

COMBINED LICENSE

ENRICO FERMI NUCLEAR PLANT UNIT 3

DTE ELECTRIC COMPANY

Docket No. 52-033

License No. NPF-95

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for a combined license (COL) for Enrico Fermi Nuclear Plant Unit 3 (Fermi 3) filed by DTE Electric Company, acting on behalf of itself, herein referred to as "the Fermi owner," which incorporates by reference Appendix E to 10 CFR Part 52, complies with the applicable standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission regulations set forth in 10 CFR Chapter I, and all required notifications to other agencies or bodies have been duly made;
  - B. There is reasonable assurance that the facility will be constructed and will operate in conformity with the application, as amended, the provisions of the Act, and the Commission regulations set forth in 10 CFR Chapter I, except as exempted from compliance in Section 2.F below;
  - C. There is reasonable assurance (i) that the activities authorized by this COL can be conducted without endangering the health and safety of the public and (ii) that such activities will be conducted in compliance with the Commission regulations set forth in 10 CFR Chapter I, except as exempted from compliance in Section 2.F below;
  - D. DTE Electric Company is technically qualified to engage in the activities authorized by this license in accordance with the Commission regulations set forth in 10 CFR Chapter I. The Fermi owner is financially qualified to engage in the activities authorized by this COL in accordance with the Commission regulations set forth in 10 CFR Chapter I;
  - E. The Fermi owner has satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements;"
  - F. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;
  - G. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs and considering reasonable available alternatives, the issuance of this license subject to the conditions for protection of the environment set forth herein is in accordance with Subpart A of 10 CFR Part 51 and all applicable requirements have been satisfied; and

- H. The receipt, possession, and use of source, byproduct, and special nuclear material as authorized by this license will be in accordance with the applicable regulations in 10 CFR Parts 30, 40, and 70.
2. On the basis of the foregoing findings regarding this facility, COL No. NPF-95 is hereby issued to DTE Electric Company (the licensee), to read as follows:
- A. This COL applies to the Fermi Unit 3, a light-water nuclear reactor and associated equipment (the facility), owned by DTE Electric Company. The facility would be located on the existing Enrico Fermi Nuclear Plant; adjacent to existing Units 1 and 2 on the western end of Lake Erie, at Lagoon Beach in Frenchtown Township, Monroe County, Michigan; approximately 8 miles northeast of Monroe, Michigan; 30 miles southwest of Detroit, Michigan; and 25 miles northeast of Toledo, Ohio and is described in the licensee's final safety analysis report (FSAR), as supplemented and amended.
- B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses:
- (1) (a) DTE Electric Company, pursuant to Sections 103 and 185b. of the Act and 10 CFR Part 52, to construct, possess, use, and operate the facility at the designated location in accordance with the procedures and limitations set forth in this license;
- (2) (a) DTE Electric Company, pursuant to the Act and 10 CFR Part 70, to receive and possess at any time, special nuclear material as reactor fuel, in accordance with the limitations for storage and in amounts necessary for reactor operation, described in the FSAR, as supplemented and amended;
- (b) DTE Electric Company, pursuant to the Act and 10 CFR Part 70, to use special nuclear material as reactor fuel, after a Commission finding under 10 CFR 52.103(g) has been made, in accordance with the limitations for storage and in amounts necessary for reactor operation, described in the FSAR, as supplemented and amended;
- (3) (a) DTE Electric Company, pursuant to the Act and 10 CFR Parts 30 and 70, to receive, possess, and use, at any time before a Commission finding under 10 CFR 52.103(g), such byproduct and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts, as necessary;
- (b) DTE Electric Company, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use, after a Commission finding under 10 CFR 52.103(g), any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as necessary;

(4) (a) DTE Electric Company, pursuant to the Act and 10 CFR Parts 30 and 70, to receive, possess, and use, before a Commission finding under 10 CFR 52.103(g), in amounts not exceeding those specified in 10 CFR 30.35(d) and 10 CFR 70.25(d) required for establishing decommissioning financial assurance, any byproduct or special nuclear material that is (1) in unsealed form; (2) on foils or plated surfaces, or (3) sealed in glass, for sample analysis or instrument calibration or other activity associated with radioactive apparatus or components;

(b) DTE Electric Company, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use, after a Commission finding under 10 CFR 52.103(g), in amounts as necessary, any byproduct, source, or special nuclear material without restriction as to chemical or physical form, for sample analysis or instrument calibration or other activity associated with radioactive apparatus or components but not uranium hexafluoride; and

(5) DTE Electric Company, pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. The license is subject to, and the licensees shall comply with, all applicable provisions of the Act and the rules, regulations, and orders of the Commission, including the conditions set forth in 10 CFR Chapter I, now or hereafter in effect.

