

DOCKETED
USNRC
May 14, 1984

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

'84 MAY 17 10:18

Before the Atomic Safety and Licensing Board

In the Matter of)

CLEVELAND ELECTRIC ILLUMINATING)
COMPANY, et al.)

(Perry Nuclear Power Plant,)
Units 1 and 2))

Docket Nos. 50-440
50-441
(OL)

OCRE RESPONSE TO APPLICANTS' INTERROGATORIES
AND REQUEST FOR PRODUCTION OF DOCUMENTS TO
INTERVENOR OHIO CITIZENS FOR RESPONSIBLE
ENERGY (FIFTH SET)

Intervenor Ohio Citizens for Responsible Energy ("OCRE") hereby files its response to Applicants' Fifth Set of Interrogatories, dated March 9, 1984. In order to conserve its scarce resources, OCRE will not reproduce herein the interrogatories propounded it; the interrogatories are answered in the same sequence and numeration encountered.

OCRE will not produce herewith the documents identified in the responses, as requested by Applicants, since all of these documents were obtained either from Applicants or from the NRC and thus are readily available to them.

Issue #16

1. No such persons have been identified.
2. No witnesses have yet been identified.

3. OCRE possesses the following documents pertaining to Issue #16:

Board Notifications

BN-83-160, 10-21-83, "New Information concerning Transamerica Delaval (TDI) Emergency Diesel Generators"

BN-83-160A, 11-17-83, "Supplemental Information Concerning Transamerica Delaval (TDI) Emergency Diesel Generators"

BN-84-010, 1-24-84, "TDI Response to NRC Questions Concerning Transamerica Delaval Emergency Diesel Generators"

BN-84-018, 1-27-84, "Failure Experience of Transamerica Delaval Emergency Diesel Generators in Marine Service"

BN-84-020, 2-13-84, "Report of Meeting of Representatives of the Transamerica Delaval, Inc. (TDI) Emergency Diesel Generators Owners Group"

BN-84-021, 2-13-84, "Staff Inspection Reports of Transamerica Delaval, Inc. for Inspections conducted from 3/79 to 7/83"

BN-84-024, 2-15-84, "Commission Paper on Transamerica Delaval, Inc. (TDI)"

BN-84-039, 2-23-84, "Report of Meetings Between the NRC and Representatives of the Transamerica Delaval, Inc. (TDI) Emergency Diesel Generators Owners Group"

BN-84-044, 2-29-84, "Transamerica Delaval, Inc. (TDI) 10 CFR Part 21 Report on Turbocharger Thrust Bearing Lubrication Deficiency"

BN-84-047, 3-7-84, "Transamerica Delaval, Inc. (TDI) Owners Group Piston Skirt Report and Task Descriptions"

BN-84-051, 3-12-84, "Transamerica Delaval, Inc. (TDI) Diesel Generators Owners Group Program Plan"

BN-84-063, 3-23-84, "Reports Submitted of the Transamerica Delaval, Inc. (TDI) Owners Group [on Connecting Rod Bearing Shell and Rocker Arm Capscrews]"

BN-84-072, 4-4-84, "Transamerica Delaval, Inc. (TDI) Owners Group/NRC Meeting Transcript and Additional TDI Owners Group Information Submitted [including Test Results on each Engine Model, Reports on Air Start Valve Capscrew, Cylinder Head Stud]"

2-1-84 Letter to Harold Denton from Joseph Molina, Falcon Carriers, Inc. (includes 1-5-84 letter from J. Molina to Clint Mathews, TDI), INRC PDR Acc. No. 8402070393)

4-11-84 Letter to J.P. McGaughy from Carl Berlinger, NRC, re

~~Preliminary Assessment of Two~~

Reports Submitted to the NRC by the Transamerica Delaval, Inc. (TDI) Owners Group [on control bearings and rocker arm cap-screws]

3-26-84 Letter to J.P. McGaughy from Carl Berlinger, NRC, re Preliminary Review of Report on Investigation of Types AF and AE Piston Skirts, FAAR-84-2-14, 2-27-84

TRANSCRIPTS: of meetings held between the TDI Owners Group and the NRC on February 10 and 15, 1984

3-19-84 Letter to J.P. McGaughy from Carl Berlinger, NRC, re Request for Additional Information Regarding Transamerica Delaval, Inc. (TDI) Diesel Generators

Documents obtained from Applicants: see attached letters from CEI to OCRE, dated March 15, 21, 27, 19, and April 5, 1984 for a brief description.

1-9-84 Letter from TDI to NRC, 10 CFR 21 Report on potential defects in overspeed governor and fuel oil transfer pump drive
NRC IE Information Notices IN 83-51, 8-8-83, and IN 83-55, 8-30-83

4. Potentially any or all of the documents identified above may be used as exhibits or in cross-examination. More specific identification will be made at the appropriate time.

5. OCRE believes that the PNPP DGs are unreliable because they are made by Transamerica Delaval. Engines made by TDI have experienced an extreme number of failures, many of them quite severe.

In addition, quality assurance at TDI is severely deficient. NRC regulations require purchased equipment to meet quality standards, 10 CFR 50 App. B Section VII. The statement of the Appeal Board in Union Electric Co. (Callaway Plant), ALAB-740, that a pervasive breakdown in QA raises doubt as to the overall integrity of the entire plant or system, even if known deficiencies have been corrected, must also apply to crucial vendor-supplied items such as the DGs.

