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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

OFFICE OF SECRETARY
DOCKETING & SERVICE
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| In the Matter of |) | |
| |) | |
| THE CLEVELAND ELECTRIC |) | Docket Nos. 50-440 |
| ILLUMINATING COMPANY, <u>ET AL.</u> |) | 50-441 |
| |) | |
| (Perry Nuclear Power Plant, |) | |
| Units 1 and 2) |) | |

APPLICANTS' STATEMENT OF MATERIAL
FACTS AS TO WHICH THERE IS NO
GENUINE ISSUE TO BE HEARD ON ISSUE 16

Pursuant to 10 C.F.R. § 2.749(a), Applicants, in support of their Motion for Summary Disposition of Issue 16, state that there is no genuine issue to be heard with respect to the following material facts:

1. Issue 16 states that Applicants have not demonstrated that the four Transamerica Delaval, Inc. ("TDI") diesel generators in place at the Perry Nuclear Power Plant ("PNPP") can reliably generate emergency on-site power. ASLB Memorandum and Order, December 23, 1983.

2. The TDI Diesel Generator Owners Group Program provides assurance that the TDI diesel generators in place at PNPP will reliably perform their safety-related functions by establishing both the reliability and acceptability of their critical engine

components. Affidavit of John C. Kammeyer ("Kammeyer Affidavit"), ¶ 31. The Program Plan established by the Owners Group provides an in-depth assessment of the PNPP diesel generators' ability to perform their safety-related function through a series of component design reviews and quality revalidations, engine tests, component inspections, and the establishment of maintenance requirements. Kammeyer Affidavit, ¶¶ 6, 9.

3. The NRC staff evaluated the Program Plan and concluded that it incorporates the essential elements needed to resolve the outstanding concerns relating to the reliability of the TDI diesel generators for nuclear service, and to ensure that they comply with GDC 1 and GDC 17. Id., ¶ 7.

4. Cleveland Electric Illuminating Company ("CEI") is a member of the Owners Group and actively participated in the Owners Group Program Plan. Id., ¶ 4; Affidavit of Edward C. Christiansen ("Christiansen Affidavit"), ¶¶ 4, 5, 7-19.

5. High-quality technical resources were used to implement the Owners Group Program. Kammeyer Affidavit, ¶ 6. Spanning over a year's time, more than a hundred engineers and technicians were involved in the Phase I effort alone (see ¶ 7 below). Id., ¶ 13. This ensured that the evaluation of the TDI diesels would be thorough and meaningful. Id., ¶ 6.

6. The Owners Group compiled a comprehensive database on diesel generator operating experience to provide a foundation for the selection of components for review. Id., ¶¶ 8, 15. The

database included information from both nuclear and non-nuclear industry experience as well as utility site-specific experience with diesel generators. Id.

7. The "Phase I" effort of the Owners Group Program has identified each significant known problem with potentially generic applicability to TDI diesel generators. Id., ¶ 8. Sixteen components were identified for which specific design and/or manufacturing concerns were raised. Id., ¶ 9. The crankshaft was among the component identified and evaluated. Id., ¶¶ 8, 10.

8. A detailed design review of each of these sixteen components was conducted by the Owners Group consultants. Id., ¶ 9. Their analyses, results, and conclusions are outlined in a series of thirty-six separate reports which have been submitted to the NRC for review. Id., ¶ 13; and see Christiansen Affidavit, ¶ 4. The Phase I reports contain recommendations for maintenance, inspection, testing and recommendations concerning operating procedures and procurement specification requirements. Christiansen Affidavit, ¶ 4.

9. CEI employed an independent engineering consulting firm, Southwest Research Institute ("SwRI"), to verify the applicability of each Owners Group report to the specific component in place at PNPP. Id. ¶ 6. SwRI concluded that each of the sixteen Phase I components in place at PNPP is acceptable for nuclear service if the applicable Owners Group maintenance and inspection recommendations, as well as those of SwRI are

followed. Affidavit of Charles D. Wood III ("Wood Affidavit"), ¶¶ 181-182.

10. While TDI drawings and certain TDI information were used as input to the Owners Group review of the diesel generator components (in both Phase I and Phase II, as discussed below), all technical evaluations were performed independent of TDI. Kammeyer Affidavit, ¶ 11. Independent design verification of each component requiring a design review was achieved by the establishment of a methodology for verification of the critical attributes of the component and their evaluation by the Owners Group, not by a review of TDI's analysis. Id. The Owners Group Program achieved independence from TDI's Quality Assurance Program by the inspection and testing of the TDI diesel generator equipment installed at each site. Id., ¶ 12. These inspections were performed by Owners Group and/or site personnel. Id. Thus, critical aspects of components actually installed in the diesels were verified independent of TDI. Id.

11. PNPP has incorporated all of the applicable Phase I Owners Group recommendations into its TDI engine program. Christiansen Affidavit, ¶ 5. Where required, Phase I components were inspected by a task force of PNPP personnel and/or Owners Group representatives during the engine revalidation effort. Id., ¶¶ 10-15. Ongoing maintenance recommendations from the Owners Group, as well as SwRI's recommendations, are being incorporated into the engine maintenance program at the plant. Id., ¶¶ 16-17. Owners Group requirements will be reflected in

specifications provided in all future purchase requisitions.