D. The license is subject to, and DTE Electric Company shall comply with, the conditions specified and incorporated below:

(1) Changes during Construction

(a) DTE Electric Company may request use of a preliminary amendment request (PAR) process, for license amendments, at any time before a Commission finding under 10 CFR 52.103(g). To use the PAR process, DTE Electric Company shall submit a written request to the Office of New Reactors (NRO) in accordance with COL-ISG-025, "Changes during Construction under Part 52."

(b) Before NRO's issuance of a written PAR notification, DTE Electric Company shall submit the license amendment request (LAR). Thereafter, NRO will issue a written PAR notification, setting forth whether DTE Electric Company may proceed in accordance with the PAR, LAR, and COL-ISG-025. If DTE elects to proceed and the LAR is subsequently denied, DTE Electric Company shall return the facility to its current licensing basis.

(2) [RESERVED]

(3) Nuclear Fuel Loading and Pre-Critical Testing

- (a) [RESERVED]
- (b) Upon a Commission finding in accordance with 10 CFR 52.103(g) that all the acceptance criteria in the ITAAC in Appendix C to this license are met, DTE Electric Company is authorized to perform pre-critical tests in accordance with the conditions specified herein;
- (c) DTE Electric Company shall perform the pre-critical tests identified in ESBWR DCD Rev. 10, Section 14.2.6 and 14.2.8.2;
- (d) DTE Electric Company shall review and evaluate the results of the tests identified in Condition 2.D.(3)(c) of this license and confirm that these test results are within the range of acceptable values predicted or otherwise confirm that the tested systems perform their specified functions in accordance with ESBWR DCD Rev. 10, Section 14.2.8.2; and
- (e) DTE Electric Company shall notify the Director of NRO, or the Director's designee, in writing, upon successful completion of the pre-critical tests identified in Condition 2.D. (3)(c) of this license.

(4) Initial Criticality and Low-Power Testing

- (a) Upon submission of the notification required by Condition 2.D.(3)(e) of this license, DTE Electric Company is authorized to operate the facility at reactor steady-state core power levels not to exceed 5-percent thermal power in accordance with the conditions specified herein;
- (b) DTE Electric Company shall perform:
  - 1. the initial criticality and low-power tests identified in ESBWR DCD Rev. 10, Sections 14.2.6, "Initial Fuel Loading and Initial Criticality," 14.2.7, "Test Program Schedule and Sequence," tests and
  - 2. the Reactor Pre Critical Heatup with Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) Natural Core Circulation Test (first of a kind test as identified in ESBWR DCD, Rev. 10, Section 14.2.8.2.35.1), and the Isolation Condenser Performance Test and Heatup and Steady State Operation Test (first of a kind test) as identified in ESBWR DCD Rev. 10, Sections 14.2.8.2.34 and 14.2.8.2.35.2.

(c) DTE Electric Company shall review and evaluate the results of the tests identified in:

1. Condition 2.D.(4)(b)1. of this license and confirm that these test results are within the range of acceptable values predicted or otherwise confirm that the tested systems perform their specified functions in accordance with ESBWR DCD Rev. 10, Section 14.2.6, 14.2.7, 14.2.8.2; and
2. Condition 2.D.(4)(b)2. of this license and confirm that these test results are within the range of acceptable values predicted or otherwise confirm that the tested systems perform their specified functions in accordance with ESBWR DCD Rev. 10, Section 14.2.8.2; and

(d) DTE Electric Company shall notify the Director of NRO, or the Director's designee, in writing, upon successful completion of initial criticality and low-power tests identified in Condition 2.D.(4)(b) of this license, including the design-specific tests identified therein.

