



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

May 18, 2015

LICENSEE: DTE Electric Company

FACILITY: Fermi 2

SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON MARCH 27, 2015  
BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND DTE  
ELECTRIC COMPANY CONCERNING REQUESTS FOR ADDITIONAL  
INFORMATION PERTAINING TO THE SEVERE ACCIDENT MITIGATION  
ALTERNATIVES REVIEW OF THE FERMI 2 LICENSE RENEWAL  
APPLICATION

The U.S. Nuclear Regulatory Commission (NRC) and representatives of DTE Electric Company (the applicant) held a telephone conference call on March 27, 2015, to discuss and clarify the NRC staff's requests for additional information (RAIs) concerning the Fermi 2 license renewal application severe accident mitigation alternatives review. The telephone conference call was useful in identifying areas where further information was necessary.

Enclosure 1 provides a listing of the participants and Enclosure 2 contains a listing of the RAIs discussed with the applicant, including a brief description on the status of the items. Enclosure 3 provides the applicant's proposed methodology.

The applicant had an opportunity to comment on this summary.

**/RA/**

Elaine Keegan, Project Manager  
Projects Branch 2  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket No. 50-341

Enclosures:  
As stated

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DATE	5/14/2015	5/15/15	5/18/15	5/18/15

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TELEPHONE CONFERENCE CALL  
FERMI 2 LICENSE RENEWAL APPLICATION  
SEVERE ACCIDENT MITIGATION ALTERNATIVES

LIST OF PARTICIPANTS  
MARCH 27, 2015

**PARTICIPANTS**

Jerry Dozier  
Elaine Keegan  
  
Roland Benke  
  
Bob Schmidt  
Michael Koenemann  
Randall Westmoreland  
Lynne Goodman  
Kevin Lynn  
Chad Kramer  
Gary Smith  
Tyson Smith  
Jon Christinidis  
Gary Hayner

**AFFILIATIONS**

U.S. Nuclear Regulatory Commission (NRC)  
NRC  
  
NRC Contractor, (Center for Nuclear Waste Regulatory  
Analysis (CNWRA))  
NRC Contractor, CNWRA  
DTE Electric Company (DTE)  
DTE  
DTE  
DTE Contractor, Tetra Tech  
Enercon  
Enercon  
DTE Outside Counsel, Winston and Strawn  
DTE Counsel  
ERIN Engineering

TELEPHONE CONFERENCE CALL  
FERMI 2 LICENSE RENEWAL APPLICATION

REQUESTS FOR ADDITIONAL INFORMATION  
SEVERE ACCIDENT MITIGATION ALTERNATIVES  
MARCH 27, 2015

The U.S. Nuclear Regulatory Commission (NRC) and representatives of DTE Electric Company (DTE) held a telephone conference call on March 27, 2015, to discuss and clarify the following requests for additional information (RAIs) concerning the Fermi 2 license renewal application severe accident mitigation alternatives (SAMA) review.

**1. Relating to Response to RAI 2.e**

The response to RAI 2.e does not account for the underestimation of the risk of Class IIA sequences discussed and evaluated in response to RAI 3. The maximum impact of the unaccounted for the  $3.14\text{E-}09/\text{yr}$ , using the same consequence assumptions as in RAI 3, is \$27,400 (\$68,600 including uncertainty). This needs to be addressed either in RAI 2 response, or probably more effectively in the RAI 3 response.

**Discussion:** DTE indicated this question is clear but suggested combining it with RAI 2.b since they are related.

**2. Relating to Response to RAI 2.g.iii**

a) In Table 3-5 (p. 14) the cost of SAMA 152 is erroneously given as \$1,000,000. The cost should be \$100,000 (ER Table D.2-1). Please perform a refined analysis similar to those provided in Table 3-6.

b) The inclusion of the  $3.14\text{E-}09/\text{yr}$  undercounting of Class IIA discussed in RAI 2 will impact the adjusted cost benefits in Table 3-6. Please account for this undercounting.

**Discussion:** DTE indicated that the question 2.a is clear. While discussing RAI 2.b to clarify the question, DTE attempted to explain the methodology used to calculate the adjusted cost benefits. Due to the nature of the calculations, DTE said they would send in an example of the methodology used. (See Enclosure 3.)

**3. Relating to Response to RAI 5. a. ii, 5. a. vi, 5. a. vii, 6.h and 7.a**

The primary purpose of the RAI was to determine how the cost-benefit calculations performed in response to the original RAIs were performed with respect to the external events multiplier. The response for each of the RAI subsections included the statement that the analysis was performed using the same methodology as described in the ER. For all but one (6.h) it was also stated that "The same external event multiplier used in the ER was applied to this evaluation." Please confirm that the external event multiplier of 11 was used for all the cited analyses including 6.h.

