UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

DEC 10 1984

Docket Nos.: 50-440
and 50-441

Mr. Murray R. Edelman
Vice President - Nuclear Group
The Cleveland Electric Illuminating Company
P. O. Box 5000
Cleveland, Ohio 44101

Dear Mr. Edelman:

Subject: TDI Diesel Generator Reliability Verification Required for Licensing of Perry Nuclear Power Plant (Units 1 and 2)

The purpose of this letter is to respond to inquiries from your staff as to what plant-specific action must be taken by the Cleveland Electric Illuminating Company (CEI) relative to the reliability qualification of the TDI diesel generators installed at Perry prior to licensing.

Our records indicate that, to date, CEI has only provided Perry plant-specific responses to questions submitted by my letter to you dated December 28, 1983. Your responses, dated October 31, 1984, have been provided to the NRC task team established to address the issue of TDI diesel generator reliability.

The team has identified the need for CEI to additionally provide its program for the qualification of diesel generator units installed at Perry. The program should detail the types of inspections/actions that will be performed on each unit (e.g., disassembly, inspections, replacement, reassembly, testing), and include the submittal of a comprehensive report addressing the results of actions, inspections and tests performed under the program. This information is required to enable the staff to determine the acceptability of the reassembled diesel generators for the licensing of Perry Units 1 and 2 and to permit the interim operation of Unit 1, should the NRC team work on this matter not be completed at the time of Unit 1 licensing.

The enclosure identifies what information must be provided in the comprehensive report, summarized as follows:

- o Detailed description of the types of inspections performed on diesel generator components.
- o Inspection findings.
- o Nature of component defects found and their resolution.
- o Component replacements and basis for replacement.
- o Results of operability checks performed.
- o Owners Group Phase I recommendations and CEI's responses to those recommendations.
- o Status of Owners Group Phase 2 implementation by CEI.
- o Technical basis for CEI conclusion that reassembled diesel generators can perform their intended function.
- o Maintenance and surveillance program.
- o Engine start log for all engine starts at Perry (successful and non-successful starts, run-time planned, reason for failure to start or to run as planned and action taken, etc.).
- o Maximum load engines will experience due to all auto loads in correct sequence (this was stated in CEI's October 31, 1984 submittal, but the staff wants to know if the figure provided has changed).

Some of the above information may be included in the DR/QR for Perry in which case a submittal date for the DR/QR should be provided.

The NRC staff is continuing with its review to establish the requirements necessary to confirm the suitability of the TDI diesel generators for the service life of Perry, as a part of its assessment of the TDI Diesel Generator Owners' Group Generic Program, the results of which will be communicated to you at a later date.

Within ten (10) days after receipt of this letter, please have your staff advise the Perry Project Manager when we may expect to receive the above required information so that staff resources can be scheduled accordingly. If there are any further questions, please let us know.

Sincerely,

ORIGINAL SIGNED BY:

B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing

Enclosure: As stated

cc: See next page

DISTRIBUTION:

Docket File	NSIC	ACRS (16)	CBerlinger
NRC PDR	LB#1 R/F	EJordan	DPersinko
L PDR	MRushbrook	RHeischman	
PRC System	JStefano	CWoodhead (OELD)	

*See previous page for concurrences

LB#1:DL	CPB:DSI	LB#1:DL
*JStefano:kab	*CBerlinger	BJYoungblood
12/05/84	12/06/84	12/10/84

PERRY

DEC 10 1984

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ENCLOSURE

ITEMS TO BE ADDRESSED IN

CLEVELAND ELECTRIC ILLUMINATING COMPANY (CEI) SUBMITTAL

I. Discussion of Engine Disassembly, Inspection Results, and Resolution of Component Defects (Units 1 and 2 Engines) with Emphasis Regarding the Following Critical Components:

1. Piston Shirt
2. Connecting Rod Bearing Shell
3. Rocker Arm Capscrew
4. Air Start Valve Capscrew
5. Push Rods
6. Cylinder Head Studs
7. High Pressure Fuel Tubing
8. Crankshaft
9. Turbochargers
10. Connecting Rod
11. Engine Base and Bearing Cap
12. Cylinder Head
13. Jacket Water Pump
14. Engine Mounted Electrical Cable
15. Cylinder Block
16. Cylinder Liner

II. Post Inspection Testing

A. Testing performed and results.

B. Preoperational testing should include the following (described in NRC Order to Mississippi Power & Light dated May 22, 1984):

1. Ten modified starts to 40% load (a modified start is a start including turbocharger prelube and a three to five minute loading to the specified load and run for a minimum of one hour).