(5) Power Ascension Testing

(a) Upon submission of the notification required by Condition 2.D.(4)(d) of this license, DTE Electric Company is authorized to operate the facility at reactor steady-state core power levels not to exceed 100-percent thermal power in accordance with the conditions specified herein, but only for the purpose of performing power ascension testing;

(b) DTE Electric Company shall perform:

1. the power ascension tests identified in the ESBWR DCD Rev. 10, Section 14.2.8.2 and Table 14.2-1; and
2. the design-specific startup tests identified below:
  - (i) Core Performance Test (first of a kind test as identified in ESBWR Design Control Document (DCD), Rev. 10, Section 14.2.8.2.7);
  - (ii) Power Maneuvering in the Feedwater (FW) Temperature Operation Domain Test (first of a kind test as identified in ESBWR DCD Rev. 10, Section 14.2.8.2.35.3);
  - (iii) Load Maneuvering Capability Test (first of a kind test as identified in ESBWR DCD Rev. 10, Section 14.2.8.2.35.4); and
  - (iv) Defense-In-Depth Stability Solution Evaluation Test (first of a kind plant test as identified in ESBWR DCD Rev. 10, Section 14.2.8.2.35.5).

(c) DTE Electric Company shall review and evaluate the results of the tests identified in:

1. Condition 2.D.(5)(b)1. of this license and confirm that these test results are within the range of acceptable values predicted or otherwise confirm that the tested systems perform their specified functions in accordance with ESBWR DCD Rev.10, Section 14.2.8.2; and
2. Condition 2.D.(5)(b)2. of this license and confirm that these test results are within the range of acceptable values predicted or otherwise confirm that the tested systems perform their specified functions in accordance with ESBWR DCD Rev. 10, Section 14.2.8.2; and

(d) DTE Electric Company shall notify the Director of NRO, or the Director's designee, in writing, upon successful completion of power ascension tests identified in Condition 2.D.(5)(b) of this license, including the design-specific tests identified therein.

(6) Maximum Power Level

Upon submission of the notification required by Condition 2.D.(5)(d) of this license, DTE Electric Company is authorized to operate the facility at steady state reactor core power levels not to exceed 4500 MW thermal (100-percent thermal power), as described in the FSAR, in accordance with the conditions specified herein.

(7) Reporting Requirements

- (a) Within 30 days of a change to the initial test program described in FSAR Section 14, Initial Test Program, made in accordance with 10 CFR 50.59 or in accordance with 10 CFR Part 52, Appendix E, Section VIII, "Processes for Changes and Departures," DTE Electric Company shall report the change to the Director of NRO, or the Director's designee, in accordance with 10 CFR 50.59(d).
- (b) DTE Electric Company shall report any violation of a requirement in Conditions 2.D.(3), 2.D.(4), 2.D.(5), and 2.D.(6) of this license within 24 hours. Initial notification shall be made to the NRC Operations Center in accordance with 10 CFR 50.72, with written follow up in accordance with 10 CFR 50.73.

(8) Incorporation

The Technical Specifications, Environmental Protection Plan, and ITAAC in Appendices A, B, and C, respectively, of this license are hereby incorporated into this license.

(9) Technical Specifications

The technical specifications in Appendix A to this license become effective upon a Commission finding that the acceptance criteria in this license (ITAAC) are met in accordance with 10 CFR 52.103(g).

(10) Operational Program Implementation

DTE shall implement the programs or portions of programs identified below, on or before the date DTE achieves the following milestones:

- (a) Environmental Qualification Program implemented before initial fuel load;
- (b) Reactor Vessel Material Surveillance Program implemented before initial fuel load;
- (c) Preservice Testing Program implemented prior to initial fuel load;
- (d) Containment Leakage Rate Testing Program implemented before initial fuel load;
- (e) Fire Protection Program
  - 1. The fire protection measures in accordance with Regulatory Guide (RG) 1.189 for designated storage building areas (including adjacent fire areas that could affect the storage area) implemented before initial receipt of byproduct or special nuclear materials that are not fuel (excluding exempt quantities as described in 10 CFR 30.18);
  - 2. The fire protection measures in accordance with RG 1.189 for new fuel storage area (including adjacent fire areas that could affect the new fuel storage area) implemented before receipt of fuel onsite;
  - 3. Before receipt of fuel on site, a formal letter of agreement shall be in place with the local fire department specifying the arrangements in support of the Fire Protection Program;
  - 4. All fire protection program features implemented before initial fuel load;
- (f) Standard Radiological Effluent Controls implemented before initial fuel load;
- (g) Offsite Dose Calculation Manual implemented before initial fuel load;
- (h) Radiological Environmental Monitoring Program implemented before initial fuel load;
- (i) Process Control Program implemented before initial fuel load;

