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DTE Energy

10 CFR 50.55a

August 7, 2013
NRC-13-0040

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) NRC Letter to Detroit Edison Company, "Fermi 2 -Evaluation of Relief Request Nos.: PRR-004, PRR-005, PRR-007, and PRR-010 for the Third 10-Year Interval Inservice Program (TAC Nos. ME2552, ME2553, ME2554, ME2559)," dated July 6, 2010 (ML101670372)

Subject: Submittal of Inservice Testing Program Relief Request PRR-011, for the Third Ten-Year Interval

Pursuant to 10CFR50.55a DTE Electric Company (DTE) hereby requests NRC approval of the enclosed relief request, PRR-011, for the Fermi 2 Power Plant. Relief request PRR-011 proposes the use of a minimum reference value for smooth running pump vibration acceptance criteria. The enclosed relief request, consistent with the evaluation of relief request PRR-005 in Reference 2, demonstrates that the proposed alternative would provide an acceptable level of quality and safety in accordance with 10CFR50.55a(a)(3)(i). Approval of the proposed alternative is requested for the remaining duration of the Fermi 2 third IST 10 year interval which started on February 17, 2010.

DTE requests NRC approval of this relief request within one calendar year of the date of this letter.

No new commitments are being made in this submittal.

Should you have any questions or require additional information, please contact Mr. Zackary W. Rad of my staff at (734) 586-5076.

Sincerely,

Enclosure: IST Relief Request PRR-011, Smooth Running Pump Vibration Acceptance Criteria

cc: NRC Project Manager
NRC Resident Office
Reactor Projects Chief, Branch 5, Region III
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

Enclosure to
NRC-13-0040

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

IST Relief Request PRR-011,
Smooth Running Pump Vibration Acceptance Criteria

Proposed Alternative In Accordance with 10 CFR 50.55a(a)(3)(i)

Alternative Provides Acceptable Level of Quality and Safety

1. ASME Code Component(s) Affected

Pump ID	Pump Description	Code Class	OM / ISTB Group	Type	Speed
T4100C040	South Control Center Heating, Ventilation and Air Conditioning (CCHVAC) Chilled Water Pump	3	A	Centrifugal	1745 RPM
T4100C041	North Control Center Heating, Ventilation and Air Conditioning (CCHVAC) Chilled Water Pump	3	A	Centrifugal	1745 RPM

2. Applicable Code Edition and Addenda

ASME OM Code 2004 Edition

3. Applicable Code Requirement

This request for relief applies only to vibration testing. ISTB-3300 requires that vibration reference values be determined from the results of preservice testing or from the results of the first inservice test. Table ISTB 5121-1 establishes the vibration acceptance criteria for centrifugal pumps based on the reference values. Specifically, the table requires the use of 2.5 and 6 times the reference values in determining acceptable ranges of vibration unless those calculated values exceed the absolute limits specified in the table. ISTB-6200 requires action to be taken based upon exceeding the ranges established in Table ISTB 5121-1.

4. Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and Standards," paragraph (a)(3)(i), relief is requested to deviate from the acceptance criteria requirement listed in 2004 ASME OM Code Table ISTB 5121-1. The basis of this request for relief is that the proposed alternative will provide an acceptable level of quality and safety.

The listed pumps have at least one vibration reference value (Vr) that is currently less than or equal to 0.04 inches per second (ips). Small values for Vr result in very small acceptable ranges for pump operation. The acceptable ranges are defined in Table ISTB-5121-1 as less than or equal to 2.5 Vr. Based on a small acceptable range, a smooth running pump could be subject to unnecessary corrective action.

5. Proposed Alternative and Basis for Use

To avoid unnecessary increased frequency testing or corrective actions on pumps which are performing satisfactorily and with very low baseline vibration, a minimum velocity measurement value (V_r) of 0.04 ips will be established for velocity reference values. This minimum value will be applied to an individual vibration location where the measured reference value is less than or equal to 0.04 ips and utilized in the calculation of acceptable ranges specified in Table ISTB 5121-1. This will result in a minimum alert range of 0.100 ips and required action range of 0.240 ips.

For very small reference values, hydraulic noise and instrumentation error can be a significant portion of the reading and therefore affect the repeatability of subsequent measurements. Also, experience gathered from the predictive maintenance program has shown that changes in vibration levels in the range of 0.04 ips are not typically indicative of degradation in pump or motor condition.

When new reference values are established per ISTB-3310, ISTB-3320, or ISTB-6200, the measured parameters will be evaluated for each vibration location to determine if the provisions of this relief request are applicable. If the measured V_r is greater than 0.04 ips, the provisions of this relief request are not applicable, and the acceptance criteria requirements of Table ISTB 5121-1 will be applied to the measured V_r value. Conversely, if a measured V_r is less than or equal to 0.04 ips, the provisions of this relief request are applicable; a minimum V_r value of 0.04 ips will be used, and the acceptance criteria requirements of Table ISTB 5121-1 will be applied to the minimum V_r value of 0.04 ips. Since T4100C041 currently has reference vibration points both less than 0.04 ips and greater than 0.04 ips, this pump will utilize both sets of acceptance criteria discussed above. The basis for the vibration reference values is documented on a Fermi 2 IST Evaluation in accordance with the Inservice Inspection and Testing Program.

