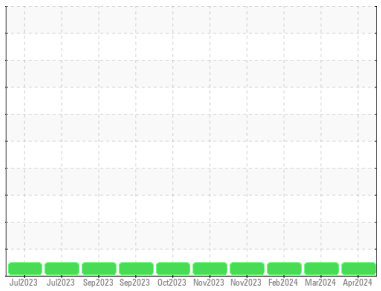
# OIL ANALYSIS REPORT

Sample Rating Trend




**NORMAL**

Area
**BD SHOP**
Machine Id
**200294**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 10W30 (40 LTR)**

## DIAGNOSIS

**Recommendation**
Resample at the next service interval to monitor.

**Wear**
All component wear rates are normal.

**Contamination**
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

**Fluid Condition**
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0926311** | WC0888923 | WC0888877 |
| Sample Date | | Client Info | | **16 Apr 2024** | 22 Mar 2024 | 09 Feb 2024 |
| Machine Age | kms | Client Info | | **250251** | 240066 | 220741 |
| Oil Age | kms | Client Info | | **58141** | 47956 | 28631 |
| Oil Changed | | Client Info | | **Not Changd** | Not Changd | Not Changd |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >3.0 | **<1.0** | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | **NEG** | NEG | NEG |
| Glycol | | WC Method | | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >200 | **52** | 49 | 38 |
| Chromium | ppm | ASTM D5185(m) | >6 | **2** | 2 | 2 |
| Nickel | ppm | ASTM D5185(m) | >3 | **<1** | <1 | <1 |
| Titanium | ppm | ASTM D5185(m) | >2 | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | >2 | **0** | 0 | <1 |
| Aluminum | ppm | ASTM D5185(m) | >50 | **12** | 12 | 10 |
| Lead | ppm | ASTM D5185(m) | >10 | **<1** | 0 | <1 |
| Copper | ppm | ASTM D5185(m) | >50 | **39** | 39 | 36 |
| Tin | ppm | ASTM D5185(m) | >6 | **0** | 0 | <1 |
| Antimony | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Beryllium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |

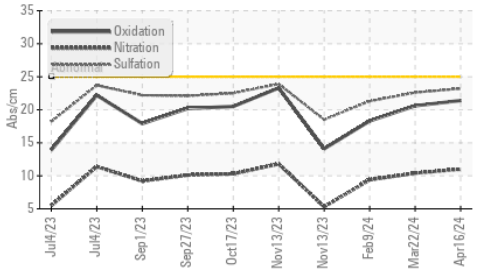
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | 2 | **3** | 1 | 3 |
| Barium | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 50 | **64** | 65 | 62 |
| Manganese | ppm | ASTM D5185(m) | 0 | **<1** | 0 | 0 |
| Magnesium | ppm | ASTM D5185(m) | 950 | **1026** | 1043 | 1009 |
| Calcium | ppm | ASTM D5185(m) | 1050 | **1140** | 1162 | 1144 |
| Phosphorus | ppm | ASTM D5185(m) | 995 | **988** | 1000 | 1033 |
| Zinc | ppm | ASTM D5185(m) | 1180 | **1226** | 1243 | 1227 |
| Sulfur | ppm | ASTM D5185(m) | 2600 | **1909** | 1961 | 2372 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >50 | **4** | 4 | 4 |
| Sodium | ppm | ASTM D5185(m) | | **2** | 2 | 1 |
| Potassium | ppm | ASTM D5185(m) | >20 | **24** | 22 | 19 |

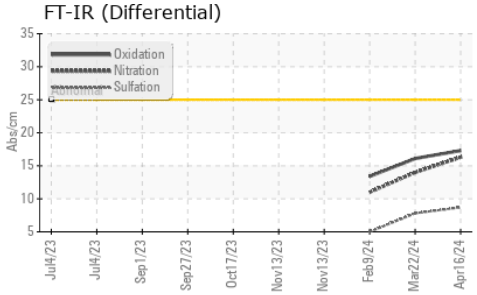
| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | ASTM D7844* | >3 | **1.1** | 1 | 0.7 |
| Nitration | Abs/cm | ASTM D7624* | >20 | **11.0** | 10.4 | 9.4 |
| Nitration(Diff) | Abs/cm | ASTM E2412* | < 25 | **16.3** | 14 | 11 |
| Sulfation | Abs/.1mm | ASTM D7415* | >30 | **23.2** | 22.6 | 21.3 |
| Sulfation(Diff) | Abs/cm | ASTM E2412* | | **8.7** | 7.8 | 5 |