6. The pattern of deficiencies

and substandard quality is well documented in the documents cited in 3 above and includes the numerous failures of TDI engines in marine, stationary, and nuclear service, the adverse findings of NRC Region IV inspections, the numerous reportable deficiencies filed under 10 CFR 21 and 50.55(e), and the ample evidence of poor or totally lacking QA described in the NRs, audit reports, and surveillance reports of Applicants.

7. (a) OCRE has not compiled a list of all known problems with TDI DGs and is under no obligation to do so. The TDI DG Owners Group has developed such a list. See BN-84-051; summaries of known deficiencies are also contained in Enc. 3 to BN-84-020.

(b) While it is possible that some of the specific deficiencies identified in TDI DGs can be resolved, the larger problem of an inherently unreliable machine due to poor QA in all facets of design and manufac-

ture by TDI remains unsolved and unsolvable.

(c) The only corrective action which will solve the problem of an inherently unreliable DG is to replace the DGs with those from a different manufacturer.

8. (a) IN 83-58 contains the Shoreham crankshaft failure. It has not been established whether the PNPP crankshafts are vulnerable to such a failure.

(b) Since it is not clear whether the PNPP crankshafts are subject to such failure, it is not possible to say whether the problem will be resolved. However, the occurrence of such a severe failure due to a design deficiency (see BN-83-180A) raises doubt as to the overall integrity of TDI's design.

(c) The basic problem of poor design, poor QA, and inherent unreliability can only be solved by replacing the DGs with those of another manufacturer.

9. (a) IN 83-51 mentions some of the failures of TDI DGs which have since been re-

strided further in other NRC documents. These items reveal the inherent unreliability of TDI DGs due to poor design and manufacturing quality.

(b) and (c) The root cause of the deficiencies listed in IN 83-51 (and the other known failures) cannot be corrected except by replacing the DGs.

10. (a) The Newsday article generally describes the problems discussed in IN 83-51.

(b) and (c) See response to 9.
(b) and (c) above.

11. (a) The Newsday article contains information similar to that in IN 83-55 and BN-83-180A.

(b) and (c) See response to 9.
(b) and (c) above.

12. (a) The Newsday article contains information similar to that in BN-84-021. In addition, the article quotes the president of F&AA, consultant to the TDI Owners Group as to the importance of quality control in DG manufacturing. These statements corroborate our position that QA/QC is essential to the reliability

of the DG, and that the lack of good QA affects the basic integrity of engines.

(b) and (c) See answer to 15.
(b) and (c) below.

13. (a) The significant facts and assertions in the Newsday article are:

- i. the preoperational history of the Shoreham DGs which details more quality deficiencies;
- ii. the statement by TDI foundry manager Edward Dobrec that changes in fabrication in 1978 stemmed from equipment that was poor and worn;
- iii. the brief description of problems with marine TDI engines (see BN-84-018 for more details) and the statement by TDI's Richard Pratt that marine operational experience applies to nuclear service;
- iv. new cylinder heads at Shoreham were found deficient, one cracked, 8 with wall thickness less than specified;
- v. statements by NRC re excessive vibration of Shoreham engines; and
- concerns on the basic

reliability of TDI engines due to the large number of problems.

(b) and (c) These items indicate that TDI engines are inherently unreliable due to the poor QA at TDI. The only remedy for the problem is to replace the DGs.

14. (a) The significant facts, findings, assertions, and conclusions are summarized for each Board Notification:

BN-83-160A: Enc. 1, p. 1-1: original design of Shoreham crankshaft inadequacies;

p. 1-2: con. on industry practice of shot peening fillet

radii not followed by TDI;

p. 5-1: TDI design loads for crankshaft in error; 13x11 shaft did not satisfy DEMA requirements; 13x11 shaft experiences large torsional vibrations due to proximity of loading harmonic to a torsional natural frequency [These items are applicable to PNPP since they indicate a lack of careful, error-free design; it is not known what other design errors affect the PNPP DGs directly.]

Enc. 3, p. 1: Connecting rod bearing material did not meet TDI standards. TDI lowered specification requirements for bear-

ing material. TDI does not have

a porosity requirement;

p. 2: design loads on conrod

bearings are higher than those recommended by Imperial Clevisite and leave little or no margin for material defects, e.g.,

voids.

[These items are applicable to PNPP in that they again illustrate poor design practice and lack of procurement specifications appropriate to assure product quality.]

BN-84-013: TDI's response to NRC Question #4(d) (tabulation of the forcing function harmonic coefficients for the crankshaft torsional analysis) indicates some significant changes in coefficients used to model the PNPP engines as compared to those presently used. Thus, TDI may not have correctly predicted the loads for the PNPP engines.

BN-84-018: The numerous and severe failures occurring in marine service described in the BN, and the recalcitrant behavior of TDI in refusing to acknowledge obvious deficiencies all indicate the poor quality with which TDI engines are designed and manufactured. In addition, the de-rating of the M/V COLUMBIA (which even

then was not successful) indicates that the RV-16 engine was inherently defective in that under-designed and over-rated.

BN-84-020: Enc. 3: the NRC's compilation of operating experience for TDI engines indicates that these engines are extremely unreliable and of poor quality.
BN-84-021: see answer to 15 below.

BN-84-024: SEDY-84-34: the NRC agrees with OCRE that the operational history and TDI QA are such that the reliability of TDI DGs is questionable.

