



LIEBHERR

OIL ANALYSIS REPORT

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



Machine Id
062154-1049
Component
Diesel Engine
Fluid
PETRO CANADA 10W40 (30 LTR)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | LH0291113 | LH0123037 | LH0202957 |
| Sample Date | | Client Info | | 13 May 2024 | 26 Oct 2023 | 22 Jun 2023 |
| Machine Age | hrs | Client Info | | 12610 | 12421 | 12090 |
| Oil Age | hrs | Client Info | | 0 | 0 | 0 |
| Filter Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | Changed | Changed | Changed |
| Filter Changed | | Client Info | | N/A | N/A | N/A |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|----------|-----|---------------|------|--------------|----|----|
| Iron | ppm | ASTM D5185(m) | >100 | 3 | 6 | 3 |
| Chromium | ppm | ASTM D5185(m) | >5 | 0 | 0 | 0 |
| Nickel | ppm | ASTM D5185(m) | >5 | 0 | 0 | <1 |
| Titanium | ppm | ASTM D5185(m) | | <1 | 0 | <1 |
| Silver | ppm | ASTM D5185(m) | >3 | 0 | <1 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >15 | <1 | 1 | 1 |
| Lead | ppm | ASTM D5185(m) | >30 | 0 | 2 | 1 |
| Copper | ppm | ASTM D5185(m) | >125 | 2 | 4 | 5 |
| Tin | ppm | ASTM D5185(m) | >5 | 0 | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |

CONTAMINATION

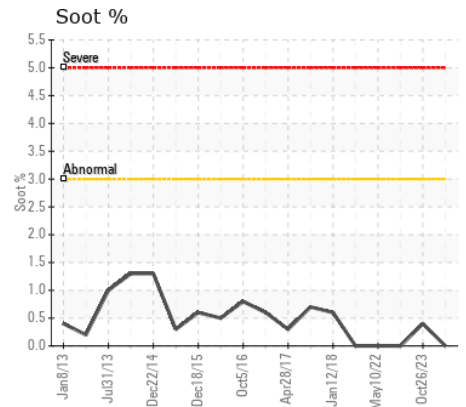
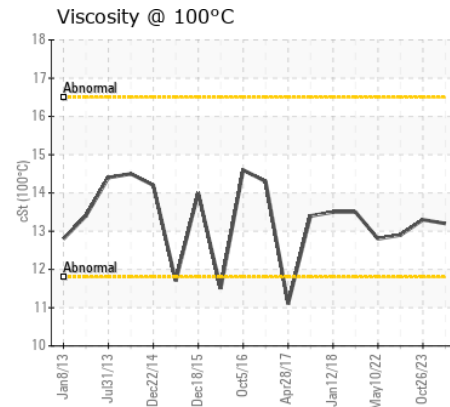
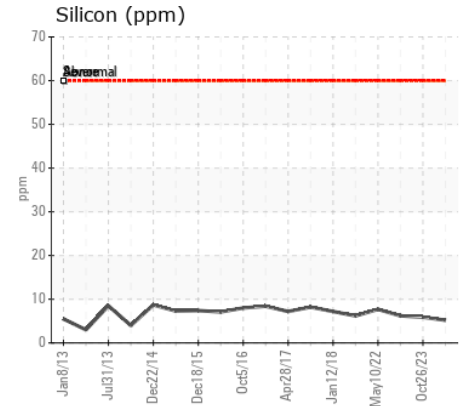
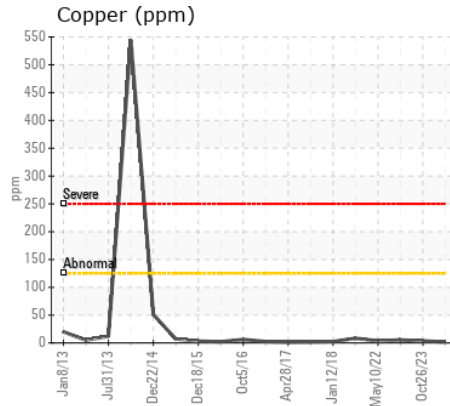
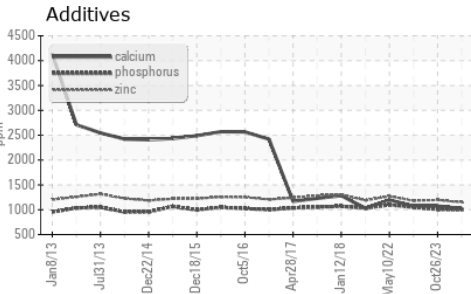
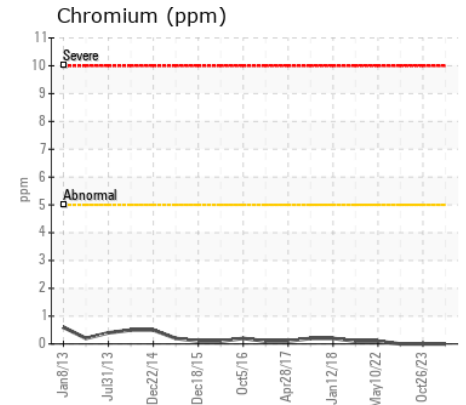
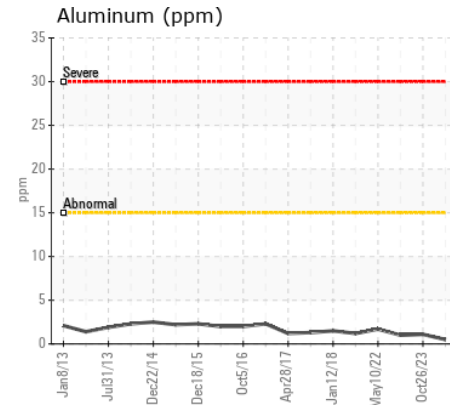
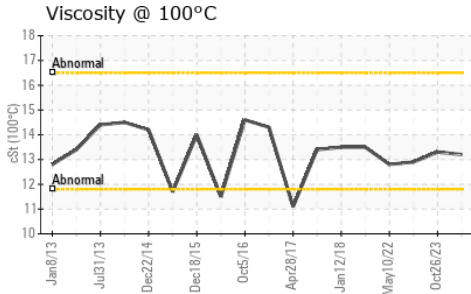
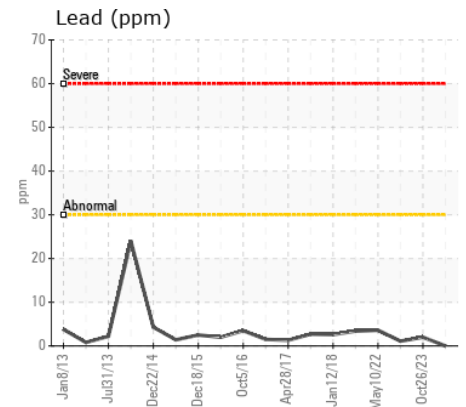
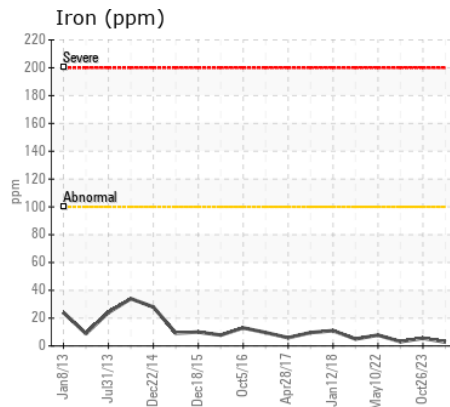
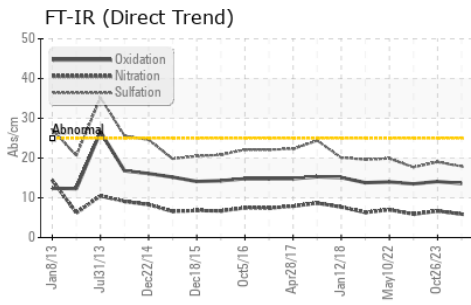
There is no indication of any contamination in the oil.