- (j) Radiation Protection Program (RPP) (including ALARA principle) or applicable portions as identified in FSAR Section 12.5 thereof:
  - 1. RPP features applicable to receipt of by-product, source, or special nuclear materials (excluding exempt quantities as described in 10 CFR 30.18) implemented before initial receipt of such materials;
  - 2. RPP features (including the ALARA principle) applicable to new fuel implemented before receipt of initial fuel on site;
  - 3. All other RPP features (including the ALARA principle) except for those applicable to control radioactive waste shipment implemented before initial fuel load; and
  - 4. RPP features (including the ALARA principle) applicable to radioactive waste shipment implemented before first shipment of radioactive waste;
- (k) Initial Test Program:
  - 1. Preoperational Test Program implemented 60 days before the first preoperational test;
  - 2. Startup Test Program implemented 60 days before initial fuel load;
- (l) Special Nuclear Material Control and Accounting Program implemented before initial receipt of special nuclear material; and
- (m) Special Nuclear Material Physical Protection Plan implemented before initial receipt of special nuclear material on site.

(11) Operational Program Implementation Schedule

No later than 12 months after issuance of the COL, DTE shall submit to the Director of NRO, or the Director's designee, a schedule for implementation of the operational programs listed in FSAR Table 13.4-201, including the associated estimated date for initial loading of fuel. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until all the operational programs listed in FSAR Table 13.4-201 have been fully implemented. This schedule shall also address:

- (a) The implementation of site specific Severe Accident Management Guidance, and
- (b) The spent fuel rack coupon monitoring program implementation.

(12) Site- and Unit-specific Conditions

(a) DTE Electric Company shall use tanks with a maximum capacity of 1000 gallons for the on-site storage of propane. No more than 1000 gallons of propane will be stored in any single location, and no storage location will be located closer than the minimum distance of 854 meters (2800 ft) from any safety-related structure and the Main Control Room.

(b) Steam Dryer Monitoring Plan

1. DTE Electric Company shall prepare a Steam Dryer Monitoring Plan (SDMP) and submit the SDMP to the NRC no later than 90 days before the scheduled date for initial fuel loading.
2. DTE Electric Company shall provide Power Ascension Test (PAT) procedures for steam dryer monitoring to the NRC resident inspectors at least 10 days before the scheduled date for initial fuel loading. The PAT procedures must include the following:
  - (i) Level 1 and Level 2 acceptance limits, as defined in Report NEDE-33313P (Revision 5, December 2013), for on-dryer strain gage and on-dryer accelerometer measurements to be used up to 100 percent power;
  - (ii) The power levels at which the steam dryer will be monitored (subject to Conditions 2.D.(12)(b)3. and 2.D.(12)(b)4. of this license) during power ascension, and the duration of monitoring at each power level;
  - (iii) A description of activities to be accomplished during monitoring at each power level;
  - (iv) Plant parameters to be monitored;
  - (v) A description of the actions to be taken if acceptance criteria are not satisfied; and
  - (vi) A description of the process for verification of the completion of commitments and planned actions specified in the PAT procedures.
3. DTE Electric Company shall complete the actions specified in Item 2 of the model license condition specified in paragraph (c) of Section 10.2, "Comprehensive Vibration Program Elements for a COL Applicant," in NEDE-33313P (Revision 5) between 65 and 75 percent thermal power.
4. DTE Electric Company shall measure, record, and evaluate pressures, strains, and accelerations from the steam dryer instrumentation at power

levels approximately 5 percent higher than the previous power level at which DTE Electric Company measured, recorded, and evaluated such parameters until 100 percent thermal power is reached. DTE Electric Company shall generate data trending and a projection of strain levels for each successive power level, including full power. DTE Electric Company shall use data trending analysis to assess whether the Level 1 or Level 2 acceptance limits would be exceeded at the next higher power level for which the PAT specifies monitoring. DTE Electric Company shall provide the data trending results and revised limit curves to the NRC project manager by facsimile or electronic transmission.