BN-84-044: 10 CFR 21 report on the turbocharger thrust bearing lubrication defect: turbocharger failures occurred at Shoreham and Catawba. TDI's original proposed fix was not effective in solving the problem. This item appears directly applicable to PNPP and also further illustrates a pervasive problem with TDI.

BN-84-047: Enc. 1, p. 1-1: all of the AF type piston skirts at Shoreham had cracked. The significance of this to PNPP is discussed in the answer to 20, below.

BN-84-051: App. 7: Component Data Base, to Owners Group Program Plan, lists numerous deficiencies in TDI engines which all indicate their unreliability
BN-84-072: Enc. 2, Tr. 36: drawings the Owners Group received from TDI had wrong revision numbers;
Tr. 38: cracks found in connecting rod (wrist pin) bushings at Shoreham;
Tr. 57: possible crack seen in Shoreham piston skirt (type AE).
Tr. 151: new conrod bearing shell at Shoreham found cracked in same place as before; also showed signs of end loading;
Tr. 158: TDI made a trade-off with Alcoa (bearing vendor): lower tensile and yield strength in exchange for more consistent quality.
[The above items again illustrate the poor quality and attitude toward quality at TDI and the continued failures and poor operating experience which indicates the general unreliability of TDI engines, including those at PNPP.]

(b) and (c) The failures and deficiencies identified above are so pervasive that it is not practical to try to resolve

specific items, rather, the only rational solution is to replace the PNPP DGs with those from another manufacturer.

15. (a) All of the adverse findings noted in BN-84-021 (NRC Region IV inspections) demonstrate the unreliability of the PNPP DGs since the findings indicate a breakdown in QA at TDI. The number, diversity, and repetitive nature of the findings especially demonstrate this. Significant deficiencies were found in the following areas:
manufacturing process
control and documentation, welding, weld rod control, and welder certification; control and auditing of vendors, identification of materials, calibration, internal audits, and document control.
An item specifically applicable to PNPP is TDI's failure to impose a QA program on the manufacturer of PNPP exhaust silencers. Insp. Report 83-02, p. 2.

(b) and (c) Since the items involve a pervasive breakdown

at TDI which undermines the reliability and integrity of the DGs (per ALAB-740), the only appropriate corrective action is to replace the DGs.

16. (a) Deficiencies specific to PNPP which may affect the reliability of the crankshafts are:
Engine 2816/75053: crankshaft had heavy nicks, dents, and scratches; right-hand web of #7 throw machined in error; machined to 5-5/16" long instead of 5-7/16"; also main bearing pins have numerous nonmetallic linear inclusions. From Documentation Package Book I Vol. III, Engine Book.
Engine 2817/75054: crankshaft #7 web machined off center, nonmetallic linear inclusions in main bearing pins. From Documentation Package Book I Vol. IV Engine Book.
(b) and (c) It is not clear that these items have been corrected or are correctible.

17. (a) Since the statement that PNPP crankshaft torsional stress is 80% of design is based on a TDI calculation generic to all U-16 engines, OAR cannot accept

that conclusion without independent verification.

(b) The assertion in question was based on the assumption that the Shoreham crankshaft failure may have been caused by a material defect in the shafts, in which case the mere lowering of torsional stress might not prevent failure. The point is now moot since the cause of the Shoreham failure was not due to material defect. See BN-83-160A.

(c) Since OCRE has not analyzed this problem or performed calculations to determine ranges of torsional stress leading to crack growth rates low enough to escape preservice detection but high enough to cause failure, it is not possible to answer this interrogatory.

18. (a) The following factors adversely affect the reliability of PNPP DG connecting rod bearings:

The conrod bearing failures occurring on the M/V COLUMBIA, a RV-16 engine (see BN-84-015, BN-84-020, BN-84-051 Enc. 7); The recent discovery of a crack in a replacement Shoreham bearing in the same location as the previous failures (see BN-84-072 Tr. 151); The very small margin between

the calculated peak oil film pressure for the V-16 (25,500 psi) and the recommended maximum (25,000 psi) (see BN-84-053 Enc. 1 p. 3-1); The lack of a TDI specification for porosity in the bearing shell material (BN-83-160A, Enc. 3 p. 1)

The preliminary assessment of the NRC that the FaAR design review of conrod bearing shells lacks sufficient details and backup information to support their conclusions; and specifically the opinion of the NRC that bearing life is not likely to be greater than 10,000 to 15,000 hours under optimum conditions (see 4-11-84 letter to McGaughey of the Owners Group from Berliner, NRC);

The observation of the NRC that the composition of the bearing material does not meet TDI's stated alloy type (see BN-84-072 Tr. 158).

(b) It is not apparent that the above items have been or will be resolved. The above items also reveal a lack of design and procurement quality by TDI which appears to adversely affect the overall reliability of the DGs.

(c) Conrod bearing reliability might be improved by replacing the bearings with those meet-

ing appropriate standards, especially regarding porosity. This might not solve the other observed problems, i.e., marine and recent Shoreham experience. Nor will it solve the basic inherent unreliability of the TDI engines.

19. (a) OCRE does not know whether the PNPP crankshaft design will lead to conrod bearing cracking.

(b) If the statement of TDI (that U-16 conrods have 1/16" chamfers) is correct, then the conrod bearing ends are not overhung or unsupported.

(c) OCRE does not know if the PNPP DGs have excessive crank-pin Journal yawing.

(d) Since TDI still does not have a specification for porosity, and since the Shoreham cracks originated at a void, (see BN-83-150R Enc. 3), it is likely that the PNPP conrod bearings have excessive voids.