2. Two fast starts to a load greater than the maximum emergency loads the engine will experience but not greater than a load corresponding to 185 psig BMEP (a fast start simulates an ESF signal with the engine in ready-standby status).
Note: Prelube to turbocharger thrust bearing should be performed prior to start.

3. One 24 hour run at a load that is greater than the maximum emergency loads the engine will experience but not greater than a load corresponding to 185 psig BMEP.

III. Augmented Maintenance/Surveillance Program

See Table 1 for guidance; Table 1 is not intended to be a requirement and is provided for information only. It summarizes a maintenance/surveillance program that the staff has previously found acceptable at MP&L.

IV. Additional Items

A. Identify steps taken to ensure that TDI engines are not unnecessarily loaded above 185 psig brake mean effective pressure (BMEP) or 5740 Kw during a loss of offsite power if lead engine testing and inspection has not been completed.

B. Proposed Technical Specification changes to limit monthly and 18 month surveillance testing to 185 psig BMEP if lead engine testing and inspection has not been completed.

C. Hot and cold crankshaft deflections relative to TDI specifications.

D. Crankshaft torsiographs and associated stresses at 0%, 25%, 50%, 75%, and 100% of engine nameplate loading (particularly, the vibratory amplitudes of the criticals at 450 rpm).

E. Pre-turbine exhaust temperatures relative to the manufacturer's recommended maximum.

F. Engine operational history based on engine start logs with an analysis of plant specific problems and their resolution.

G. Any additional measures taken by CEI regarding Quality Assurance of engine components:

1. Inspections performed by CEI at TDI manufacturing facilities;
2. Inspections performed by CEI on replacement engine components prior to installation;
3. Results of any QC records review performed by CEI.

H. Verification of maximum load (and corresponding BMEP) that the engine will experience during emergency service conditions.

TABLE 1

AUGMENTED MAINTENANCE - SURVEILLANCE PROGRAM

The following maintenance and surveillance actions are provided as guidance to augment the maintenance program recommended by TDI. Alternate actions may be justified on the basis of plant-specific maintenance practices, design and experience. The overall goal of the augmented maintenance program should be to stagger the testing and surveillance to prevent both diesels from being out of service at the same time, and ensure reliability of the diesels while minimizing their unavailability.

Action	Frequency
1. Air-roll Engine (Cylinder Heads)	At 4hr and 24hr after each shutdown and prior to planned start.
2. Visually inspect external engine block and base for oil and water leakage.	Monthly, or after every 24hr of engine operation, whichever comes first.
3. Sample lubricating oil at lube oil filter inlet when engine is running - chemical analysis by qualified laboratory.	
4. Routinely sample lubricating oil - chemical analysis by qualified laboratory and sump water check.	Monthly
5. Record lube oil filter differential pressure.	
6. Visually inspect all connecting rods and check for preload relaxation.	After 200 hours of engine operation or 9 calendar months, whichever comes first, and prior to power levels above 5%.
7. Check 25% of cylinder head studs and 100% of air-start valve capscrews for preload relaxation.	After 270hr of engine operation or each refueling outage, whichever comes first.
8. Visually check cams, tappets and pushrods.	
9. Check hot and cold crankshaft deflections.	
10. Check rotor float for one turbocharger and inspect stationary nozzle ring bolts.	

Action	Frequency
11. Record engine operating parameters: a. engine inlet lube oil pressure b. turbo L.O. R.F. pressure c. turbo L.O. L.F. pressure d. fuel oil pressure e. fuel oil filter differential pressure f. air manifold pressure L.B. g. air manifold pressure R.B. h. lube oil filter differential pressure i. jacket water pressure (inlet and (outlet) j. crankcase vacuum k. all cylinder exhaust temperatures l. stack temperatures at turbine inlet m. lube oil temperature (inlet and (outlet) n. jacket water temperature (inlet and outlet) o. tachometer p. hourmeter q. engine load	During surveillance test, record parameters hourly, unless more frequent recording is recommended by manufacturer.
12. Clean and inspect "Y" strainers in starting air system.	Quarterly
13. Flush jacket water system	Three to four years.