

# LIEBHERR

## CONSTRUCTION EQUIPMENT



### 100881 - Diesel Engine

Sample No: LH0278805

Oil Type: PETRO CANADA 10W40



#### SAMPLE INFORMATION

| Sample Number | LH0278805   | LH0153886   | LH0153899   | LH0235536   |
|---------------|-------------|-------------|-------------|-------------|
| Sample Date   | 20 Nov 2023 | 16 Jun 2023 | 31 Oct 2022 | 22 Jun 2022 |
| Machine Hours | 6420        | 5929        | 5427        | 5380        |
| Oil Hours     | 0           | 0           | 0           | 380         |
| Oil Changed   | Changed     | Changed     | Changed     | Not Changd  |
| Sample Status | NORMAL      | NORMAL      | ABNORMAL    | NORMAL      |

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#### OIL CONDITION

|                      |       |      |      |      |      |
|----------------------|-------|------|------|------|------|
| Visc @ 40°C          | cSt   | ---  | ---  | 69.6 | ---  |
| Visc @ 100°C         | cSt   | 13.3 | 13.3 | 11.6 | 11.5 |
| Viscosity Index (VI) | Scale | ---  | ---  | 161  | ---  |
| Oxidation (PA)       | %     | 63   | 63   | 67   | 67   |

#### Diagnosis

Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.



#### CONTAMINATION

|                |     |      |      |     |     |
|----------------|-----|------|------|-----|-----|
| Water          | %   | NEG  | NEG  | NEG | NEG |
| Soot %         | %   | 0    | 0    | 0   | 0   |
| Nitration (PA) | %   | 70   | 68   | 62  | 95  |
| Sulfation (PA) | %   | 52   | 51   | 55  | 62  |
| Glycol         | %   | NEG  | NEG  | NEG | NEG |
| Fuel           | %   | <1.0 | <1.0 | 1.2 | 1.6 |
| Silicon        | ppm | 6    | 6    | 8   | 5   |
| Sodium         | ppm | 2    | 2    | 4   | 2   |
| Potassium      | ppm | 0    | <1   | <1  | 4   |



#### WEAR METALS

|            |     |    |    |    |    |
|------------|-----|----|----|----|----|
| Iron       | ppm | 3  | 3  | 2  | 7  |
| Copper     | ppm | 2  | 1  | <1 | 2  |
| Lead       | ppm | <1 | <1 | <1 | 2  |
| Tin        | ppm | <1 | 0  | 0  | <1 |
| Aluminum   | ppm | 1  | 1  | <1 | 1  |
| Chromium   | ppm | 0  | <1 | 0  | <1 |
| Molybdenum | ppm | 59 | 56 | 52 | <1 |
| Nickel     | ppm | 0  | <1 | <1 | <1 |
| Titanium   | ppm | 0  | <1 | <1 | <1 |
| Silver     | ppm | <1 | <1 | 0  | <1 |
| Manganese  | ppm | 0  | <1 | <1 | <1 |
| Vanadium   | ppm | 0  | 0  | 0  | 0  |



#### ADDITIVES

|            |     |      |      |      |      |
|------------|-----|------|------|------|------|
| Calcium    | ppm | 1089 | 1004 | 1032 | 2167 |
| Magnesium  | ppm | 992  | 977  | 1020 | 402  |
| Zinc       | ppm | 1226 | 1160 | 1185 | 858  |
| Phosphorus | ppm | 1023 | 1071 | 1085 | 801  |
| Barium     | ppm | <1   | 0    | 0    | 0    |
| Boron      | ppm | 2    | 7    | 61   | 76   |

**Depot:** BAKOTT  
**Unique No:** 5683998  
**Signed:** Kevin Marson  
**Report Date:** 28 Nov 2023



### GRAPHS