Id., ¶ 22.

12. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and maintenance recommendations at PNPP, the PNPP TDI diesel generators' turbochargers are acceptable for their intended nuclear service. Wood Affidavit, ¶¶ 143-152.

13. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and maintenance recommendations at PNPP, the PNPP TDI diesel generators' base and bearing caps are acceptable for their intended nuclear service. Id. ¶¶ 34-35.

14. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and maintenance recommendations at PNPP, the PNPP TDI diesel generators' crankshafts are acceptable for their intended nuclear service. Id. ¶¶ 161-172.

15. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and maintenance recommendations at PNPP, the PNPP TDI diesel generators' cylinder blocks and cylinder liners are acceptable for their intended nuclear service. Id., ¶¶ 131-142.

16. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and

maintenance recommendations at PNPP, the PNPP TDI diesel generators' cylinder head studs are acceptable for their intended nuclear service. Id., ¶¶ 108-118.

17. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and maintenance recommendations at PNPP, the PNPP TDI diesel generators' connecting rods are acceptable for their intended nuclear service. Id., ¶¶ 173-180.

18. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and maintenance recommendations at PNPP, the PNPP TDI diesel generators' connecting rod bearing shells are acceptable for their intended nuclear service. Id., ¶¶ 46-59.

19. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and maintenance recommendations at PNPP, the PNPP TDI diesel generators' pistons are acceptable for their intended nuclear service. Id., ¶¶ 119-130.

20. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and maintenance recommendations at PNPP, the PNPP TDI diesel generators' airstart valve capscrews are acceptable for their intended nuclear service. Id., ¶¶ 80-90.

21. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and maintenance recommendations at PNPP, the PNPP TDI diesel generators' cylinder heads are acceptable for their intended nuclear service. Id., ¶¶ 67-79.

22. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and maintenance recommendations at PNPP, the PNPP TDI diesel generators' fuel oil injector tubing are acceptable for their intended nuclear service. Id., ¶¶ 24-32.

23. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and maintenance recommendations at PNPP, the PNPP TDI diesel generators' main and connecting pushrods are acceptable for their intended nuclear service. Id., ¶¶ 91-107.

24. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and maintenance recommendations at PNPP, the PNPP TDI diesel generators' rocker arm capscrews are acceptable for their intended nuclear service. Id., ¶¶ 12-23.

25. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and maintenance recommendations at PNPP, the PNPP TDI diesel generators' jacket water pumps are acceptable for their intended nuclear service. Id., ¶¶ 153-160.

26. Based on the Owners Group and SwRI's evaluations, as well as the implementation of applicable inspection, testing, and maintenance recommendations at PNPP, the PNPP TDI diesel generators' wiring and terminations are acceptable for their intended nuclear service. Id., ¶¶ 60-66.

27. "Phase II" of the Owners Group Program examined the important components of each owner's engine which were not reviewed in the Phase I effort. Kammeyer Affidavit, ¶¶ 14-27. PNPP diesel generator components were examined from the standpoint of both design and quality attributes. Id., ¶ 14; Christiansen Affidavit, ¶¶ 7-11.

28. The Phase II components were chosen on the basis of past nuclear and non-nuclear engine experience, as well as site-specific experience, as entered into the comprehensive database discussed supra. Kammeyer Affidavit, ¶¶ 14-17. The effect the component's failure would have on the performance of the diesel generator was also evaluated and each component was classified according to its criticality. Id., ¶ 16.

29. Appropriate design review and quality revalidation requirements were established for each component, as reflected in the more detailed task descriptions which were prepared for each component. Id., ¶¶ 18-19, 22. Components whose failure would result in immediate diesel generator shutdown or prevent start-up under emergency conditions normally required a full design review and quality revalidation. Id., ¶¶ 16-17. The task description

for each PNPP component was then implemented by a PNPP task force at the site, with detailed design reviews being conducted by the Owners Group. Id., ¶ 22; Christiansen Affidavit, ¶¶ 8-11.

30. The Phase II effort has been completed at PNPP. The PNPP DR/QR Report was transmitted to the NRC on January 17, 1985. Christiansen Affidavit ¶ 8. As noted in the DR/QR Report, selected engine components (as recommended by the Owners Group) will be inspected following approximately 100 hours of operation on each of the Unit 1 engines. Affidavit of Gary R. Leidich ("Leidich Affidavit"), ¶ 21.

31. All unfavorable inspection results have been documented according to established PNPP procedure, evaluated and resolved. Christiansen Affidavit, ¶ 13. A problem with the engines' rocker arms and one with the crankshaft oil holes were the only two notable concerns encountered. Id. ¶¶ 14, 15. Both problems were corrected according to procedures recommended by the Owners Group and TDI. Id.