5. At each power level for which Conditions 2.D.(12)(b)3. and 2.D.(12)(b)4. of this license require steam dryer monitoring, DTE Electric Company shall measure and record pressure, strain, and acceleration responses over a range of plant conditions sufficient to confirm that loading and fatigue effects from normal variations in plant conditions at power levels up to and including 100 percent thermal power will not adversely affect the life of the dryer. DTE Electric Company shall include its evaluation of steam dryer performance during such variations in plant conditions, including during Power Maneuvering in the Feedwater Temperature Operating Domain testing, in the dryer structural response as part of the full stress analysis report described in Condition 2.D.(12)(b)9 of this license.
6. If a flow-induced resonance is identified at any power level at which Conditions 2.D.(12)(b)3. and 2.D.(12)(b)4. of this license require steam dryer monitoring, and the strains or vibrations exceed the pre-determined Level 1 or Level 2 limit curve, DTE Electric Company shall cease power ascension until completing the actions specified in Item 5 of the model license condition specified in paragraph (c) of Section 10.2 in NEDE-33313P (Revision 5) and the following:
  - (i) If a Level 1 limit curve is exceeded, DTE Electric Company shall reduce power to the last power level at which DTE Electric Company performed steam dryer monitoring pursuant to Conditions 2.D.(12)(b)3. and 2.D.(12)(b)4. of this license and at which the Level 1 limit curve was not exceeded. DTE Electric Company shall perform a stress analysis to develop a new Level 1 limit curve before increasing power to the next level at which Condition 2.D.(12)(b)4. of this license requires steam dryer monitoring.
  - (ii) If a Level 2 limit curve is exceeded, or if data trending indicates that a Level 1 limit curve may be challenged before the next power level at which Condition 2.D.(12)(b)4. of this license requires steam dryer monitoring is reached, DTE Electric Company shall evaluate the Level 1 and Level 2 limit curves and perform a stress analysis that demonstrates

that the stress acceptance limits are satisfied at the higher power level before power is increased.

7. DTE Electric Company shall determine end-to-end bias and uncertainties by comparing the predicted and measured strain or acceleration on the steam dryer at each power level at which DTE Electric Company performs steam dryer monitoring pursuant to Conditions 2.D.(12)(b)3. and 2.D.(12)(b)4. of this license and confirm the conservatism of the predicted dryer stress field. At each such power level, DTE Electric Company shall adjust the predicted strain and acceleration responses using the frequency-dependent end-to-end bias errors and uncertainty values. If any of the measured sensor data at that power level exceeds the adjusted predictions, DTE Electric Company shall either (a) modify the bias errors and uncertainty values and limit curves and ensure measured sensor responses do not exceed the adjusted predictions, or (b) quantitatively evaluate the effect on fatigue life.
8. At the initial power level at which Condition 2.D.(12)(b)3. of this license requires steam dryer monitoring and at approximately 85 and 95 percent power, DTE Electric Company shall provide the steam dryer data analysis and results to the NRC project manager by facsimile or electronic transmission; and shall not exceed the power level at which it performed the steam dryer monitoring for at least 72 hours after the NRC project manager has confirmed receipt of the transmission.
9. DTE Electric Company shall provide data collected from the steam dryer monitoring required by Condition 2.D.(12)(b)4. of this license at 100 percent power to the NRC project manager by facsimile or electronic transmission within 72 hours of completing the collection of that data, with receipt confirmation from the NRC project manager. DTE Electric Company shall submit a full stress analysis report and evaluation to the NRC document control desk in accordance with 10 CFR 52.4 within 90 days of first reaching 100 percent thermal power. The report must include the minimum stress ratio and the final dryer load definition using steam dryer data, and associated bias errors and uncertainties, and must demonstrate that the steam dryer will maintain its structural integrity over its design life considering variations in plant parameters, including, but not limited to, reactor pressure and core flow rate. If the structural integrity of the steam dryer for the full plant life is not demonstrated by the stress analysis, DTE Electric Company shall describe its compensatory actions, such as future dryer replacement, in the stress analysis report.
10. DTE Electric Company shall implement a periodic steam dryer inspection program as follows:

