.595.2732 • Mobile 704.490.2653 • nwilmshurst@epri.com

AFFIDAVIT

RE: Request for Withholding of the Following Proprietary Information Included In:

DTE Energy Transmittal to NRC on "Response to NRC Request for Additional Information for the Review of the Fermi 2 License Renewal Application-Set 33" containing Enclosure 1 "DTE Response to NRC Request for Additional Information for the Review of the Fermi 2 License Renewal Application-Set 33- Proprietary"

I, Neil Wilmschurst, being duly sworn, depose and state as follows:

I am the Vice President and Chief Nuclear Officer at Electric Power Research Institute, Inc. whose principal office is located at 1300 W WT Harris Blvd, Charlotte, NC. ("EPRI") and I have been specifically delegated responsibility for the above-listed report that contains EPRI Proprietary Information that is sought under this Affidavit to be withheld "Proprietary Information". I am authorized to apply to the U.S. Nuclear Regulatory Commission ("NRC") for the withholding of the Proprietary Information on behalf of EPRI.

EPRI Proprietary Information is identified in the above referenced report by double brackets. An example of such identification is as follows:

{{This sentence is an example.^(E)}}

Tables containing EPRI Proprietary Information are identified with double brackets before and after the object. In each case, the superscript notation ^(E) refers to this affidavit as the basis for the proprietary determination.

EPRI requests that the Proprietary Information be withheld from the public on the following bases:

Withholding Based Upon Privileged And Confidential Trade Secrets Or Commercial Or Financial Information (see e.g., 10 C.F.R. § 2.390(a)(4):

a. The Proprietary Information is owned by EPRI and has been held in confidence by EPRI. All entities accepting copies of the Proprietary Information do so subject to written agreements imposing an obligation upon the recipient to maintain the confidentiality of the Proprietary Information. The Proprietary Information is disclosed only to parties who agree, in writing, to preserve the confidentiality thereof.

b. EPRI considers the Proprietary Information contained therein to constitute trade secrets of EPRI. As such, EPRI holds the Information in confidence and disclosure thereof is strictly limited to individuals and entities who have agreed, in writing, to maintain the confidentiality of the Information.

c. The information sought to be withheld is considered to be proprietary for the following reasons. EPRI made a substantial economic investment to develop the Proprietary Information and, by prohibiting public disclosure, EPRI derives an economic benefit in the form of licensing royalties and other additional fees from the confidential nature of the Proprietary Information. If the Proprietary Information were publicly available to consultants and/or other businesses providing services in the electric and/or nuclear power industry, they would be able to use the Proprietary Information for their own commercial benefit and profit and without expending the substantial economic resources required of EPRI to develop the Proprietary Information.

d. EPRI's classification of the Proprietary Information as trade secrets is justified by the Uniform Trade Secrets Act which California adopted in 1984 and a version of which has been adopted by over

forty states. The California Uniform Trade Secrets Act, California Civil Code §§3426 – 3426.11, defines a "trade secret" as follows:

"Trade secret" means information, including a formula, pattern, compilation, program device, method, technique, or process, that:

(1) Derives independent economic value, actual or potential, from not being generally known to the public or to other persons who can obtain economic value from its disclosure or use; and

(2) Is the subject of efforts that are reasonable under the circumstances to maintain its secrecy."

e. The Proprietary Information contained therein are not generally known or available to the public. EPRI developed the Information only after making a determination that the Proprietary Information was not available from public sources. EPRI made a substantial investment of both money and employee hours in the development of the Proprietary Information. EPRI was required to devote these resources and effort to derive the Proprietary Information. As a result of such effort and cost, both in terms of dollars spent and dedicated employee time, the Proprietary Information is highly valuable to EPRI.

f. A public disclosure of the Proprietary Information would be highly likely to cause substantial harm to EPRI's competitive position and the ability of EPRI to license the Proprietary Information both domestically and internationally. The Proprietary Information can only be acquired and/or duplicated by others using an equivalent investment of time and effort.

I have read the foregoing and the matters stated herein are true and correct to the best of my knowledge, information and belief. I make this affidavit under penalty of perjury under the laws of the United States of America and under the laws of the State of North Carolina.

Executed at 1300 W WT Harris Blvd being the premises and place of business of Electric Power Research Institute, Inc.

Date: 6-24-2015

Neil Wilmshurst

Neil Wilmshurst

(State of North Carolina)

(County of Mecklenburg)

Subscribed and sworn to (or affirmed) before me on this 24th day of June, 2015 by Neil Wilmshurst, proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

Signature Deborah H. Rouse (Seal)

My Commission Expires 2nd day of April, 2016