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

November 17, 2014

Mr. Joseph H. Plona, Senior VP
and Chief Nuclear Officer
DTE Electric Company
Fermi 2 - 210 NOC
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: FERMI, UNIT 2 - REQUEST FOR ADDITIONAL INFORMATION ASSOCIATED WITH NEAR-TERM TASK FORCE RECOMMENDATION 2.1, SEISMIC HAZARD AND SCREENING REPORT (TAC NO. MF3861)

Dear Mr. Plona:

By letter dated March 31, 2014[1], to the U. S. Nuclear Regulatory Commission (NRC), DTE Electric Company, the licensee for Fermi, Unit 2 (Fermi 2), submitted for NRC review the Seismic Hazard and Screening Report, Pursuant to Title 10 of the *Code of Federal Regulations* Part 50, Section 50.54(f), Response for Information Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident.

The NRC staff has reviewed the information provided for Fermi's seismic hazard reevaluation and has determined that additional information is required to complete its review. Enclosed is a request for additional information (RAI) related to the rock dynamic material property curves representing the conditions at the Fermi 2 site. As discussed with your staff on November 12, 2014, it was agreed that a response would be provided no later than December 31, 2014.

[1] Fermi 2 Seismic Hazard Evaluation Report dated March 31, 2014, can be found under Agencywide Documents Access and Management System (ADAMS) Accession No. ML14090A326.

If you have any questions related to the enclosed RAIs or response date, please contact me at 301-415-1115 or via e-mail at Nicholas.Difrancesco@nrc.gov.

Sincerely,

Nicholas J. DiFrancesco, Senior Project Manager
Hazards Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket No. 50-341

Enclosure:
Request for Additional Information

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

NEAR-TERM TASK FORCE RECOMMENDATION 2.1

SEISMIC HAZARD AND SCREENING REPORT

FERMI, UNIT 2

DOCKET NO. 50-341

By letter dated March 31, 2014[1], to the U. S. Nuclear Regulatory Commission (NRC), DTE Electric Company the licensee for Fermi, Unit 2 (Fermi 2), submitted for NRC review the Seismic Hazard and Screening Report (SHSR), Pursuant to Title 10 of the *Code of Federal Regulations* Part 50, Section 50.54(f) (hereafter referred to as the 50.54(f) letter), Response for Information Regarding Recommendation 2.1 of the Near-Term Task Force (NTTF) Review of Insights from the Fukushima Dai-ichi Accident.

Review of rock dynamic material curves used in the Seismic Hazard Screening Report (SHSR)

Two approaches to damping are used in the SHSR; Electric Power Research Institute (EPRI) rock curves and a linear response with constant damping derived from the low strain values in the EPRI rock curves (>3 percent) which correspond to kappa values of 0.009 – 0.011 seconds and Q values of approximately 16.

In contrast to the approach used in the SHSR, the Fermi, Unit 3 (Fermi 3) Combined License (COL) application estimated that the site would behave linearly under all loading levels based on rock properties such as S-wave velocity and rock quality designation (RQD). The applicant notes that a possible exception to this assumption is Unit F of the Salina Group, which is represented by Units G and E of the Salina Group in the SHSR. This approach led the applicant to conclude that damping is less than 3 percent (typically about 0.5 – 2 percent) throughout the profile. With the exception of Salina Group F, which corresponds to the Salina Group G and Salina Group E in the SHSR, RQD values at Fermi 3 are greater than 50 percent and support this approach. Based on boring data in the Fermi 2 Updated Final Safety Analysis Report, RQD values are comparable at Fermi 2 and Fermi 3.

The SPID notes that EPRI rock curves may be appropriate for sedimentary rocks with seismic velocities between 3,000 and 7,000 feet per second (fps), which may behave in a manner similar to gravels. Both the Bass Islands Formation (6,550 fps) and the Salina Group C (7,400 fps) units at Fermi 2 have best estimate seismic velocities at the upper edge or beyond this range and high RQD values (54 percent and 72 percent, respectively). This suggests a choice of dynamic property curves with low strain damping values less than that of the EPRI rock curves is more appropriate for the conditions at the Fermi 2 site.

The NRC Staff has reviewed the information submitted and has determined that the following

[1] Fermi 2 Seismic Hazard Evaluation Report dated March 31, 2014, can be found under Agencywide Documents Access and Management System (ADAMS) Accession No. ML14090A326.

additional information below is needed to complete its review.

Consistent with the 50.54(f) letter, the SPID guidance [2], and the site subsurface properties, please supplement the SHSR with the bases for modeling the entire profile using both the nonlinear EPRI rock dynamic material property curves as one model and the relatively high small strain damping values from the EPRI rock curves to model linear response with constant damping as the alternative model.

Alternatively, please revise the SHSR to reflect an updated choice of dynamic material properties that more appropriately represents the subsurface conditions at the Fermi 2 site. If the selection of dynamic material properties is revised, please detail whether multiple base cases are considered and the relative weights applied to those base cases.

[2]The screening, prioritization, and implementation details (SPID) can be found under ADAMS Accession No. ML12333A170.

If you have any questions related to the enclosed RAIs or response date, please contact me at 301-415-1115 or via e-mail at Nicholas.Difrancesco@nrc.gov.

Sincerely,

***/RA/***

Nicholas J. DiFrancesco, Senior Project Manager
Hazards Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket No. 50-341

Enclosure:
Request for Additional Information

cc w/encl: Distribution via Listserv

DISTRIBUTION:

| | | |
|---|---|---|
| PUBLIC | RidsNrrDorlLpl3-1 | RidsNrrOd |
| JLD R/F | RidsNrrLASLent | NDiFrancesco, NRR |
| RidsOeMailCenter | RidsRgn3MailCenter | DJackson, NRO |
| RidsNrrPMFermi | AKock, NRO | MJardaneh, NRO |

**ADAMS Accession No: ML14301A247** *via email

| | | | |
|---|---|---|---|
| OFFICE | NRR/JLD/JHMB/PE | NRR/JLD/JHMB/LA | NRR/DORL/LPL3-1/PM |
| NAME | FVega | SLent | JRankin |
| DATE | 11/14/14 | 10/29/14 | 11/17/14 |
| OFFICE | NRR/JLD/JHMB/BC | NRR/JLD/JHMB/PM | |
| NAME | SWhaley | NDiFrancesco | |
| DATE | 11/17/14 | 11/17/14 | |

**OFFICIAL RECORD COPY**