**Discussion:** DTE indicated the question is clear.

4. Specify the U.S. permanent population, Canadian permanent population, and total transient population that sum to the total estimated population of 6,055,678 reported in Table D.1-22 of the environmental report. Provide tables showing the spatial distribution of these three population components. Justify that the total population and its spatial distribution modeled in the SAMA analysis will not underestimate offsite population doses and offsite economic cost risks, considering prevailing winds blowing from the west to southwest and the corresponding potential for atmospheric plume migration to the east to northeast. Explain how the population distribution and economic values were implemented in the SAMA analysis to account for the non-U.S. population and non-U.S. land areas. Provide supporting WinMACCS code inputs and outputs that confirm offsite population doses and offsite economic cost risks have not been underestimated.

**Discussion:** DTE indicated that the question is clear.

5. To support an NRC evaluation of potential replacement power costs from a temporary suspension of Fermi 3 power generation during site cleanup and decontamination activities following a severe accident at the Fermi 2 plant, confirm that 1655 MWe is an appropriate value for the Fermi 3 power output or recommend a more appropriate value.

**Discussion:** DTE indicated that the question is clear.

**DRAFT RAI 2B  
(RAI 2.G.III CLARIFICATION)**

**PROPOSED METHOD EXAMPLE FOR  
ADDRESSING UNDERCOUNTING OF CLASS IIA FREQUENCY**

Purpose:

Draft NRC RAI 2b provided to DTE on March 23, 2015 requests accounting for Class IIA release frequency undercounting of  $3.14\text{E-}09/\text{yr}$  to determine the impact on SAMA adjusted cost benefits as presented in Table 3-6 of DTE RAI responses provided March 5, 2015. In a teleconference on March 27, 2015 between DTE and the NRC reviewers, a method for accounting for the  $3.14\text{E-}09/\text{yr}$  undercounting was proposed by DTE. The NRC asked to see an example of this methodology applied to a SAMA candidate. This document provides the requested example and further discusses the method.

Proposed Method:

SAMAs 50, 145, 152, 177, and 194 are the SAMAs which have been identified as being close to potentially cost beneficial in previous RAIs. For each of these relevant SAMAs, the general method presented and discussed as summarized in Table 3-2 and Table 3-6 of the March 5, 2015 DTE RAI response is maintained, with the following changes:

1. The  $3.14\text{E-}09/\text{yr}$  undercount frequency is conservatively added to the H/E release category portion that is classified as Class IIA in Table 3-2 (i.e.,  $5.32\text{E-}08/\text{yr}$ ). The addition of all the undercount frequency to the H/E category is judged conservative since it would be expected that this additional frequency would be distributed among various release categories that contain Class II sequences.
2. The general method of Table 3-6 calculates the H/E Class IIA frequency and H/E "Other" frequency that is reduced due to the SAMA candidate in order to calculate the Adjusted Cost Benefit. The fraction of Class IIA frequency reduction for this SAMA candidate is now applied to the new (higher) Class IIA H/E release category frequency developed in Step 1 to develop a new (higher) Class IIA frequency reduction, which translates into a higher Adjusted Cost Benefit. This is based on an assumption that the SAMA Class IIA frequency reduction for the additional  $3.14\text{E-}09/\text{yr}$  frequency will occur in approximately the same proportion as the other Class IIA frequency in the H/E release category. This is judged a reasonable assumption. The H/E "Other" frequency portion and contribution to the Adjusted Cost Benefit remains the same.
3. The general method of Table 3-6 is used to calculate the new (higher) Adjusted Cost Benefit for comparison to the SAMA Implementation Cost. The higher Adjusted Cost Benefit is due to the increase in the Offsite Benefit portion. The Onsite Benefit portion remains unchanged. Onsite Benefit is calculated based on Level 1 CDF rather than Level 2 Release Category frequency. The  $3.14\text{E-}9/\text{yr}$  undercounting is due to postulated undercounting of Level 2 frequency not Level 1 CDF.

Example:

An example of this method is provided below. SAMA 050 is used as the example SAMA for this discussion.

