

RELATED CORRESPONDENCE

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

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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' ANSWERS TO OHIO CITIZENS FOR
RESPONSIBLE ENERGY ELEVENTH SET OF INTERROGATORIES
TO APPLICANTS RELATING TO ISSUE NO. 16

Applicants for their answers to Ohio Citizens for Responsible Energy ("OCRE") Eleventh Set of Interrogatories to Applicants, dated February 17, 1984 (postmarked February 18, 1984), state as follows:

All documents supplied to OCRE for inspection will be produced at Perry Nuclear Power Plant ("PNPP"). Arrangements to examine the documents at PNPP can be made by contacting Mr. Bradley S. Ferrell of The Cleveland Electric Illuminating Company ("CEI") at (216) 259-3737, extension 5520. Applicants will provide copies of any of the produced documents or portions thereof which OCRE requests at Applicants' cost of

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duplication. Arrangements for obtaining copies can be made with Mr. Ferrell.

11-1. In Applicants' response to OCRE Interrogatory 10-10, it is stated that TDI was selected on the basis of quality, reliability, and experience.

(a) At the time of the award of the contract to TDI, had TDI manufactured any DGs for use as standby power units in nuclear facilities? If so, list the facilities, and date of installation and operation of the DGs.

(b) Did Applicants (or any of their agents) at any time contact any users of TDI diesel engines (including non-nuclear users, e.g., ship owners) for their experience with TDI's quality and reliability? If so, list all users so contacted, and produce any correspondence, notes, etc. concerning such contact. If no contacts were made, why not?

Response:

(a) Transamerica Delaval, Inc. ("Delaval" or "TDI") had not completed manufacture of any diesel generators for use as standby power units for nuclear facilities at the time of the award of the contract for the PNPP standby diesel generators to Delaval. However, Delaval was in the process of manufacturing 29 diesel generators for application as standby power units for nuclear facilities, including 16 which were of a V-16 engine design, as are the PNPP diesels. A list of the facilities for which the 29 diesel generators were being manufactured is available at PNPP. In addition, no other manufacturer, including the other bidders on Applicants' specification, had manufactured or was manufacturing nuclear-qualified diesel generators of the size desired by Applicants.

(b) Neither Applicants nor any of their agents contacted any users of Delaval diesel engines prior to the award of the contract to Delaval. Applicants do not generally contact users of equipment supplied by Applicants' prospective vendors unless there is reason to question a particular vendor's reliability. Applicants were aware that Delaval had considerable experience manufacturing diesel engines and had no reason to question Delaval's reliability.

11-2. Enclosure 3 to the Staff Report dated Feb. 2, 1984, p. 3 of the attachment concerning Region IV Inspection Findings at TDI, item #8, states that "a QA program was not imposed on the manufacturer of exhaust silencers for EDGs furnished to Perry, Units 1 and 2, as required by Perry Specification No. SP-750-4549-00 and SP-706-4549-00."

(a) When and how did Applicants become aware of this deficiency?

(b) What has been determined to be the cause of the deficiency?

(c) What corrective actions were taken as a result?

Response:

(a) Applicants became aware of the above referenced inspection finding through Board Notification 84-020, dated February 13, 1984, to which the inspection finding was attached.

(b) According to Delaval, Delaval's response to the NRC Staff ("Staff") concerning the inspection finding was that there was no deficiency because a copy of Applicants' quality assurance ("QA") requirements was attached to Delaval's purchase order issued to the exhaust silencer manufacturer. The Staff has not yet issued an evaluation of Delaval's response.

(c) No corrective action has been taken pending the Staff's resolution of the inspection finding. In any event, the design of the PNPP standby diesel generator exhaust system does not require safety-related exhaust silencers. If the exhaust silencer should fail, a safety-related safety relief valve will open, allowing continued operation of the diesel generator.

11-3. Enclosure 4, the transcript of the meeting of Jan. 26, 1984, at p. 18 refers to the absence of any documented provisions for control of installation of fuel oil line clamps; this is considered by the Staff to be a generic problem.

(a) When and how did Applicants become aware of this deficiency?

(b) What corrective actions have been taken?

Response:

(a) Applicants on October 3, 1983 received a letter from Delaval dated September 30, 1983 notifying Applicants of a potential problem with excessive vibration in the engine mounted fuel oil lines.

(b) Applicants' corrective actions are documented in their interim and final reports to the Staff concerning this item, dated November 10, 1983 and January 30, 1984, respectively.