(e) The porosity problem could be solved by replacement or by radiographic inspection of the bearings.

20. (a) OCRE believes that the PNPP DG piston skirts are susceptible to cracking in the crown-to-skirt stud attachment boss area. This type of cracking has been observed extensively in type AF pistons; the AH design used in the PNPP DGs is essentially a machined AF using Belleville washers (see BN-84-072, Tr. 107).

In addition, other problems with pistons have been identified: skirt cracking in the wrist pin area (see 1-5-84 letter to TDI from J. Molina, Falcon Carriers p. 15);

piston ring failures, in-torquing of skirt/crown bolts, fretting between crown and skirt. (see BN-84-018, M/V COLUMBIA)

piston crown cracking at Kuosheng (see BN-84-051 App. 7)

(b) It is not clear that any of the above problems will be resolved at PNPP.

(c) There is insufficient information on the root cause of piston problems and on the performance of the AE design to be able to say that replacement of the PNPP pistons with type AE would be satisfactory. Given the overall performance of TDI engines, replacement of the DGs would be the appropriate remedy.

21. (a) and (b) It is not clear that use of Belleville in place of spherical washers solves the piston skirt-crown separation problem; see 1-5-84 letter to TDI from Falcon Carriers, p. 12, which indicates that separation may be caused by skirt cracking.

(c) See 20. (c) above.

22. (a) It is impossible to know whether the pistons have stress risers unless they are thoroughly inspected.

(b) It has not been established from a credible source that the PNPP pistons have been subjected to the stated treatment. Furthermore, it is not clear that stress-relief will solve the problem; see 1-5-84 letter to TDI from Falcon Carriers, p. 12, which states that pis-

tons were found cracked which had been stress-relieved.

(c) See 20. (c) above.

23. (a) Given the extensive amount of cylinder head cracking observed in TDI engines, it is likely that the PNPP cylinder heads will crack.

(b) Cylinder head cracking can result in engine failure if the crack were to admit cooling water into the hot combustion chamber (thermal shock) or if the crack were to permit a large amount of water into the cylinder during engine standby; upon an attempt to start, the engine would be severely damaged by the presence of a noncompressible fluid in the cylinder; this occurred in a GM diesel at Surry 1; see BN-84-051, App. 7; see also the 1-5-84 letter to TDI from Falcon Carriers, p. 15, which states that a cylinder was filled with water due to a cylinder head crack.

(c) Given the poor operational history of TDI engines in general, the only prudent solution to this and the many other problems is to replace the DGs.

24. (a) OCRE believes that the PNPP cylinder liners will be subject to the same failures which have been observed in other TDI engines:

cracked liners (Shoreham-Tr. of 2-16-84 NRC/Owners Group meeting at 73); liner deformation and loss of crush (M/V COLUMBIA-Engine Rebuild Report, 3-31-81, Sec. II, BN-84-018);

scratches, scuffing, and grooving (Grand Gulf, M/V COLUMBIA and PRIDE OF TEXAS BN-84-051, App. 7).

(b) There is no reason to believe that the problems will be solved at PNPP.

(c) Since at least some of the problems (loss of crush and liner deformation) appear to result from the basic engine design (see BN-84-018, M/V COLUMBIA rebuild report), the practicable solution is to replace the DGs.

25. (a) OCRE believes that the failures identified in other TDI engine blocks will affect the PNPP DGs: block cracking (Shoreham-Tr. of 2-16-84 NRC/Owners Group meeting at 12 and M/V COLUMBIA-BN-84-018,

3-31-81 Rebuild Report); block deformation (metal creep) (M/V COLUMBIA- Rebuild Report).

(b) and (c) There is no indication that the problem will be resolved for PNPP; since the cylinder block problems are due to the inherent design, no solution appears possible except replacement of the DGs.

26. (a) and (b) OCRE believes that Applicants fail to comply with:

App. B to 10 CFR 50-Applicants have failed to ensure that the DG vendor has implemented a QA program and has provided equipment conforming to quality standards;

GDC 17, App. A to 10 CFR 50-the onsite AC power system lacks true independence and redundancy since both major safety-related divisions of AC power are supplied by unreliable TDI DGs; Reg. Guide 1.108-Part B-the PNPP DGs apparently do not have "high reliability designed into" them; Reg. Guide 1.9 Rev. 2-Applicants should perform a 300-start-and-load test if the TDI DGs are used because of the questionable reliability and uniformity of the engines.

Regulations were cited since they must be met (see Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 528-29);

Reg. Guides were cited because they represent means acceptable to the NRC for meeting the Commission's regulations and thus provide additional appropriate standards. See also the response to 27. (a) below.

(c) The cited standards could most properly met by replacing the TDI DGs with those from another manufacturer.

27. (a) OCRE believes that Reg. Guide 1.9 Rev. 2 applies to PNPP for the reasons set forth in OCRE's 1-18-84 brief, i.e., pursuant to Florida Power & Light (St. Lucie Unit 2), ALAB-503, 12 NRC 30, unusual situations can demand that requirements beyond the GDC of 10 CFR 50 App. A be imposed. Certainly the unusual circumstances of TDI engine failures warrant using a more stringent version of a regulatory guide.

(b) OCRE does not claim that Ap-

plicants fail to comply with provisions of Reg. Guide 1.9 Rev. 2 not contained in IEEE Std. 387-1977.

(c) and (d) Not applicable.

