



LIEBHERR

OIL ANALYSIS REPORT

| | |
|-----------------|-----------------|
| WEAR | NORMAL |
| CONTAMINATION | NORMAL |
| FLUID CONDITION | ABNORMAL |



Machine Id
LIEBHERR L586 059953-1334
Component
Diesel Engine
Fluid
PETRO CANADA 10W40 (--- GAL)

RECOMMENDATION

The oil change at the time of sampling has been noted. Resample at the next service interval to monitor. No other corrective action is recommended at this time.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | LH0270296 | LH0284945 | LH0242568 |
| Sample Date | | Client Info | | 04 Mar 2024 | 01 Feb 2024 | 01 Oct 2022 |
| Machine Age | hrs | Client Info | | 7962 | 4939 | 3002 |
| Oil Age | hrs | Client Info | | 0 | 0 | 0 |
| Filter Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | Changed | Changed | N/A |
| Filter Changed | | Client Info | | Changed | Changed | N/A |
| Sample Status | | | | ABNORMAL | NORMAL | NORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|----------|-----|---------------|------|--------------|----|----|
| Iron | ppm | ASTM D5185(m) | >100 | 4 | 5 | 7 |
| Chromium | ppm | ASTM D5185(m) | >5 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185(m) | >5 | <1 | 0 | <1 |
| Titanium | ppm | ASTM D5185(m) | | 0 | 0 | <1 |
| Silver | ppm | ASTM D5185(m) | >3 | 0 | <1 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >15 | 1 | 2 | 1 |
| Lead | ppm | ASTM D5185(m) | >30 | <1 | <1 | 2 |
| Copper | ppm | ASTM D5185(m) | >125 | 1 | 3 | 12 |
| Tin | ppm | ASTM D5185(m) | >5 | 0 | <1 | <1 |
| Vanadium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |

CONTAMINATION

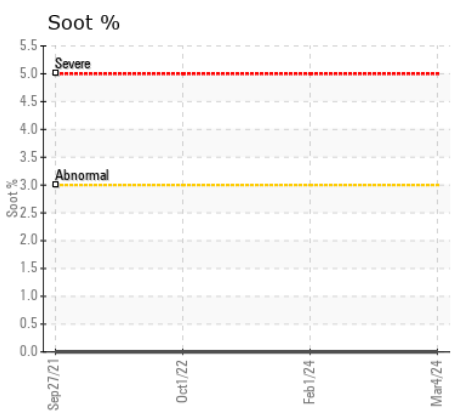
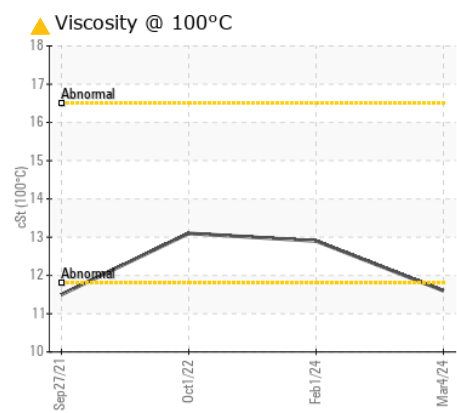
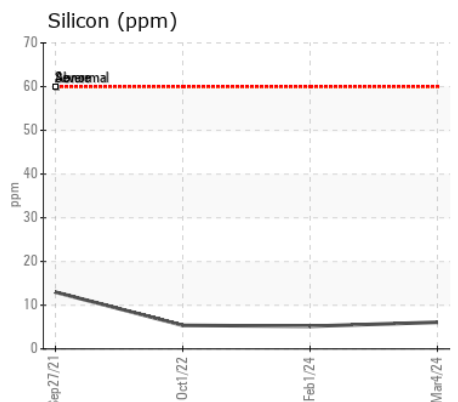
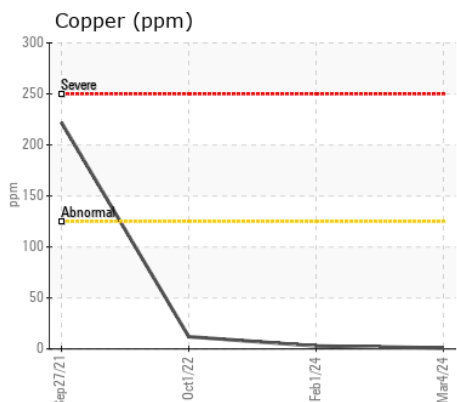
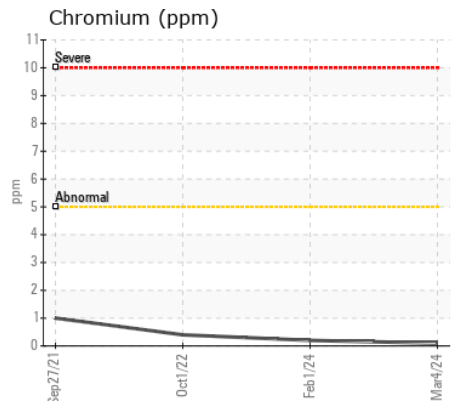
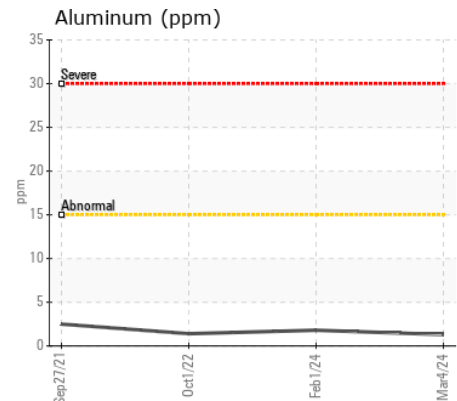
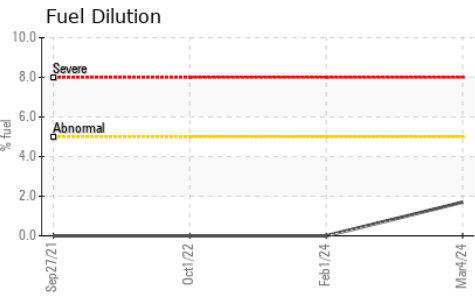
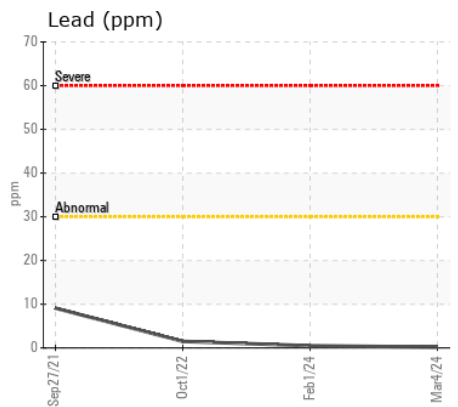
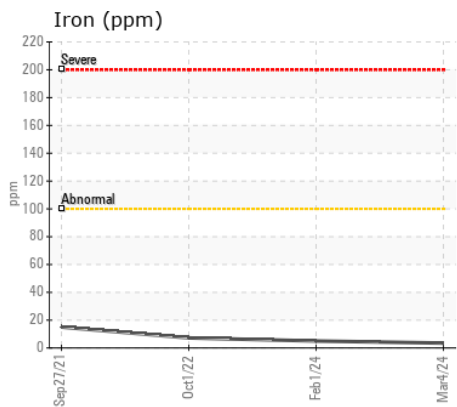
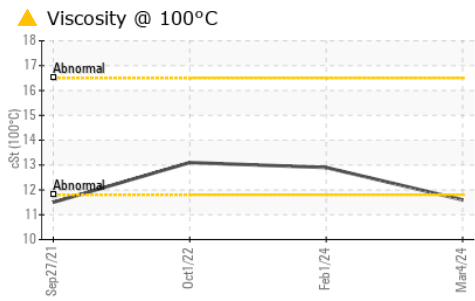
Light fuel dilution occurring. No other contaminants were detected in the oil.