In addition to the requirements of ISTB, the pumps in the ASME Inservice Testing Program are included in the site Preventative and Predictive Maintenance Program Scope. The Predictive Maintenance Program currently employs predictive monitoring techniques such as vibration monitoring and analysis beyond that required by ISTB.

All vibration data, which is collected quarterly utilizing an accurate data acquisition system, is downloaded into the Vibration Predictive Maintenance Program software and then analyzed for vibration magnitude and discrete frequencies. Components exhibiting abnormal vibration trends would be subjected to a detailed spectral analysis.

If the measured parameters are outside the normal operating range or are determined by analysis to be trending toward an unacceptable degraded state, appropriate actions are taken that may include:

- Increased monitoring to establish rate of change,
- Review of component specific information to identify cause, and
- Removal of the pump from service to perform maintenance.

The Preventative Maintenance Program coverage includes an event to inspect and lubricate these pumps. This includes lubrication of the pump and motor bearings, a check of the coupling screws, lubrication of the coupling, and cleaning of the motor housing and vents. In addition, Electrical Predictive Maintenance testing is performed on the pump motors.

Figure 1 below shows the physical location of the vibration points.

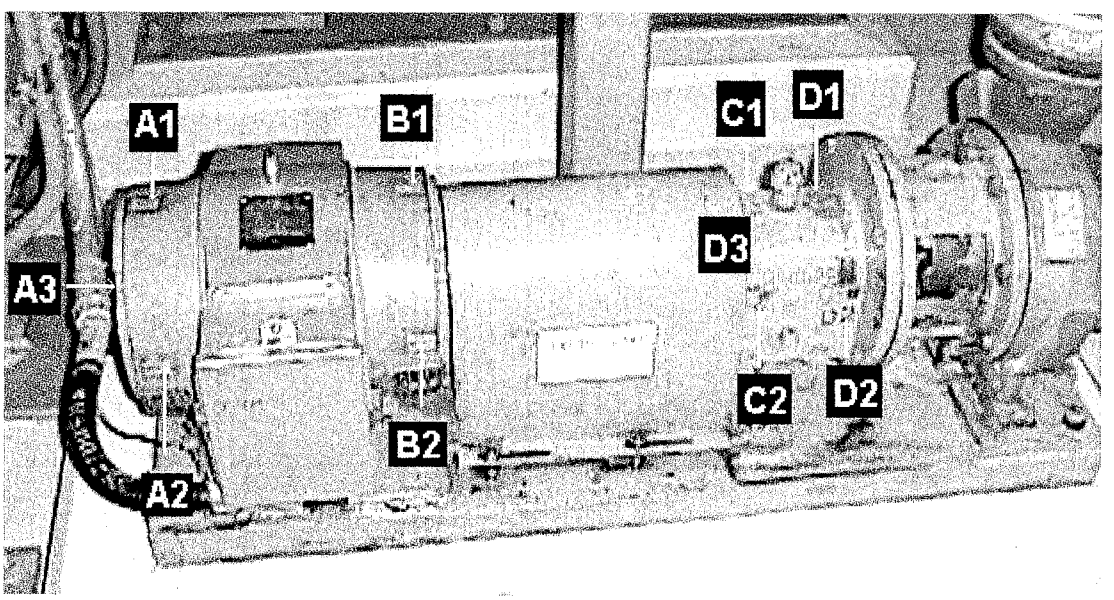

Figure 1 (Physical Locations of Vibration Points – Typical)

The measured reference vibration values for the IST Program are collected at locations C1, C2, D1, D2, and D3. The reference values for the CCHVAC Chilled Water Pumps were established from operating data when the pumps were known to be operating acceptability. The vibration reference values for these pumps are:

PIS No.	C1 (ips)	C2 (ips)	D1 (ips)	D2 (ips)	D3 (ips)
T4100C040	0.020	0.025	0.015	0.024	0.023
T4100C041	0.049	0.053	0.037	0.041	0.042

These two pumps are in the Preventative and Predictive Maintenance Program scope even though they have very low vibration readings and are considered to be smooth running pumps.

On average, the Control Center HVAC Chilled Water Pumps (T4100C040 and T4100C041) operate 50% of the time (one division operates continuously).

In conclusion, using the provisions of this relief request as an alternative to the specific requirements of 2004 ASME OM Code Table 5121-1 will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) authorization to implement the proposed alternative is requested.

6. Duration of Proposed Alternative

This proposed alternative will be used for the remaining duration of the Fermi 2 third 120 month interval which started on February 17, 2010.

7. Precedent

Fermi 2 Nuclear Power Plant - Relief Request PRR-005 for the Third Interval In-service Testing Program; Docket Number 50-341. (ML101670372)