28. (a) OCRE has reviewed only SP-562-4549-00, Rev. II - IV, and attachment specification SP-706-4549-00. OCRE does not claim that these specifications are deficient.

(b) and (c) Not applicable.

29. (a) Many of the known failures and deficiencies of TDI engines are due to design deficiencies: Shoreham crankshaft and conrod bearing failures, cylinder liner/block failures, AP piston cracking. OCRE does not know what other design defects exist.

(b) and (c) There is no indication that the known design problems will be resolved for PNPP; since these defects seem inherent in the basic design of the engine (including major parts such as the engine block) the only proper solution is to replace the DGs. This would also avoid future problems from latent design defects.

30. OCRE has not determined what deficiencies exist in TDI's Instruction Manual.

31. (a) OCRE believes that the deficiencies and nonconformances identified in all the DARs, audit reports, surveillance reports, and the following NRs all adversely affect the reliability of the PNPP DGs in that they collectively indicate a severe breakdown in QA at TDI. Pursuant to ALAB-740, a severe breakdown in QA places the basic integrity of the DGs in question.

THE NRs ARE GROUPED ACCORDING TO THE DEFICIENCY INVOLVED, TOLERANCES

NR, 7-5-83	PO39-1918
NR, 7-5-83	PO39-1918
NR, 1-5-83	PO39-1401
NR, 9-14-81	PO39-0161
NR, 4-30-80	GE39-0008
NR, 5-2-80	GE39-0008
NR, 10-26-81	PO44-0223
NR, 12-7-81	PO44-0223, REV. 1
NR, 12-9-81	PO44-0223, REV. 2
NR, 11-3-83	PO39-2462
NR, 9-20-83	PO39-2200
NR, 1-9-83	PO39-1532
NR, 3-15-83	PO39-1634

NR, 8-19-83	PO39-2089
NR, 8-5-83	PO39-2035
NR, 3-18-83	PO39-1614
NR, 3-24-83	PO39-1632
NR, 1-20-83	PO39-1457
ALIGNMENT	
NR, 12-22-82	PO39-1329
NR, 10-25-82	PO39-1189
NR, 10-27-82	PO39-1206
NR, 11-9-82	PO39-1241
NR, 11-18-82	PO39-1261
NR, 9-19-82	PO39-1109
NR, 5-11-82	PO39-0721
NR, 3-19-82	PO39-0538
NR, 12-13-82	PO39-1325
NR, 1-6-83	PO39-1402
NR, 10-6-81	PO39-0190
NR, 10-26-83	GE39-0052
NR, 6-7-82	PO44-0791
NR, 11-9-81	PO44-246
NR, 10-12-83	PO39-2246
NR, 10-17-83	PO39-2271
NR, 11-18-83	PO39-2431
NR, 1-18-84	PO39-2624
NR, 1-12-83	PO39-1432
NR, 1-18-83	PO39-1448
NR, 1-18-83	PO39-1449
NR, 3-18-83	PO39-1605
NR, 3-18-83	PO39-1605
NR, 5-17-83	PO39-1786
NR, 7-27-83	PO39-1994
NR, 4-25-83	PO39-1716
NR, 7-19-83	PO39-1954
NR, 2-7-84	PO39-2706

WELDING

NR, 10-25-82 P039-1185
NR, 11-17-82 P039-1250
NR, 6-15-82 P039-0734
NR, 12-13-82 P039-1328
NR, 1-18-84 P039-2623
NR, 1-10-83 P039-1423
NR, 1-17-84 P039-1605
NR, 7-29-84 C00-2554
NR, 12-1-83 C00-3012
NR, 1-25-84 C00-3099
NR, 12-13-78 C00-1049
NR, 9-25-80 RECI-067

HANDLING

NR, 12-21-81 P039-0317
NR, 12-9-82 P00-347
NR, 3-1-79 C00-1071
NR, 3-2-79 C00-1134
NR, 3-13-79 C00-1139
NR, 4-10-79 C00-1143
NR, 6-29-79 C00-1236
NR, 3-24-80 C00-1527

SHIPPING

NR, 5-21-81 P01-0033
NR, 10-1-81 P01-113
NR, 10-23-81 P00-118
NR, 5-10-82 P00-218
NR, 5-21-78 C00-226
NR, 5-26-78 C00-230
NR, 3-2-79 C00-1133
NR, 5-17-82 P039-1007