1. The additional  $3.14\text{E-}09/\text{yr}$  frequency is added to the original Class IIA H/E release frequency of  $5.32\text{E-}08/\text{yr}$ . The new Class IIA H/E frequency is  $5.32\text{E-}08/\text{yr} + 3.14\text{E-}09/\text{yr} = 5.63\text{E-}08/\text{yr}$ , as provided in Table 1. It is noted that the original Class IIA H/E release frequency of  $5.32\text{E-}08/\text{yr}$  was developed based on the top H/E release sequences presented in Table 2g-2 of the DTE RAI response dated January 9, 2015. The Class IIA contribution was calculated as 17% of the total H/E release category frequency of  $3.13\text{E-}07/\text{yr}$ , based on the contribution of sequences IIA-063, IIA-024, and IIA-037 as shown in Table 2g-2. Due to this original calculation approach (e.g., using rounded percentages, focus on top sequences), the original Class IIA H/E release frequency value of  $5.32\text{E-}08/\text{yr}$  presented in Table 2g-4 is a close approximation to a more detailed calculation.
2. For SAMA 50, the Class IIA frequency reduction for this SAMA is  $1.485\text{E-}09/\text{yr}$  (previously rounded to  $1.49\text{E-}09/\text{yr}$  in Table 3-6) based on a detailed cutset summation. This Class IIA frequency reduction for this SAMA maybe compared to the detailed cutset summation for the SAMA Base Case where the Class IIA frequency value is  $5.161\text{E-}08/\text{yr}$  (slightly different from  $5.32\text{E-}08/\text{yr}$  value that was calculated in a less detailed manner, as discussed above). The Class IIA frequency reduction portion is therefore calculated as  $(1.485\text{E-}09/\text{yr})/(5.161\text{E-}08/\text{yr}) = 2.877\text{E-}02$ , or 2.88%, as presented in the third column of Table 2.
3. The 2.88% reduction is applied to the adjusted Class IIA H/E release frequency of  $5.63\text{E-}08/\text{yr}$  (Table 1), the adjusted Class IIA frequency reduction becomes  $2.88\% * 5.63\text{E-}08/\text{yr} = 1.62\text{E-}09/\text{yr}$  (Column 4 of Table 2).
4. The Adjusted Cost Benefit is recalculated and results in a higher value based on an increase in the Offsite Benefit portion. For SAMA 50, the Adjusted Cost Benefit is \$18,854.
5. An uncertainty factor of 2.5 is applied to this value to account for CDF uncertainty, which results in an Adjusted Cost Benefit with Uncertainty of \$47,135. This benefit is less than the \$50,000 estimated Implementation Cost, and the SAMA candidate remains non-cost beneficial.

Preparer: Alex Duvall 3/26/2015

Preparer: Gary Hayner 3/31/2015

Reviewer: Grant Teagarden 3/31/2015

Table 1

FERMI 2 SAMA DOSE RISK AND COST RISK WITH SEPARATE CLASS IIA H/E RELEASE CATEGORY

Characteristics of Release Mode		Population Dose	Offsite Economic Cost	Population Dose Risk	Offsite Economic Cost Risk	
Release Category		yr <sup>-1</sup>	Person-rem	\$	Person-rem/yr	\$/yr
H/E-BOC		5.93E-08	2.18E+07	3.03E+10	1.29E+00	1.80E+03
H/E	Class IIA	5.63E-08	2.18E+07	3.03E+10	1.23E+00	1.71E+03
	Other	2.60E-07	8.10E+06	2.80E+10	2.11E+00	7.28E+03
H/I		7.20E-08	9.52E+06	5.26E+10	6.86E-01	3.79E+03
H/L		2.46E-10	8.98E+06	1.67E+10	2.21E-03	4.11E+00
M/E		6.17E-08	2.48E+06	8.39E+09	1.53E-01	5.18E+02
M/I		3.71E-08	2.76E+06	6.10E+09	1.03E-01	2.27E+02
L/E		4.36E-08	2.26E+05	2.26E+07	9.85E-03	9.85E-01
L/I		5.46E-08	2.14E+06	8.25E+09	1.17E-01	4.51E+02
LL/E		5.02E-10	1.31E+04	3.81E+05	6.57E-06	1.91E-04
LL/I		7.75E-08	1.29E+05	4.05E+06	1.00E-02	3.14E-01
CI		7.83E-07	6.46E+01	1.96E+00	5.06E-05	1.54E-06
Totals					5.71E+00	1.58E+04



**Table 2**  
**FERMI 2 SAMA CANDIDATES WITH POTENTIAL IMPACTS ON CLASS IIA SEQUENCES**

<b>SAMA</b>	<b>Description</b>	<b>Class IIA Percent Reduction</b>	<b>Class IIA Frequency Reduction</b>	<b>Additional Offsite Dose Benefit (\$)</b>	<b>Additional Offsite Economic Cost Benefit (\$)</b>	<b>Base Case Benefit Portion from Offsite</b>	<b>Adjusted Benefit Portion from Offsite</b>	<b>Base Case Benefit Portion from Onsite</b>	<b>Adjusted Cost Benefit (\$)</b>	<b>2.5 Uncertainty Factor Applied to Adjusted Cost Benefit (\$)</b>	<b>Implementation Cost (\$)</b>
50	Change procedures to allow cross connect of motor cooling for RHRSW pumps	2.88%	1.62E-09	5,258	441	11,967	17,667	1,187	18,854	47,134	50,000

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