

NOV 13 1984

Docket No. 50-416

LICENSEE: Mississippi Power & Light Company

FACILITY: Grand Gulf Nuclear Station, Unit 1

SUBJECT: SUMMARY OF MAY 18, 1984 MEETING WITH MP&L TO DISCUSS INSPECTION OF A TDI DIESEL ENGINE

On May 18, 1984, a meeting was held in Bethesda, Maryland to discuss dis-assembly and inspection of one TDI diesel engine at Grand Gulf, Unit 1. The meeting was attended by representatives of NRC, MP&L, MP&L consultants and DOE. An attendance list is enclosed (Enclosure 1). A copy of the vugraphs used by NRC for their presentation is also enclosed (Enclosure 2).

In a letter dated April 25, 1984, NRC informed MP&L that their proposed program for the diesel generators would not establish adequate reliability for the TDI diesel engines. In a submittal dated May 6, 1984, MP&L provided additional argument to support their position for no immediate teardown inspection. The purpose of the meeting was to discuss the weaknesses in the MP&L argument and to inform them that a teardown inspection of at least one TDI diesel engine would be required by a pending Order.

As the NRC discussed the points in the vugraphs, MP&L provided the latest information in regard to each point. At the conclusion of the meeting, the NRC position was stated as follows:

- (1) A teardown inspection of at least one TDI diesel engine would be required prior to supporting a power level in excess of 5%.
- (2) With or without the TDI diesels, the safety of the plant up to 5% power is not an immediate concern.
- (3) Some credit would be allowed for the temporary gas turbines.
- (4) MP&L may be able to support a power level above 5% using the gas turbines and should provide an analysis if they wish to pursue authorization of a higher power level.
- (5) For the interim period, MP&L should request an exemption from Appendix A, GDC 17 to support low power operation with unproven TDI diesel engines.

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- (6) An Order would be issued within a few days requiring the detailed inspection of at least one TDI diesel engine and providing interim Technical Specifications in regard to the TDI diesel generators and the gas turbines to support continued low power operation.

MP&L indicated that the required inspection would take 6 to 8 weeks and that their exemption request would be submitted in about a week.




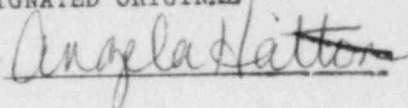
M. D. Houston, Project Manager
Licensing Branch No. 4
Division of Licensing

Enclosure:
As stated


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DESIGNATED ORIGINAL

Certified By



DL:LB #4
DHouston/ah
10/7/84



DL:LB #4
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10/19/84

GRAND GULF

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MEETING ATTENDEES
May 18, 1984

NRC

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R. Houston
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E. Adensam
M. Miller
M. Srinivasan
C. Berlinger
J. Gray
M. Wagner
J. Lieberman
E. Murphy
W. Hodges

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T. Cloninger
B. Angle
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MP&L Consultants

M. White
R. McGehee

DOE

K. Trickett

JUSTIFICATION FOR DISASSEMBLY

- o OG PROGRAM ON 15 ITEMS NOT COMPLETE WITH REGARD TO SEVERAL CRITICAL GG COMPONENTS
- o FEW GG INSPECTIONS TO DATE HAVE INCLUDED NDE
- o CAUSES OF COMPONENT FAILURES HAVE NOT ALL BEEN ESTABLISHED
- o NO LINKAGE ESTABLISHED BETWEEN GG AND OTHER PLANTS WHICH HAVE PERFORMED INSPECTIONS
- o KEY PARTS HAVE BEEN REPLACED BUT HAVE NOT EXPERIENCED 10^7 CYCLES AT EXPECTED LOADS

SPECIFIC CONCERNS REGARDING 5/6/84 LETTER

PISTONS

- o CATAWBA HAS RECENTLY IDENTIFIED PROBLEMS WITH AN PISTONS

CYLINDER HEADS

- o FAILURE DURING A START IS UNSATISFACTORY
- o R-5 EXPERIENCE IS IRRELEVANT
- o SOME OLD SYTLE HEADS STILL ON GG ENGINES BUT HAVE NOT BEEN INSPECTED IN ACCORDANCE WITH OG RECOMMENDATIONS (UT, MT)

CONNECTING ROD BEARINGS

- o BEARINGS REPLACED AFTER LOW HOURS - NO EXPERIENCE WITH NEW BEARINGS
- o PROBLEMS IDENTIFIED RECENTLY AT CATAWBA
- o ALL BEARING NOT INSPECTED IAW OG CRITERIA

PUSH RODS

- o MAIN PUSH RODS NOT REPLACED - HIGH FAILURE RATE (2%)

CYLINDER BLOCK

- o NO INSPECTION TO DETERMINE IF CRACKS EXIST
- o OG EVALUATION OF CRACKING NOT COMPLETE
- o COULD NOT DETECT RADIAL OR CIRCUMFERENTIAL CRACKS WITHOUT DISASSEMBLY
- o CRACKS AT SHOREHAM HAVE PROPOGATED PAST BOLT HOLES