GENERATOR

NR, 3-18-82 P033-530
NR, 4-30-82 P033-685
NR, 5-1-82 P033-772
NR, 6-1-82 P033-773

NR, 6-7-82 P033-788

NR, 6-7-82 P033-789

NR, 6-16-82 P033-818

NR, 6-17-82 P033-825

ID

NR, 5-5-82 P039-0688

NR, 4-12-82 P039-0603

NR, 10-27-81 P039-0219

NR, 10-28-81 P039-0235

NR, 6-15-81 OP00-0049

NR, 9-25-81 OP00-107

NR, 7-16-82 OP00-257

NR, 2-23-83 OP00-392

NR, 11-7-80 C00-1930

NR, 5-14-82 P03-009

NR, 9-25-80 RECI-059

NR, 9-16-80 RECI-048

DEFECTIVE MATERIAL

NR, 10-22-82 P039-1167

NR, 9-16-82 P039-1073

NR, 11-30-83 GE39-0354

NR, 10-13-83 P039-2257

NR, 10-19-83 P039-2262

NR, 8-30-83 P039-2120

DOCUMENTATION

NR, 9-24-82 P039-1081

NR, 8-9-82 P039-0989

NR, 11-19-82 P039-1267

NR, 10-14-81 P039-0203

NR, 6-15-81 OP00-0052

NR, 7-9-81 OP00-057

NR, 9-29-81 OP00-1111

NR, 9-30-81 OP00-115

NR, 10-26-81 OP00-120

NR, 12-23-81 P00-142

NR, 2-16-82 OP00-166

NR, 7-22-82	OPDC-284
NR, 10-30-82	OPDC-310
NR, 11-17-82	OPDC-331
NR, 11-20-82	OPDC-333
NR, 11-29-82	OPDC-337
NR, 12-9-82	OPDC-346
NR, 1-20-83	OPDC-369
NR, 2-23-83	OPDC-391
NR, 12-13-78	ODC-1049
NR, 12-13-78	ODC-1050
NR, 12-14-78	ODC-1056
NR, 12-15-78	ODC-1057
NR, 1-9-79	ODC-1070
NR, 1-5-79	ODC-1075
NR, 5-29-79	ODC-1237
NR, 3-3-80	ODC-1513
NR, 7-23-79	ODC-1269
NR, 4-14-80	ODC-1540
NR, 5-21-80	ODC-1572
NR, 6-23-80	ODC-1724
TDI QA	
NR, 10-12-81	PO39-0197
NR, 10-21-81	PO39-0211
NR, 2-1-84	PO39-2580
NR, 2-1-84	PO39-2694
NR, 1-10-83	PO39-1422
NR, 1-13-83	PO39-1433
NR, 5-12-83	TAB-0054
NR, 5-12-83	TAB-0053
NR, 2-15-83	PO39-1530
NR, 2-14-84	PO39-1530, REV.
NR, 2-14-84	PO39-2737

(b) and (c) Because of the severity of the QA breakdown at TDI, the resolution of specific items is the wrong emphasis; rather, the basic integrity of the entire engine must be examined. Because of the pervasive QA failure at TDI, the only appropriate solution is to replace the DGs.

(d) Since the identified deficiencies at PNPP are indicative of general poor quality of the DGs, and are similar to defects identified in operating engines, it is only logical that they be considered "harbingers of troubles to come."

32. There is insufficient information to determine whether the proposed corrective actions are adequate to preclude fuel line failures.

33. OCRE does not claim that deficiencies in the storage of the DGs before installation have adversely affected their reliability.

34. OCRE is not challenging the installation of the DGs.

35. OCRE believes that the type qualification testing of the PNPP DGs is deficient in

that it relies on a prototype engine rather than testing each engine; more stringent qualification is necessary due to the lack of TDI engine reliability. Replacement of the DGs would of course resolve the problem.

36. (a) According to Applicants' surveillance reports, the following deficiencies were identified during factory testing of the DGs:

shop testing of the first engine resulting in excessive scuffing of LB #6 cylinder liner; scoring of LB #2 link rod lower pin; compression differences as high as 90 lbs. observed between LB and RB; #7 LB exhaust valve lifter not adjustable; misaligned gaskets prevented the engine from cranking. (Trip Report No. 010-8-R, 3-20-78)
testing of the starting air system: 3 attempts to get 5 starts failed; 3 air start valves were not operating; torsigraph test: instrumentation not calibrated. (Trip Report 010-11-R, 4-24-78)
factory test of engine #2, Unit 2: oil pressure drop #1 LB wrist pin bushing spun, complete

piston assembly and cylinder liner failure; test stand oil filters were dirty. (Trip Report 010-15, 6-7-78)

(b) It is not clear that the cylinder scuffing or compression differences in the first engine were resolved; it is not clear that the piston/cylinder failure in the fourth engine did not affect other engine components.

(c) Determining the cause of the troubles in the first engine is warranted, as is a thorough inspection of the fourth engine for damage. Moreover, the test experience further demonstrates general carelessness and lack of quality by TDI which threatens the basic integrity of the DGs. Replacement with a more reliable engine is warranted.

37. OCRE believes that preoperational testing for TDI DGs must be especially stringent due to the poor operational history of these engines. As stated above, the preoperational tests should be replaced with a 300 start-and-load test due to the unreliability of TDI DGs.

Thus Applicants' present preoperational test plan (which may no longer meet with approval from the NRC [see 2-23-84 letter from B.J. Youngblood to M.R. Edelman]) is inadequate.

81 State of Alaska Memo); and valve problems on the M/V PRIDE OF TEXAS which were attributed to insufficient valve spring tension (BN-84-018, Nautilus Surveys Inc. Report, Sec. D).

38. (a) The DR/OR program has severe deficiencies:

- i. Uncritical reliance upon TDI supplied information; e.g., see the attachment entitled "Component Revalidation Checklist" to the transcript of the 2-10-84 NRC/Owners Group Meeting concerning an inspection for potentially defective valve springs: the inspection relies totally on a letter and a drawing from TDI; no independent check of TDI's information is apparent; a thorough evaluation of TDI's documentation and procurement practices for valve springs seems mandated by the finding of NRC Region IV that valve spring suppliers had not been surveyed (BN-84-021, Insp. Rep. 82-01); the use of defective valve springs on the M/V COLUMBIA (BN-84-018, 11-19-

- ii. use of the lead engine concept as a rationale for not performing a 100% design review and inspection (and stringent testing) of each TDI engine; this ignores the severe OR deficiencies and lack of standardization apparent in TDI's operation by assuming that all V-16 engines are equivalent to (and use the same parts as) Grand Gulf. The use of spare and replacement parts as equivalent to actually installed parts is also flawed for the same reason. The lack of extensive testing of each DG (assuming more rigorous tests on the lead engines will be sufficient) is similarly deficient.