11-4. What corrective actions are planned by Applicants to avoid cylinder head cracks, which have plagued Shoreham, Grand Gulf, and marine users of TDI diesel engines?

Response:

Information supplied by Delaval indicates that cylinder head cracks will not adversely affect the reliability of the PNPP standby diesel generators. See TDI Diesel Generator Owners Group, Minutes of November 30, 1983 Meeting, p. 56-57. Therefore, it does not appear that "corrective actions ... to avoid cylinder head cracks ..." are necessary.

11-5. (a) What style piston (AF, AN, or AE) is used in the PNPP DGs?

(b) Have the pistons been relieved of all stress raisers? Provide documentation of this.

(c) Has the piston crown-skirt separation problem (as occurred at Grand Gulf) been investigated for the PNPP DGs? Are they susceptible to this problem? What corrective actions are planned?

(d) Have the pistons been heat treated in accordance with the appropriate specifications? P. 88 of Enclosure 4, the transcript of the Jan. 26, 1984 meeting, mentions a Part 21 problem with heat treating. Explain the nature of this problem and how it affects the PNPP DGs; include any corrective actions planned.

Response:

(a) The PNPP standby diesel generators have "AH" type pistons.

(b) According to Delaval, the PNPP pistons were properly heat treated in order to relieve stresses in the pistons. In addition, the pistons were deburred prior to heat treatment, a procedure which also helps to prevent stress risers. Applicants do not possess the requested documentation.

(c) Yes, the piston crown-skirt separation problem has been investigated for the PNPP standby diesel generators. According to Delaval, the PNPP standby diesel generator pistons are not susceptible to this problem because the piston crowns are bolted to the piston skirts through a "full stack" of Belleville washers. "Flat spherical" washers were used at Grand Gulf. There have been no reported piston crown-skirt separation problems with the PNPP design. No corrective actions are necessary.

(d) Yes, the PNPP standby diesel generator pistons have been heat treated in accordance with the appropriate specifications, as discussed in (b), above. The heat treatment problem mentioned on page 88 of the transcript of the January 26, 1984 meeting was the subject of a 10 C.F.R., Part 21 notification from Delaval to the Staff dated October 28, 1982. PNPP was not on the list of affected plants identified in the letter since, as stated in the letter, only pistons manufactured between December 1978 and October 1981 were subjected to the inappropriate heat treatment method. The pistons for the PNPP standby diesel generators were manufactured prior to December 1978. According to Delaval, the inappropriate method consisted of fan-cooling the pistons after heat treatment rather than air-cooling them, as was done to the PNPP standby diesel generator pistons. No corrective actions are necessary.

11-6. What are the dimensions of the diesel engine cylinder liner, specifically, the lip, and the cylinder block counterbore? Include dimensions of all fillets and radii. Are there any drilled holes or stud threading terminating at the same level as the counterbore in the block?

Response:

Applicants do not possess any of the requested information.

11-7. Does TDI have different personnel, equipment, and quality standards and practices for engines to be used in nuclear safety-related applications as opposed to non-nuclear projects (e.g., marine uses)? Document any such differences.

Response:

Quality standards and practices differ for the manufacture of diesel generators to be used at nuclear power plants in that documentation is substantially increased for verification purposes. See TDI Diesel Generators Owners Group, Minutes of November 30, 1983 Meeting, pp. 55-56. Personnel and equipment are the same.

11-8. To what extent are the Perry engines similar to the V-16 TDI engines used in the State of Alaska's M/V Columbia? Document the major differences between the PNPP and M/V Columbia engines.

Response:

Applicants have not done an analysis to determine similarities or differences between the PNPP standby diesel generator engines and the M/V Columbia's engines. Applicants are aware that the M/V Columbia's marine, heavy fuel oil, V-16 engine design differs from PNPP's stationary, diesel fuel, V-16 engine design.

11-9. Regarding the Design Review/Quality Revalidation Program set forth by the TDI Owners Group at the Jan. 26, 1984 meeting with the NRC:

(a) Do Applicants endorse this program and intend to implement it for the PNPP DGs?

(b) Will the identification and selection of parts for review be based exclusively on the TDI parts list?

(c) Will the design/quality review of components in the PNPP engines identified from the TDI parts list as common to the lead engines (Shoreham and Grand Gulf) as well be based exclusively on the lead engine reviews (i.e., common parts on lead engines are considered representative for all; no PNPP-unique review will be done)?