ENGINE BASE

- C BASE AREA HAS NOT BEEN INSPECTED
- O OG REPORT DOES NOT APPLY TO V-ENGINES - ONLY TO DSR-48
- O UNCLEAR WHEN BOLT TORQUE CHANGED AND WHETHER CRACKS DEVELOPED BEFORE CHANGE

TURBOCHARGER

- O SHOULD PROVIDE MORE INFORMATION REGARDING THRUST BEARING WEAR, LUBRICATION, AND INSPECTION

CONNECTING RODS

- O NO INDICATION WHEN TORQUE ON BOLTS WAS CHANGED
- O PREVIOUS INSPECTION PERFORMED BY MP&L WERE VISUAL - NO NDE DONE
- O OG HAS NOT ADDRESSED RODS FOR V-ENGINES
- O GG USES OLD DESIGN RODS WITH 1 7/8 INCH BOLTS

WRIST PIN BUSHING

- o No NDE DONE ON BUSHINGS AT GG - VISUAL AND DIMENSIONAL ONLY
- o STAFF DOES NOT AGREE THAT CRACKS ARE NOT SIGNIFICANT
- o MP&L DOES NOT KNOW IF ANY BUSHINGS AT GG HAVE CRACKS IN 15° SECTOR WHERE LOADING IS HIGHEST: ...

TEST PROGRAM

- o RECENT 1000 HOUR RUN IS A GOOD SIGN BUT LONG HISTORY OF PROBLEMS CANNOT BE IGNORED

ENGINE INSPECTIONS

	<u>MP&L PROPOSAL</u>	<u>OG RECOMMENDATIONS</u>	<u>NRC STAFF POSITION</u>
CYLINDER HEADS	VISUAL AND NDE (UT, LP, AND MT)	GENERALLY SIMILAR	MP&L PROPOSAL IS ACCEPTABLE.
ENGINE BASE ASSEMBLY	LP MAIN BEARING SADDLE, VISUALLY INSPECT MATING SURFACES	NONE IF LOADS SIMILAR TO SNPS AND SNPS INSPECTIONS ARE ACCEPTABLE, AND SIM IS IMPLEMENTED	MP&L PROPOSAL ACCEPTABLE EXCEPT FASTNER TORQUES SHOULD ALSO BE CHECKED AT THIS TIME. IMPLEMENT SIM
ROCKER ARM CAPSCREWS	VERIFY TORQUE, MT CAPSCREWS AND VERIFY MATERIAL	VERIFY TORQUE, VERIFY MATERIAL	MP&L PROPOSAL IS ACCEPTABLE.
CYLINDER BLOCK	VISUAL AND LP OF CYLINDER BLOCK MATING SURFACE AND HOLD AREAS	LP OF LINER LANDS	MP&L PROPOSAL IS ACCEPTABLE. ALSO SHOULD LP INSPECT LINER LANDS
CYLINDER HEAD STUDS	VISUAL, HARDNESS, TORQUE, AND MATERIAL COMPARATER CHECKS	VISUAL, TORQUE, HARDNESS VERIFY LUBRICANT	MP&L PROPOSAL IS ACCEPTABLE.
CYLINDER LINERS	VISUALLY INSPECT, DIMENSIONAL AND MATERIAL VERIFICATION	INSPECT FOR WEAR, DISTORTION, AND FLAWS	LP INSPECTION SHOULD BE ADDED TO MP&L PROGRAM. LIGHTLY HONE ANY GLAZED LINERS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS

ENGINE INSPECTIONS (CONTINUED)

	<u>MP&L PROPOSAL</u>	<u>OG RECOMMENDATIONS</u>	<u>NRC STAFF POSITION</u>
TURBOCHARGER			
WELDS	VISUAL	NOT YET ADDRESSED	MP&L PROPOSAL IS ACCEPTABLE
BRACKET BOLTS	VERIFY TORQUES AND MATERIAL	NOT YET ADDRESSED	MP&L PROPOSAL IS ACCEPTABLE
THRUST BEARING	NOT ADDRESSED	INSPECT FOR WEAR, CHECK MOTOR ASSEMBLY AXIAL CLEARANCES. CHECK BEARING OIL FLOW RATES PER OG CRITERIA	INSPECTION SHOULD ADDRESS OG RECOMMENDATIONS
CONNECTING RODS			
ROD BOX	VISUAL, DIMENSIONAL, MT, HARDNESS, AND MATERIAL VERIFICATION	INSPECT CRANKPIN, AND LINK PIN BORES, BOLT HOLES AND PARTING SURFACES. CHECK BOLT TORQUE PER SIM 64	MP&L PROPOSAL IS ACCEPTABLE. SHOULD ADDRESS OG RECOMMENDATIONS
BOLTS	MT, CHECK TORQUES	NOT YET ADDRESSED	MP&L PROPOSAL IS ACCEPTABLE.
WRIST PIN BUSHINGS	DIMENSIONAL, LP, AND MATERIAL VERIFICATION	LP	MP&L PROPOSAL IS ACCEPTABLE
PISTONS	DIMENSIONAL, AND MT OF SKIRTS, CROWNS, AND FASTENERS	NDE OF PISTONS - SAMPLE BASIS	MP&L PROPOSAL IS ACCEPTABLE. INSPECT ALL PISTONS IN ONE ENGINE