- iii. the lack of any acceptance criteria for acceptable DG performance. Applicants

have actually stated that there is no number or type of failure that is unacceptable (Applicants' answer to OCRE Interrogatory 11-11(d)).

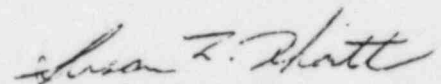
iv. the lack of proper goal in the DR/OR: your goal is not to establish the reliability of TDI DGs, but only to evaluate components (Ibid.).

(b) The DR/OR could be improved by: establishing proper goals and acceptance criteria; more thoroughly evaluating TDI-supplied information and practices before using it as the basis of any action; performing a 100% design review and inspection and rigorous testing on each engine. However, the experience to date with TDI engines clearly indicates their unreliability; the entire DR/OR concept appears little more than a sham attempt to justify use of deficient DGs. The time and money being spent on the DR/OR would be better invested in obtaining new DGs.

39-42. The relevant information requested is supplied in the attached affidavit.

43. OCRE has attached the 2-17-84 letter from J. Michael McGarry, III to the Catawba ASLB concerning failures in the Catawba TDI V-16 engines.

Respectfully submitted,



Susan L. Hiatt
OCRE Representative
8275 Munson Rd.
Mentor, OH 44060
(216) 255-3158

AFFIDAVIT

I, Susan L. Hiatt, duly sworn depose and say that:

1. I am responsible for the foregoing responses to Applicants' Fifth Set of Interrogatories to OCRE; and
2. the answers to said interrogatories are true and complete to the best of my knowledge and belief.

Susan L. Hiatt

Susan L. Hiatt

Sworn to and subscribed before me this 14th day of May
1984

Marley Ford Eiger

Notary Public

MARLEY FORD EIGER, Attorney At Law

Notary Public - State of Ohio

My commission has no expiration date

Section 147.03 R. C.



THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

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March 16, 1984
PY-CEI/OCRE-0013 L

Ohio Citizens for Responsible Energy
c/o Ms. Susan L. Hiatt
8275 Munson Road
Mentor, OH 44060

Dear Ms. Hiatt:

On behalf of Ohio Citizens for Responsible Energy you requested copies of documents during a series of on-site visits to review documents on Issue No. 16. Enclosed are copies of the pages which you requested. This list includes:

NR's/DAR's	(323 pages)
Spec. 562 Rev. 3 & 4; Spec. 706	(197 ")
D/G Owners Group Activities	(436 ")
D/G Correspondence	(236 ")
Spec. 562 General Information	(82 ")

Please sign below and return one copy of this letter to indicate receipt of these documents.

Applicants cost for copying the enclosed at \$0.10 per page is \$127.40. Please remit a check in the specified amount payable to The Cleveland Electric Illuminating Company, and address to:

Perry Nuclear Power Plant
c/o Mr. Bradley S. Ferrell
P. O. Box 97
Perry, OH 44081

Sincerely,

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY

Bradley S. Ferrell
Bradley S. Ferrell

Requested documents received by:

Susan L. Hiatt *3-17-84*
Susan L. Hiatt Date
Ohio Citizens for Responsible Energy

BSF:kay

cc: Jay Silberg, Esq. (with enclosures)



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March 21, 1984
PY-CEI/OCRE-0014 L

Ohio Citizens for Responsible Energy
c/o Ms. Susan L. Hiatt
8275 Munson Road
Mentor, OH 44060

Dear Ms. Hiatt:

On behalf of Ohio Citizens for Responsible Energy you requested copies of pages of documents relative to Issue No. 16.

Enclosed are the pages from the Unit 1 and 2 TDI diesel engine documentation packages which you requested.

Please sign below and return one copy of this letter to indicate receipt of these documents.

Applicants cost for copying the enclosed at \$0.10 per page is \$55.00. Please remit a check in the specified amount payable to The Cleveland Electric Illuminating Company, and address to:

Perry Nuclear Power Plant
c/o Mr. Bradley S. Ferrell
P. O. Box 97
Perry, OH 44081

Sincerely,

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY

Bradley S. Ferrell
Bradley S. Ferrell

Requested documents received by:

Susan L. Hiatt *3-22-84*
Susan L. Hiatt Date
Ohio Citizens for Responsible Energy

BSF:kay

cc: Jay Silberg, Esq. (with enclosures)



THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

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March 27, 1984
PY-CEI/OCRE-0015 L

Ohio Citizens for Responsible Energy
c/o Ms. Susan L. Hiatt
8275 Munson Road
Mentor, OH 44060

Dear Ms. Hiatt:

On behalf of Ohio Citizens for Responsible Energy you requested copies of pages of documents relative to Issue No. 16.

Enclosed are the pages drawn from the TDI Instruction and Parts Manuals.

Please sign below and return one copy of this letter to indicate receipt of these documents.

