

# LIEBHERR

## CONSTRUCTION EQUIPMENT



### LIEBHERR LH50M 144157-1216 - Diesel Engine

Sample No: LH0255441

Oil Type: LIEBHERR MOTOROIL 10W-40



**CALGARY METALS (1985) LTD.**  
 3415 OGDEN RD. SE.  
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#### SAMPLE INFORMATION

|               |             |             |             |     |
|---------------|-------------|-------------|-------------|-----|
| Sample Number | LH0255441   | LH0255426   | LH0225087   | --- |
| Sample Date   | 17 Nov 2023 | 23 Aug 2023 | 15 Feb 2023 | --- |
| Machine Hours | 2077        | 1548        | 472         | --- |
| Oil Hours     | 0           | 0           | 0           | --- |
| Oil Changed   | Changed     | Changed     | Changed     | --- |
| Sample Status | NORMAL      | NORMAL      | ABNORMAL    | --- |



#### OIL CONDITION

|                |     |      |      |      |     |
|----------------|-----|------|------|------|-----|
| Visc @ 100°C   | cSt | 13.3 | 13.0 | 12.0 | --- |
| Oxidation (PA) | %   | 61   | 64   | 205  | --- |



#### CONTAMINATION

|                |     |      |      |     |     |
|----------------|-----|------|------|-----|-----|
| Water          | %   | NEG  | NEG  | NEG | --- |
| Soot %         | %   | 0    | 0    | 0   | --- |
| Nitration (PA) | %   | 58   | 61   | 98  | --- |
| Sulfation (PA) | %   | 52   | 57   | 114 | --- |
| Glycol         | %   | NEG  | NEG  | NEG | --- |
| Fuel           | %   | <1.0 | <1.0 | 1.3 | --- |
| Silicon        | ppm | 6    | 6    | 9   | --- |
| Sodium         | ppm | 1    | 2    | 2   | --- |
| Potassium      | ppm | 0    | 0    | 3   | --- |



#### WEAR METALS

|            |     |    |    |     |     |
|------------|-----|----|----|-----|-----|
| Iron       | ppm | 3  | 4  | 10  | --- |
| Copper     | ppm | 18 | 85 | 178 | --- |
| Lead       | ppm | <1 | 2  | 6   | --- |
| Tin        | ppm | 0  | 0  | <1  | --- |
| Aluminum   | ppm | <1 | 1  | 3   | --- |
| Chromium   | ppm | 0  | <1 | <1  | --- |
| Molybdenum | ppm | 60 | 57 | 45  | --- |
| Nickel     | ppm | <1 | 0  | 0   | --- |
| Titanium   | ppm | 0  | 0  | <1  | --- |
| Silver     | ppm | <1 | 0  | 0   | --- |
| Manganese  | ppm | 0  | <1 | 1   | --- |
| Vanadium   | ppm | 0  | 0  | 0   | --- |



#### ADDITIVES

|            |     |      |      |      |     |
|------------|-----|------|------|------|-----|
| Calcium    | ppm | 1066 | 1008 | 1404 | --- |
| Magnesium  | ppm | 968  | 938  | 914  | --- |
| Zinc       | ppm | 1193 | 1139 | 856  | --- |
| Phosphorus | ppm | 984  | 998  | 794  | --- |
| Barium     | ppm | <1   | 1    | 30   | --- |
| Boron      | ppm | 9    | 8    | 113  | --- |

#### Diagnosis

Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. Additive levels indicate the addition of a different brand, or type of oil. The condition of the oil is acceptable for the time in service.

Depot: CAL341CAL  
 Unique No: 5696827  
 Signed: Wes Davis  
 Report Date: 18 Dec 2023



### GRAPHS