(d) Will the quality revalidation of components rely exclusively on spare or replacement parts (and not on parts actually used in the engines) unless the spares are unavailable?

(e) Will the Perry engines be inspected to ensure that the parts identified on the TDI parts list and the spare/replacement parts are in fact identical to those used in the PNPP DGs?

(f) Given the repetitive deficiencies of TDI in the area of part/component identification, traceability, and standardization (e.g., experiences of the State of Alaska with the M/V Columbia, described in BN-84-018), justify any uncritical use of TDI data (e.g., parts list) and any reliance on the quality of spare/replacement parts or conditions in other TDI engines as a substitute for the complete dismantling, inspection, and testing of each PNPP diesel engine to determine the quality thereof.

Response:

(a) Applicants are participating in the TDI Diesel Generator Owners Group Design Review/Quality Revalidation Program ("DR/QR Program") and have included the PNPP standby diesel generators in the program. Applicants endorse the purposes of the program and will evaluate the results of the program for applicability to the PNPP standby diesel generators.

(b) No, the identification and selection of components for review will not be based exclusively on the TDI Parts Manual.

(c) The PNPP specific review will include an evaluation of the applicability of "lead" engine reviews to PNPP components. Review of PNPP components will be done if it is determined to be necessary to assure the reliability of the PNPP standby diesel generators.

(d) Quality revalidation of components will not rely exclusively on spare or replacement parts, but will include parts used in the PNPP standby diesel generators.

(e) Inspections of components of the PNPP standby diesel generators will be conducted to verify that they are identical to the parts identified in the TDI Parts Manual and to the spare or replacement parts. The specific components and the types of inspections to be performed have not yet been determined.

(f) Applicants will not rely on any uncritical use of Delaval data. Neither will they rely on the quality of spare or replacement parts or the condition of other Delaval engines in reviewing the design and revalidating the quality of the PNPP standby diesel generators. The TDI Owners Group technical staff, in evaluating each specific component of the PNPP standby diesel generators, will provide recommendations concerning any special or expanded tests and inspections necessary to assure the reliability of the component. The technical staff may

recommend that such tests and inspections be performed on the "lead" engines, or it may recommend that they be performed on PNPP standby diesel generators themselves, depending on the particular component under consideration. The results of "lead" engine tests and inspections will be evaluated by the technical staff in order to determine whether additional tests and inspections should be recommended for the PNPP standby diesel generators.

11-10. (a) Do Applicants have any plans to ever replace the TDI DGs with those from another manufacturer in PNPP Unit 1?

(b) In Unit 2?

(c) If not, why not?

(d) Is this an option in the Design Review/Quality Revalidation Program?

Response:

(a) Applicants have no plans to replace the Delaval standby diesel generators in PNPP Unit 1 with diesel generators from another manufacturer.

(b) Applicants have no plans to replace the Delaval standby diesel generators in PNPP Unit 2 with diesel generators from another manufacturer.

(c) Applicants do not believe that the PNPP standby diesel generators are unreliable.

(d) No, replacement of Delaval diesel generators is not an alternative being explored by the DR/QR Program.

11-11. (a) Do Applicants share the opinion voiced at the Jan. 26, 1984 meeting (see Tr. 46-47) that the Owners Group Design Review/Quality Revalidation Program will be successful? If so, what is the basis for this optimism?

(b) What is meant by "success" of the program? What criteria and standards are used to define "success" of the program?

(c) If the program is not successful, what actions will be taken?

(d) How many failures or quality deficiencies are necessary before Applicants or the Owners Group will conclude that TDI diesel engines are unreliable and unfit for nuclear service? I.e., is there any number or type of failure considered unacceptable?

Response:

(a) The statement to which the Interrogatory refers was made by an unidentified attendee of the meeting, and Applicants do not know what that person meant by a "successful" program. Applicants do believe that the DR/QR Program will be successful with respect to the PNPP standby diesel generators, as "success" is defined in (b), below. The basis for Applicants' belief is stated in (c), below.

(b) By success of the program, Applicants mean a complete review of the PNPP standby diesel generators within the guidelines of the Owners Group charter.

(c) Applicants are confident that the DR/QR Program for the PNPP standby diesel generators will be successful because sufficient resources have been made available through the Owners Group to assure completion of the program.