ENGINE INSPECTIONS (CONTINUED)

	<u>MP&L PROPOSAL</u>	<u>OG RECOMMENDATIONS</u>	<u>NRC STAFF POSITION</u>
CRANKSHAFT	TORSIOGRAPH DEFLECTION TEST, DIMENSIONAL CHECK	NDE, TORSIOGRAPH	MP&L PROPOSAL IS ACCEPTABLE. NDE SHOULD BE PERFORMED AT FIRST REFUELING
CRANKSHAFT COVER, CAPSCREWS	VISUAL AND TORQUE	NOT ADDRESSED	MP&L PROPOSAL IS ACCEPTABLE
FUEL OIL INJECTION LINES	VISUAL FOR LEAKS	SAME	ACCEPTABLE FOR THIS INSPECTION
PUSH RODS	VISUAL	LP - SAMPLE BASIS	VISUAL ACCEPTABLE FOR THIS INSPECTION. LP AT FIRST REFUELING (SAMPLE BASIS)
AIR-START VALVE CAPSCREWS	VISUAL AND DIMENSIONAL	SAME, PLUS TORQUE	MP&L PROPOSAL IS ACCEPTABLE, EXCEPT INCLUDE TORQUE CHECK
JACKET WATER PUMP	NOT ADDRESSED	NONE IF ANALYSIS IS ACCEPTABLE AND INSPECTIONS AT SNPS/RIVER BEND ARE ACCEPTABLE	NONE AT THIS TIME.

PREOPERATIONAL TESTING PROGRAM

NRC REQUIREMENTS

- o 10 MODIFIED STARTS AT 40% LOAD
- o 2 FAST STARTS TO 70% LOAD
- o 1 24-HOUR RUN AT 70%

MP&L PROPOSAL

- o 1 8-HOUR RUN AT 20-100% LOAD
- o 1 MANUAL START TO 70% LOAD FOR 4 HOURS
- o 1 MANUAL START TO 70% LOAD FOR 24 HOURS

TABLE 5-1

GGNS D/G MAINTENANCE TESTING PROGRAM

Maintenance Action	Frequency	Procedure
Observe and record lubricating oil and jacket water temperatures.	Every 8 hr	02-S-01-5
Drain all low point water collectors, "Y" strainers and air receiver tanks in starting air system.	D (once/24 hr)	02-S-01-5
Check engine and auxiliary equipment for oil, water, and fuel oil leaks.	D (once/24 hr)	02-S-01-5
Check level of lubricating oil in sump tank, governor, and pedestal bearing.	D (once/24 hr)	02-S-01-5
Check fuel pump racks for freedom of movement through full limit of travel.	D	02-S-01-5 Monthly Lube
Check air butterfly valve(s) and actuating cylinders for freedom of operation.	W	02-S-01-5
Turn on electrical fuel oil booster pump for a short time and circulate fuel through system. Check strainers for clean fuel.	W	02-S-01-5
Clean and inspect "Y" strainers in starting air system. NOTE: If fouling of strainers is such that more frequent inspection is indicated, shorten inspection interval.	6 months Q	07-S-24-P75-D015-1
Check lubricating oil filter pressure differential.	M	06-OP-P75-M-0001/2
Inspect and clean air filter in starting air distributor. If conditions warrant, inspect more frequently.	M	Vendor Manual

NOTE 1: 'D - Daily; W - Weekly; M - Monthly; Q - Quarterly; A/S - Annual/Each Shutdown; and EA/AS - Bi-Annual/Alternate Shutdowns.

TABLE 5-2

MP&I. PROPOSED ADDITIONAL MAINTENANCE & INSPECTIONS

Maintenance Action	Frequency
* Air Roll Engine	At 4 hrs and 24 hrs following engine shutdown and once weekly thereafter.
Visually inspect externals of engine block and base	Monthly or after every 24 hrs of operation, whichever comes first.
Visually inspect all connecting rods and check the preload of the connecting rod bolts	After 25 starts or 50 hrs of engine operation, whichever comes first.
Inspect lubricating oil for water	Monthly or after 24 hrs of operation, whichever comes first.
Send lubricating oil sample to laboratory for analysis	Monthly
Inspect sample of lubricating oil from bottom of sump for water	Monthly
Record filter differential pressures (where applicable)	Monthly
Check preload on 25% of cylinder head studs, rocker arm capscrews, start valve capscrews	50 ±10 hr of engine operation or refueling outage whichever comes first.
Visually check cams, tappets and push rods	After 100 hrs of operation or refueling outage, whichever comes first.
* Check crankshaft deflection	After 100 hrs of operation or refueling outage, whichever comes first, within 15 minutes of engine shutdown
Record pertinent engine operating parameters	During surveillance testing.

MEETING SUMMARY DISTRIBUTION

Docket No(s): 50-416

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