| | | | | | | |
|------------------|----------|---------------|------|--------------|------|------|
| Silicon | ppm | ASTM D5185(m) | >60 | 6 | 5 | 5 |
| Potassium | ppm | ASTM D5185(m) | >20 | <1 | 3 | 2 |
| Fuel | % | ASTM D7593* | >5 | 1.7 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | ASTM D7844* | >3 | 0 | 0 | 0 |
| Nitration | Abs/cm | ASTM D7624* | >20 | 8.6 | 8.7 | 9.5 |
| Sulfation | Abs/.1mm | ASTM D7415* | >30 | 19.3 | 19.6 | 21.7 |
| Emulsified Water | scalar | Visual* | >0.2 | NEG | NEG | NEG |

FLUID CONDITION

Viscosity of sample indicates oil is within SAE 30 range, advise investigate. The condition of the oil is acceptable for the time in service.

| | | | | | | |
|--------------|----------|---------------|-----|---------------|------|------|
| Sodium | ppm | ASTM D5185(m) | >20 | 4 | 1 | 2 |
| Boron | ppm | ASTM D5185(m) | | 37 | <1 | 1 |
| Barium | ppm | ASTM D5185(m) | | 0 | 0 | <1 |
| Molybdenum | ppm | ASTM D5185(m) | | 58 | 57 | 58 |
| Manganese | ppm | ASTM D5185(m) | | 0 | 0 | <1 |
| Magnesium | ppm | ASTM D5185(m) | | 1079 | 970 | 963 |
| Calcium | ppm | ASTM D5185(m) | | 848 | 1089 | 1098 |
| Phosphorus | ppm | ASTM D5185(m) | | 1041 | 993 | 1011 |
| Zinc | ppm | ASTM D5185(m) | | 1187 | 1182 | 1165 |
| Sulfur | ppm | ASTM D5185(m) | | 2945 | 2631 | 2332 |
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | 17.7 | 17.0 | 19.0 |
| Visc @ 100°C | cSt | ASTM D7279(m) | | ▲ 11.6 | 12.9 | 13.1 |



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : LH0270296 **Received** : 07 Mar 2024
Lab Number : 02620479 **Tested** : 08 Mar 2024
Unique Number : 5737589 **Diagnosed** : 08 Mar 2024 - Kevin Marson
Test Package : MOB 1 (Additional Tests: FuelDilution, PercentFuel)

THOMAS CAVANAGH CONSTRUCTION LTD
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 Contact: Keith

To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.

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