32. Where the Owners Group recommended "ongoing" maintenance for a Phase II component to assure its reliable performance, this maintenance requirement is being incorporated into the ongoing PNPP preventative maintenance program. Id., ¶¶ 16-17. SwRI recommendations relating to the Phase I components will also be incorporated into PNPP's engine maintenance program. Id. Specifications for Phase II components provided in all future purchase requisitions will also reflect any pertinent Owners Group requirements. Id., ¶ 22.

33. The two PNPP Unit 1 TDI diesel generators will be subjected to a comprehensive testing program coupled with specific component inspections prior to plant licensing and operation. Leidich Affidavit, ¶ 7. This program will provide additional assurance of the reliability of the TDI diesel generators' ability to perform their intended safety-related function. Id.

34. The preoperational engine test program for the Unit 1 diesel engines is based on IEEE-387-1977 and NRC Reg. Guide 1.108, Rev. 1, August 1977 (as described in Table 1.8 of the PNPP FSAR). Id., ¶ 8. The program includes testing and inspection recommendations developed by the Owners Group. Id.

35. The "lead" engines for the model DSRV-16-4 engines installed at PNPP have already undergone successful pre-operational testing. Id., ¶ 9. The TDI DSRV-16-4 engines at Comanche Peak were successfully tested in a program based on IEEE Std. 387, Reg. Guide 1.108, and the additional Owners Group tests (including a torsionograph test of the crankshaft and engine vibration tests). Id. In excess of 100 hours of operation were logged on these engines. The TDI DSRV-16-4 engines at the Catawba plant have over 1600 hours of successful operation. Id., ¶ 10. The successful operation of these engines provides additional assurance of the capabilities of the DSRV-16-4 engines installed at PNPP. Id., The test program developed for PNPP incorporated information obtained from the testing at these other plants as well as input from routine reporting and surveillance programs such as 10 C.F.R. Parts 21 and 50.55(e). Id., ¶ 11.

36. The PNPP diesel generator auxiliary systems will be tested to demonstrate the proper functioning of the electrical and pneumatic controls for the diesel generator auxiliary systems, which include the starting air, jacket water, lube oil, and fuel oil systems. Id., ¶ 14.

37. Diesel generator control circuit functional and start tests will be conducted at PNPP to demonstrate electrical and pneumatic control circuit operability in the "Manual" mode of operation for both Unit 1 diesel generators. Id., ¶ 15. Each diesel generator will be tested to demonstrate that it is capable of starting, achieving rated voltage and frequency within acceptable limits and time, and accepting load in the various modes of operation. Id., ¶ 15.

38. Diesel generator load tests will be conducted to demonstrate the capability of both Unit 1 diesel generators to start, load to 100 percent of full-rated load, and achieve steady-state temperature equilibrium. Id., ¶ 16. Each diesel generator will demonstrate its operational capacity at 100 percent load for 24 hours within design and operational parameters. Id. Each diesel generator's capability to reject 100 percent rated load without tripping due to overspeed will be tested. Id., ¶ 16.

39. Diesel generator load acceptance tests will be performed to demonstrate the capability of both Unit 1 diesel generators to start upon receipt of a start signal and to independently accept design loads without exceeding manufacturer specifications and design criteria. Id., ¶ 17.

40. Diesel generator reliability tests will be conducted to demonstrate the starting performance of both Unit 1 diesel generators by the performance of a minimum of 69 total valid tests with no failures, in accordance with the criteria specified in Reg. Guide 1.108, Rev. 1 Section C.2.a(9) and C.2.e. Id., ¶ 18. PNPP will perform 20 additional tests, 10 on each of the Unit 1 diesel generators. Id., ¶¶ 18-19. Each of the start-and-load tests will be documented on a chronological test log in accordance with Section 3.0 of Reg. Guide 1.108. Id., ¶ 19.

41. Testing recommended by the Owners Group to confirm the adequacy of selected components will also be performed at PNPP. Id., ¶ 20. A torsionograph test to confirm the adequacy of the crankshaft to withstand operating torsional stresses will be performed. Id. An engine baseline vibration survey will be taken to determine the initial vibration characteristics of both Unit 1 engines. Id.

42. TDI-recommended hot and cold crankshaft deflection measurements will also be performed prior to preoperational testing to verify the adequacy of the crankshaft. Id., ¶ 20. At PNPP, an additional measure of the performance of each cylinder on each of the engines will be obtained by logging cylinder exhaust temperature sensor readings under load. Id., ¶ 13.

43. Surveillance and reporting programs in place at PNPP, including those established pursuant to 10 C.F.R. Parts 21 and 50.55(e), will continue to identify and monitor any problems with the TDI diesel generators. Christiansen Affidavit, ¶¶ 23, 24.

44. Procurement of diesel generator components will continue to be conducted in accordance with the requirements of 10 C.F.R. Part 21. Id., ¶ 22.

45. All PNPP Nonconformance Reports written against the diesel generators have been reviewed for reportability to the NRC. Id., ¶ 25. Significant conditions have been reported via Deficiency Analyses Reports ("DARs"). Id., ¶ 26. Of the 19 DARs forwarded to the NRC relating to TDI-supplied equipment, corrective action has been completed on all but the most recent one, and the majority have been closed out by the NRC staff. Id.

Respectfully submitted,

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