- (i) During the first two refueling outages after first reaching 100 percent thermal power, DTE Electric Company shall perform a visual inspection of all accessible areas and susceptible locations of the steam dryer in accordance with industry guidance on steam dryer inspections in the latest NRC staff-approved version of BWRVIP-139-A, "BWR Vessel and Internals Project, Steam Dryer Inspection and Flaw Evaluation Guidelines," with any conditions or limitations specified in the NRC staff approval. The results of these baseline inspections shall be submitted to the NRC within 60 days following startup after each outage.
  - (ii) At the end of the second refueling outage after reaching 100 percent thermal power, DTE Electric Company shall update the Steam Dryer Monitoring Program to include a long-term inspection plan based on plant-specific and industry operating experience, and shall submit the updated program to the NRC within 180 days following startup from the second refueling outage.
- (c) No later than 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), DTE Electric Company shall submit to the Director, or the Director's designee, in writing, a fully developed set of site-specific emergency action levels (EALs) for Fermi Unit 3 in accordance with Nuclear Energy Institute (NEI) 07-01, "Methodology for Development of Emergency Action Levels Advanced Passive Light Water Reactors," Revision 0, with no deviations.
- (d) DTE Electric Company shall conduct a detailed analysis of on-shift staffing, in accordance with the NRC endorsed version of NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," Revision 0, and DTE Electric Company shall incorporate any changes to the Emergency Plan needed to bring staffing to the required levels, prior to or concurrent with completion of the EP ITAAC in Table C.3.9.4 in Appendix C to this license.
- (e) Before initial fuel load, DTE Electric Company shall:
1. Implement a surveillance program for explosively actuated valves (squib valves) in the Gravity Driven Cooling System and the Automatic Depressurization System at Fermi 3 that includes the following provisions in addition to the requirements specified in the ASME *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) as incorporated by reference in 10 CFR 50.55a. (Section 3.9 Mechanical Systems and Components)

(i) Preservice Testing

All explosively actuated valves shall be preservice tested by verifying the operational readiness of the actuation logic and associated electrical circuits for each explosively actuated valve with its pyrotechnic charge removed from the valve. This must include confirmation that sufficient electrical parameters (voltage, current, resistance) are available at the explosively actuated valve from each circuit that is relied upon to actuate the valve. In addition, a sample of at least 20 percent of the pyrotechnic charges in all explosively actuated valves shall be tested in the valve or a qualified test fixture to confirm the capability of each sampled pyrotechnic charge to provide the necessary motive force to operate the valve to perform its intended function without damage to the valve body or connected piping. The sampling must select at least one explosively actuated valve from each redundant safety train. Corrective action shall be taken to resolve any deficiencies identified in the operational readiness of the actuation logic or associated electrical circuits, or the capability of a pyrotechnic charge. If a charge fails to fire or its capability is not confirmed, all charges with the same batch number shall be removed, discarded, and replaced with charges from a different batch number that has demonstrated successful 20 percent sampling of the charges.

(ii) Operational Surveillance

Explosively actuated valves shall be subject to the following surveillance activities after commencing plant operation:

- a. At least once every 2 years, each explosively actuated valve shall undergo visual external examination and remote internal examination (including evaluation and removal of fluids or contaminants that may interfere with operation of the valve) to verify the operational readiness of the valve and its actuator. This examination shall also verify the appropriate position of the internal actuating mechanism and proper operation of remote position indicators. Corrective action shall be taken to resolve any deficiencies identified during the examination with post-maintenance testing conducted that satisfies the PST requirements.
- b. At least once every 10 years, each explosively actuated valve shall be disassembled for internal examination of the valve and actuator to verify the operational readiness of the valve assembly and the integrity of individual components and to remove any foreign material, fluid, or corrosion. The examination schedule shall provide for each valve design used for explosively actuated valves at the facility to be included among the explosively actuated valves to be disassembled

and examined every 2 years. Corrective action shall be taken to resolve any deficiencies identified during the examination with post-maintenance testing conducted that satisfies the PST requirements.