Applicants cost for copying the enclosed at \$0.10 per page is \$7.90. Please remit a check in the specified amount payable to The Cleveland Electric Illuminating Company, and address to:

Perry Nuclear Power Plant
c/o Mr. Bradley S. Ferrell
P. O. Box 97
Perry, OH 44081

Sincerely,

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY

Bradley S. Ferrell
Bradley S. Ferrell

Requested documents received by:

Susan L. Hiatt *3-28-84*
Susan L. Hiatt Date
Ohio Citizens for Responsible Energy

BSF:kay

cc: Jay Silberg, Esq. (with enclosures)



THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

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March 29, 1984
PY-CEI/OCRE-0016 L

Ohio Citizens for Responsible Energy
c/o Ms. Susan L. Hiatt
8275 Munson Road
Mentor, OH 44060

Dear Ms. Hiatt:

On behalf of Ohio Citizens for Responsible Energy you requested copies of pages of documents relative to Issue No. 16.

Enclosed are the pages drawn from the Surveillance Reports of the Class 1E Diesel Generator Units.

Please sign below and return one copy of this letter to indicate receipt of these documents.

Applicants cost for copying the enclosed at \$0.10 per page is \$20.30. Please remit a check in the specified amount payable to The Cleveland Electric Illuminating Company, and address to:

Perry Nuclear Power Plant
c/o Mr. Bradley S. Ferrell
P. O. Box 97
Perry, OH 44081

Sincerely,

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY

Bradley S. Ferrell
Bradley S. Ferrell

Requested documents received by:

Susan L. Hiatt *4-2-84*
Susan L. Hiatt Date
Ohio Citizens for Responsible Energy

BSF:kay

cc: Jay Silberg, Esq. (with enclosures)



THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

P.O. BOX 97 ■ PERRY, OHIO 44081 ■ TELEPHONE (216) 259-3737 ■ ADDRESS-10 CENTER ROAD

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April 5, 1984
PY-CEI/OCRE-0017 L

Ohio Citizens for Responsible Energy
c/o Ms. Susan L. Hiatt
8275 Munson Road
Mentor, OH 44060

Dear Ms. Hiatt:

On behalf of Ohio Citizens for Responsible Energy you requested copies of pages of documents relative to Issue No. 16.

Enclosed are the pages of Audit Reports of the Delaval Engine and Compressor Division.

Please sign below and return one copy of this letter to indicate receipt of these documents.

Applicants cost for copying the enclosed at \$0.10 per page is \$15.40. Please remit a check in the specified amount payable to The Cleveland Electric Illuminating Company, and address to:

Perry Nuclear Power Plant
c/o Mr. Bradley S. Ferrell
P. O. Box 97
Perry, OH 44081

Sincerely,

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY

Bradley S. Ferrell
Bradley S. Ferrell

Requested documents received by:

Susan L. Hiatt 4-6-84
Susan L. Hiatt Date
Ohio Citizens for Responsible Energy

ESF:kay

cc: Jay Silberg, Esq. (with enclosures)

LAW OFFICES OF

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February 17, 1984

Mr. James L. Kelley
Chairman
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Dr. Paul W. Purdom
235 Columbia Drive
Decatur, Georgia 30030

Dr. Richard F. Foster
P.O. Box 4263
Sunriver, Oregon 97702

Re: Duke Power Company, et al. (Catawba
Nuclear Station, Units 1 and 2),
Docket Nos. 50-413, 50-414

Gentlemen:

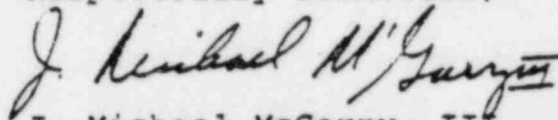
The Board now has pending before it a decision with respect to Palmetto Alliance's motion for a new contention with respect to the Transamerica Delaval diesel generators at Catawba. In light of that, we believe we should bring to the Board's attention that, in the course of long-term durability tests being conducted with the 1-A diesel generator at Catawba, certain matters have occurred with respect to one cylinder head, one or more valve pushrods, one of the two turbochargers on the engine, and a fuel oil injection pump nozzle.

More specifically, a minor amount of cylinder head leakage was noted during a run; when the engine was shut down it was discovered, during the week of February 5, that there was a slight crack in that cylinder head. Also during that week, the pushrods for diesel generator 1-A were checked, and it was determined that some had flaws in the welds joining the ball to the pipe. We would note that all the pushrods on diesel generator 1-A were subsequently replaced with pushrods

of an improved design. During the same week, one of the turbochargers showed excessive wear on the rear bearing due to inadequate lubrication, a lube oil drain line leak, and a rupture of the lube oil prelude line for that turbo-charger. Finally, during this run, a fuel oil injection pump nozzle was found to be cracked.

It should be noted that, with the exception of the fuel oil injection pump nozzle, these matters are similar in nature to matters found with other TDI diesels, as reflected in the February 2, 1984 "Report of Meeting with Representatives of the Transamerica Delaval, Inc. (TDI) Emergency Diesel Generator Owner's Group" which was served on the parties to this proceeding. It is Applicants' view, however, that none of these matters have a significant bearing on the operational reliability of the diesel.

Respectfully submitted,



J. Michael McGarry, III.

cc: All Parties
(Hand delivered to Kelley and Guild)

CERTIFICATE OF SERVICE

'84 MAY 17 AIO:18

This is to certify that copies of the foregoing were served by deposit in the U.S. Mail, first class, postage prepaid, 15th day of May, 1984 to those on the service list below.


Susan L. Hiatt

SERVICE LIST

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Washington, D.C. 20555

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Washington, D.C. 20555

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Atomic Safety & Licensing Appeal Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555