

| | | | |
|----------------------|---|---|--|
| CUSTOMER: | WESTERN TURBO AND FUEL INJECTION LTD | | |
| PLANT: | . | | |
| MACHINE NAME: | MT284 SN 1HTSHADR61H397090 | Machine Condition CRITICAL | |
| LOCATION | | | |
| MACHINE TYPE: | DIESEL ENGINE | | |
| LUBE TYPE: | NEM MULTI-SERVICE 15W-40 | | |
| MACH MFGR: | INTERNATIONAL | | |
| MACH MOD: | 7400 | Lubricant Condition MARGINAL | |
| RECEIVED: | 10-FEB-14 | | |
| CONTACT 1: | | | |
| REPORT: | 12-FEB-14 10:26:17 | | |
| SAMPLE NO: | 1951-1-12-1 | | |
| TICKET NO: | 2672,2674,2675,ENGC2672,ENGC2674,ENGC2675 | | |

RECOMMENDATIONS

- Inspect head gasket, injectors for location of glycol leak. Possible problem with cooling system.
- Closely monitor unit for changes in operating parameters.
- Change lubricant.
- Check coolant system.

LOGIC

- An increase in copper combined with a positive specific glycol test indicates a problem with the cooling system.
- Glycol was detected in the oil.
- An increase in sodium in the oil by as little as 50 ppm can mean that one gallon of coolant has leaked into a 10 gallon lub oil system.
- Glycol contamination may form gummy residues in closely fitted parts and render a cold engine impossible to restart or cause seizure of the engine.

MISCELLANEOUS

- Lubricant refers to oil, fuel, biofuel, grease, coolant or varnish.
- FOR GREATER DIAGNOSTIC, PLEASE SUPPLY A CURRENT REFERENCE LUBRICANT TO COMPARE WITH SAMPLE.
- Trend analysis could not be performed. (Min. 4 tests required)
- Our database indicates no site contaminant for this unit. Please advise laboratory if this is not the case.
- Our records indicate that your system contains filter(s) FLEETGUARD # #
- Tank capacity 28 liter(s).

NOTE

- Client's Note : Looking for antifreeze in the oil.

SAMPLING HISTORY

| LabNo | SAMPLE DATE DD-MM-YYYY | TIME ON OIL / TSN | TIME SINCE OVER- HAUL / TSO | OIL CHANGED (Y/N) | PREVIOUS CONDI- TION MACH/OIL |
|--------|---------------------------|-------------------|--------------------------------|-------------------|----------------------------------|
| 944849 | 06-02-2014 | 3000 | 344951 | Y | (n/a) |

(SP) SPECTROSCOPIC ANALYSIS [ASTM D5185] (elements seen in ppm)

TESTED ELEMENTS ARE:Fe, Cu, Pb, Sn, Cr, Al, Ni, Ti, Ag, V, Mg, Si, B, Na, Ba, Ca, P, Mn, Zn, Mo, Cd, K.

| Date(DD/MM/YY) | 06-02-14 | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | REF |
|----------------|----------|-------|-------|-------|-------|-------|-------|-------|-----|
| Labno | 944849 | | | | | | | | |
| Fe-IRON | 31 | | | | | | | | - |
| Cu-COPPER | 17 | | | | | | | | - |
| Pb-LEAD | 37 | | | | | | | | - |
| Sn-TIN | 1.0 | | | | | | | | - |
| Al-ALUMINUM | 3.0 | | | | | | | | - |
| Mo-MOLYBDENUM | 12 | | | | | | | | - |
| Si-SILICON | 16 | | | | | | | | - |
| Mg-MAGNESIUM | 104 | | | | | | | | - |
| B-BORON | 70 | | | | | | | | - |
| Na-SODIUM | 735 | | | | | | | | - |
| Ca-CALCIUM | 2361 | | | | | | | | - |
| P-PHOSPHORUS | 1034 | | | | | | | | - |
| Zn-ZINC | 1277 | | | | | | | | - |
| K-POTASSIUM | 10 | | | | | | | | - |

(FTIR) FOURIER TRANSFORM INFRARED ANALYSIS (Absorbance)

| Date(DD/MM/YY) | 06-02-14 | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | REF |
|----------------|----------|-------|-------|-------|-------|-------|-------|-------|-----|
| Labno | 944849 | | | | | | | | |
| SOOT | 3 | | | | | | | | - |
| OXIDATION | 14 | | | | | | | | - |
| SULFATE | 21 | | | | | | | | - |
| NITRATION | 7 | | | | | | | | - |

SOOT (%)

| Date(DD/MM/YY) | 06-02-14 | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | REF |
|----------------|----------|-------|-------|-------|-------|-------|-------|-------|-----|
| Labno | 944849 | | | | | | | | |
| SOOT (%) | 0.12 | | | | | | | | - |

VISCOSITY/100 [ASTM D445]

| Date(DD/MM/YY) | 06-02-14 | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | REF |
|----------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|
| Labno | 944849 | | | | | | | | |
| in cSt 100°C | 13.52 | | | | | | | | 15.20 |

GLYCOL [ASTM D2982]

| Date(DD/MM/YY) | 06-02-14 | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) |
|----------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|
| Labno | 944849 | | | | | | | | |
| GLYCOL (%) | 1.00 | | | | | | | | |

HOT PLATE (%)

| Date(DD/MM/YY) | 06-02-14 | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | REF |
|----------------|----------|-------|-------|-------|-------|-------|-------|-------|-----|
| Labno | 944849 | | | | | | | | |
| WATER | < 0.1 | | | | | | | | - |

FUEL [N-NEGATIVE, P-POSITIVE]

| Date(DD/MM/YY) | 06-02-14 | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | (n/a) | REF |
|----------------|----------|-------|-------|-------|-------|-------|-------|-------|-----|
| Labno | 944849 | | | | | | | | |
| FUEL | N | | | | | | | | - |

WESTERN TURBO AND FUEL INJECTION LTD assumes sole responsibility for the total copy, reproduction, application of and reliance upon results and recommendations reported by Predictive Maintenance Corporation, whose obligation is limited to good faith performance. Report released under authority of employee number 1026.