- c. For explosively actuated valves selected for test sampling every 2 years in accordance with the ASME OM Code, the operational readiness of the actuation logic and associated electrical circuits shall be verified for each sampled explosively actuated valve following removal of its charge. This must include confirmation that sufficient electrical parameters (voltage, current, resistance) are available for each valve actuation circuit. Corrective action shall be taken to resolve any deficiencies identified in the actuation logic or associated electrical circuits.
- d. For explosively actuated valves selected for test sampling every 2 years in accordance with the ASME OM Code, the sampling must select at least one explosively actuated valve from each redundant safety train. Each sampled pyrotechnic charge shall be tested in the valve or a qualified test fixture to confirm the capability of the charge to provide the necessary motive force to operate the valve to perform its intended function without damage to the valve body or connected piping. Corrective action shall be taken to resolve any deficiencies identified in the capability of a pyrotechnic charge in accordance with the PST requirements.

This license condition shall expire upon (1) incorporation of the above surveillance provisions for explosively actuated valves into the facility's inservice testing program, or (2) incorporation of inservice testing requirements for explosively actuated valves in new reactors (i.e., plants receiving a construction permit, or COL for construction and operation, after January 1, 2000) to be specified in a future edition of the ASME OM Code as incorporated by reference in 10 CFR 50.55a, including any conditions imposed by the NRC, into the facility's inservice testing program.

- (f) DTE Electric Company shall perform detailed geologic mapping of excavations for safety related structures; examine and evaluate geologic features discovered in these excavations; and shall notify the Director of NRO, or the Director's designee, in writing, once excavations for these safety related structures are open for examination.

(g) Mitigation Strategies for Beyond-Design-Basis External Events

1. DTE Electric Company shall complete development of an overall integrated plan of strategies to mitigate a beyond-design-basis external event at least 1 year before the completion of the last ITAAC on the schedule required by 10 CFR 52.99(a).
2. 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).
3. The guidance and strategies required by this condition must be capable of (i) mitigating a simultaneous loss of all alternating current (ac) power, both from the onsite and offsite power systems, and loss of normal access to the normal heat sink and (ii) providing for adequate capacity to perform the functions upon which the guidance and strategies rely for all units on the Fermi site and in all modes at each unit on the site.
4. Before initial fuel load, DTE Electric Company shall fully implement the guidance and strategies required by this condition, including:
  - (i) Procedures;
  - (ii) Training;
  - (iii) Acquisition, staging, or installation of equipment and consumables relied upon in the strategies; and
  - (iv) Configuration controls and provisions for maintenance and testing (including testing procedures and frequencies for preventative maintenance) of the equipment upon which the strategies and guidance required by this condition rely.
5. The training required by Condition 2.D.(12)(g)4.(ii) of this license must use a Systematic Approach to Training (SAT) to evaluate training for station personnel, and must be based upon plant equipment and procedures upon which the guidance and strategies required by this Condition rely.
6. DTE Electric Company shall maintain the guidance and strategies described in the application upon issuance of the license, and the integrated plan of

strategies upon its completion as required by Condition 2.D.(12)(g)(1) of this license. DTE Electric Company may change the strategies and guidelines required by this Condition provided that DTE Electric Company evaluates each such change to ensure that the provisions of Conditions 2.D.(12)(g)(2) and 2.D.(12)(g)(3) of this license continue to be satisfied and DTE Electric Company documents the evaluation in an auditable form.

(h) Reliable Spent Fuel Pool/Buffer Pool Level Instrumentation

Prior to initial fuel load, DTE Electric Company shall address the following requirements using the guidance contained in JLD-ISG-2012-03, "Compliance with Order EA-2012-051, Reliable Spent Fuel Pool Instrumentation," Revision 0:

The spent fuel pool/buffer pool instrumentation shall be maintained available and reliable through the development and implementation of a training program. The training program shall include provisions to ensure trained personnel can route the temporary power lines from the alternate power source to the appropriate connection points, and connect the alternate power source to the safety-related level instrument channels.