| | | | | | | |
|------------------|----------|---------------|------|----------------|------|------|
| Silicon | ppm | ASTM D5185(m) | >60 | 5 | 6 | 6 |
| Potassium | ppm | ASTM D5185(m) | >20 | <1 | 0 | <1 |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | ASTM D7844* | >3 | 0 | 0.4 | 0 |
| Nitration | Abs/cm | ASTM D7624* | >20 | 5.9 | 6.7 | 5.9 |
| Sulfation | Abs/.1mm | ASTM D7415* | >30 | 17.9 | 19.0 | 17.7 |
| Emulsified Water | scalar | Visual* | >0.2 | NEG | NEG | NEG |

FLUID CONDITION

The condition of the oil is acceptable for the time in service.

| | | | | | | |
|--------------|----------|---------------|-----|-------------|------|------|
| Sodium | ppm | ASTM D5185(m) | >20 | 1 | 1 | 2 |
| Boron | ppm | ASTM D5185(m) | | 1 | 1 | 2 |
| Barium | ppm | ASTM D5185(m) | | 0 | <1 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | | 59 | 60 | 58 |
| Manganese | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Magnesium | ppm | ASTM D5185(m) | | 957 | 958 | 944 |
| Calcium | ppm | ASTM D5185(m) | | 1021 | 1075 | 1073 |
| Phosphorus | ppm | ASTM D5185(m) | | 1001 | 1008 | 1047 |
| Zinc | ppm | ASTM D5185(m) | | 1150 | 1195 | 1179 |
| Sulfur | ppm | ASTM D5185(m) | | 2563 | 2547 | 2599 |
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | 13.6 | 14.1 | 13.5 |
| Visc @ 100°C | cSt | ASTM D7279(m) | | 13.2 | 13.3 | 12.9 |



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : LH0291113
Lab Number : 02635513
Unique Number : 5776666
Test Package : MOB 1

Received : 15 May 2024
Tested : 15 May 2024
Diagnosed : 15 May 2024 - Wes Davis

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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.