(d) There is no specified number or type of failure or quality deficiency which Applicants consider unacceptable for

the PNPP standby diesel generators. Applicants' evaluation of the reliability of the PNPP standby diesel generators will be based on all of the available data. It is not a purpose of the Owners Group to draw conclusions with respect to the reliability or fitness of any particular Delaval diesel generator or Delaval diesel generators in general.

11-12. What influence do cost/schedule factors (i.e. delay of fuel load or power operation) have on the Design Review/Quality Revalidation Program and on decisions or conclusions made during the program?

Response:

Neither cost nor scheduling factors will have any influence on the DR/QR Program, nor decisions made or conclusions reached during the program.

11-13. Is the Design Review/Quality Revalidation Program only a program to determine interim reliability, or is it intended to justify the use of TDI DGs for the entire life of the plant?

Response:

The purpose of the DR/QR Program is to evaluate diesel generator components from a design and quality standpoint, not to determine interim reliability or to justify the use of Delaval diesel generators for any particular period of time.

11-14. (a) Will the Design Review/Quality Revalidation Program attempt to find the root cause of TDI engine unreliability?

(b) If so, explain how this is to be accomplished.

(c) If not, why not?

(d) If so, what effect will this determination have on the final decision regarding the acceptability of TDI engines?

Response:

(a) It is not a purpose of the DR/QR Program to evaluate a "root cause" of problems with Delaval diesel generators. Applicant do not agree that the PNPP standby diesel generators are unreliable.

(b) Not applicable.

(c) The purpose of the DR/QR Program is to evaluate diesel generator components from a design and quality standpoint.

(d) Not applicable.

11-15. (a) What role will TDI personnel have in the Design Review/Quality Revalidation Program?

(b) To what extent will TDI personnel be responsible for evaluating the adequacy of their own products?

(c) To what extent will Applicants/Owners Group rely on the judgements or statements of TDI personnel?

(d) Name all TDI personnel to be involved in the Program.

(e) Are there any contractual arrangements between Applicants/Owners Group and TDI for services or advice regarding the Design Review/Quality Revalidation Program? Supply the details of any such contract.

Response:

(a) The role of Delaval personnel is to supply the Owners Group with the information necessary for the Owners Group to carry out the DR/QR program.

(b) Delaval personnel will not be responsible for evaluating the adequacy of Delaval's products.

(c) The DR/QR Program is an independent review of Delaval diesel generators. The Owners Group will not rely on the judgments or statements of Delaval personnel.

(d) Applicants do not have the names of all Delaval personnel to be involved in the DR/QR program.

(e) There are no contractual arrangements between either Applicants or the Owners Group and Delaval for services or advice related to the DR/QR Program.

Respectfully submitted,

SHAW, PITTMAN, POTTS & TROWBRIDGE

By: Michael A. Swiger
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MICHAEL A. SWIGER

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Washington, D.C. 20036
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Dated: March 8, 1984

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
CLEVELAND, OHIO

Edward C. Christiansen, being duly sworn according to law, deposes that he is Engineer, Nuclear Construction Department, of The Cleveland Electric Illuminating Company, and that the facts set forth in the answers to Ohio Citizens for Responsible Energy Interrogatories 11-1 through 11-15 in the foregoing "Applicants Answers to Ohio Citizens for Responsible Energy Eleventh Set of Interrogatories to Applicants Relating to Issue No. 16," dated March 8, 1984, are true and correct to the best of his knowledge, information, and belief.

Edward C. Christiansen

Sworn to and subscribed before

me this 8th day of

March 1984.

James R. Rissler

March 8, 1984

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

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| THE CLEVELAND ELECTRIC |) | Docket Nos. 50-440 |
| ILLUMINATING COMPANY, <u>ET AL.</u> |) | 50-441 |
| |) | |
| (Perry Nuclear Power Plant, |) | |
| Units 1 and 2) |) | |

CERTIFICATE OF SERVICE

This is to certify that copies of the foregoing "Applicants' Answers to Ohio Citizens for Responsible Energy Eleventh Set of Interrogatories to Applicants Relating to Issue No. 16" were served by deposit in the United States Mail, First Class, postage prepaid, this 8th day of March, 1984, to all those on the attached Service List.

Michael A. Swiger
Michael A. Swiger

DATED: March 8, 1984

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NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of)
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THE CLEVELAND ELECTRIC)
ILLUMINATING COMPANY)
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(Perry Nuclear Power Plant,)
Units 1 and 2))

Docket Nos. 50-440
50-441

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