(i) Emergency Planning Actions

1. Communications

- (i) At least 18 months prior to the latest date set forth in the schedule for completing the inspections, test, and analyses in the ITAAC schedule submitted in accordance with 10 CFR 52.99(a), DTE Electric Company shall have performed an assessment of on-site and offsite communications systems and equipment required during an emergency event to ensure communications capabilities can be maintained during prolonged station blackout conditions. The communications capability assessment shall be performed in accordance with NEI 12-01, "Guidance for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0.
- (ii) At least one hundred eighty (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), DTE Electric Company shall complete implementation corrective actions identified in the communications capability assessment described above, including any related emergency plan and implementing procedure changes and associated training.

## 2. Staffing

- (i) At least 18 months prior to the latest date set forth in the schedule for completing the inspections, tests, and analyses in the ITAAC schedule submitted in accordance with 10 CFR 52.99(a), DTE Electric Company shall have performed assessments of the on-site and augmented staffing capability to satisfy the regulatory requirements for response to a multi-unit event. The staffing assessments will be performed in accordance with NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0.
- (ii) At least 180 days before the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR 52.103(a), DTE Electric Company shall revise the Emergency Plan to include the following:
  - a. Incorporation of corrective actions identified in the staffing assessment in Condition 2.D.(12)(i)1.(i) of this license.
  - b. Identification of how the augmented staffing will be notified given degraded communications capabilities.
- (j) Prior to initial fuel load, DTE Electric Company shall execute formal Letters of Agreement with the following State and local agencies with emergency planning responsibilities:
  1. Michigan State Police
  2. Monroe County Emergency Management Division
  3. Wayne County Department of Homeland Security & Emergency Management
  4. Frenchtown Charter Township Fire Department
  5. Mercy Memorial Hospital Corporation
  6. Monroe Community Ambulance
  7. Oakwood Southshore Medical Center
  8. Ohio Emergency Management Agency
  9. Monroe County Community College

These Letters of Agreement shall identify the specific nature of arrangements in support of emergency preparedness for operation of Fermi Unit 3. The Emergency Plan shall be revised to include these Letters of Agreement after they have been executed.

E. DTE Electric Company shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims.

F. Exemptions

(1) The following exemption from the regulations was granted in the rulemaking for the design certification rule that is referenced in the application. In accordance with 10 CFR Part 52, Appendix E, Section V, Applicable Regulations, Subsection B, and pursuant to 10 CFR 52.63(a)(5), the licensee is exempt from the regulation in Paragraph (f)(2)(iv) of 10 CFR 50.34—Plant Safety Parameter Display Console, as discussed in Section 18.8.3.2 of the ESBWR FSER.

(2) For the reasons set forth below, the following specific exemption which is outside the scope of the design certification rule referenced in the application is granted:

DTE Electric Company is exempt from the requirements of 10 CFR 70.22(b), 10 CFR 70.32(c), 10 CFR 74.31, 10 CFR 74.41, and 10 CFR 74.51 because DTE Electric Company meets the requirements of 10 CFR 70.17 and 74.7, as discussed in Section 1.4.4 of the SER. The exemption meets the requirements of 52.7 because it is authorized by law, will not present an undue risk to the public health or safety, and is consistent with the common defense and security. Additionally, special circumstances are present in that the application of the regulations in this particular circumstance is not necessary to achieve the underlying purpose of the rule (10 CFR 50.12(a)(2)(ii)) as described in the FSAR and the staff SER dated November 18, 2014.

G. DTE Electric Company shall maintain the guidance and strategies developed in accordance with 10 CFR 50.54(hh)(2).

H. This license is effective as of May 1, 2015 and shall expire at midnight on the date 40 years from the date that the Commission finds that the acceptance criteria in the combined license are met in accordance with 10 CFR 52.103(g).

FOR THE NUCLEAR REGULATORY  
COMMISSION

***/RA/***

Glenn M. Tracy, Director  
Office of New Reactors

Appendices:

Appendix A – Technical Specifications

Appendix B – Environmental Protection Plan

Appendix C – Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)