

AUG 02 1984

Docket No.: 50-445

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Docket 50-445
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Mr. M. D. Spence, President
Texas Utilities Generating Company
400 N. Olive Street
Lock Box 81
Dallas, Texas 75201

Dear Mr. Spence:

SUBJECT: TDI DIESEL GENERATOR RELIABILITY VERIFICATION REQUIRED
FOR THE LICENSING OF THE COMANCHE PEAK STEAM ELECTRIC
STATION, UNIT 1

Reference: Letter from Youngblood (NRC) to Spence (TUGCo) dated
June 16, 1984, SUBJECT: TDI Diesel Generator
Reliability Verification.

In the above reference, the staff described information concerning the TDI
diesels that must be provided by Texas Utilities Generating Company (TUGCo)
for staff review prior to licensing. Briefly, the information consisted of a
comprehensive report describing the inspections and results of the 1A and 1B
engines, TUGCo responses to each of the Phase I Owners Group recommendations,
and results of the Train A and Train B operability checks performed.
Additionally, TUGCo was requested to provide a proposed maintenance and
surveillance program.

Enclosure 1 provides the details of items to be included in TUGCo's future
submittals. It does not supersede the requests made in the above reference.
A TDI maintenance/surveillance program that has been approved by the staff
for Grand Gulf is also provided. It is plant-specific and is intended for
guidance only.

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B. J. Youngblood, Chief
Licensing Branch #1
Division of Licensing

Enclosure: As stated

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7/27/84

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JStefano
7/27/84

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The purpose of this letter is to provide TUGCo with additional guidance on the information previously requested. It does not supersede the requests made in the above reference. The items to be discussed by TUGCo as well as the details of a TDI maintenance/surveillance program that has been approved by the staff for Grand Gulf are given in Enclosure 1. The maintenance/surveillance program is plant-specific and is provided for guidance only.

In order to expedite staff review, TUGCo should continue to submit the information on the schedule to which it has committed even if some items in Enclosure 1 cannot be included at that time.

B. J. Youngblood, Chief
Licensing Branch #1
Division of Licensing

Enclosure: As stated

TDI:PG *DP*
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ITEMS TO BE ADDRESSED IN
TEXAS UTILITIES GENERATING COMPANY (TUGCo) SUBMITTAL

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

1. Piston Skirt
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) 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 torsionographs 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. Information available concerning engine block as a result of recent strain gage monitoring of 1A engine.
- G. Engine operational history based on engine start logs with an analysis of plant specific problems and their resolution.
- H. Any additional measures taken by TUGCo regarding Quality Assurance of engine components:
 1. Inspections performed by TUGCo at TDI manufacturing facilities;
 2. Inspections performed by TUGCo on replacement engine components prior to installation;
 3. Results of any QC records review performed by TUGCo;
 4. Comparisons between 1A and 1B engine components where:
 - a. quality control records do not exist for the same component on both engines; and
 - b. different aspects of QC records exist for the same component on both engines.

5. Record-keeping procedures used by TUGCo to track engine components during inspections.
- I. 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.

<u>Action</u>	<u>Frequency</u>
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.	
5. Record lube oil filter differential pressure.	} Monthly
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 cap-screws 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 turbo-charger 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.