# OIL ANALYSIS REPORT

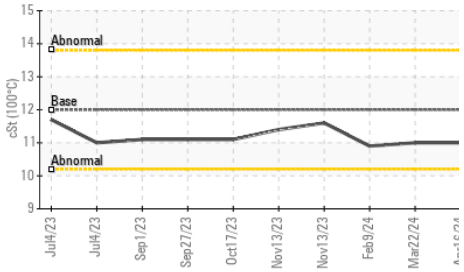
FT-IR (Direct Trend)



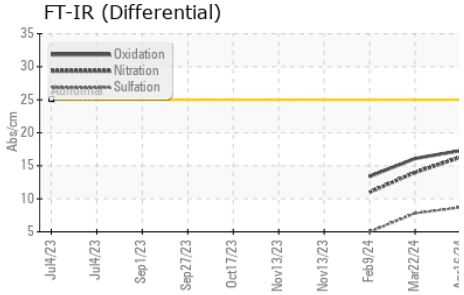

FT-IR (Differential)




Viscosity @ 100°C




FT-IR (Differential)



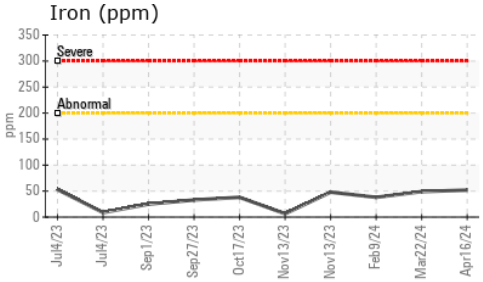

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | **21.4** | 20.6 | 18.3 |
| Oxidation(Diff) | Abs/cm | ASTM E2412* | < 25 | **17.3** | 16.1 | 13.4 |
| Base Number (BN) | mg KOH/g | ASTM D2896* | | **7.48** | 7.94 | 8.14 |

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Emulsified Water | scalar | Visual* | >0.2 | **NEG** | NEG | NEG |
| Free Water | scalar | Visual* | | **NEG** | NEG | NEG |

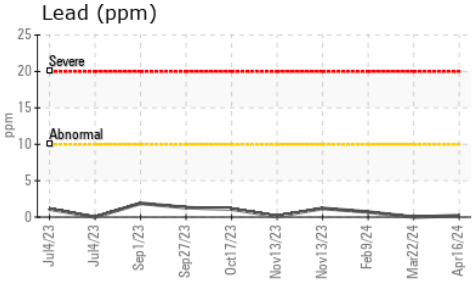
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D7279(m) | 12.00 | **11.0** | 11.0 | 10.9 |

## GRAPHS

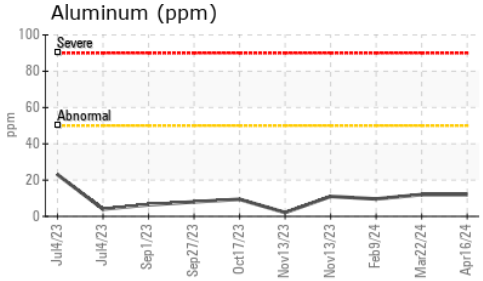
Iron (ppm)



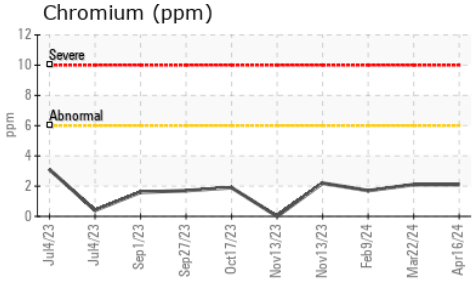

Lead (ppm)



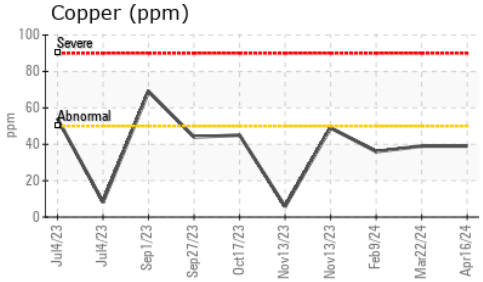

Aluminum (ppm)



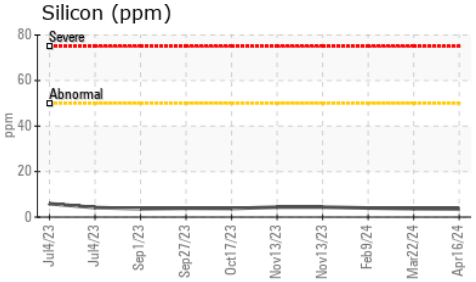

Chromium (ppm)



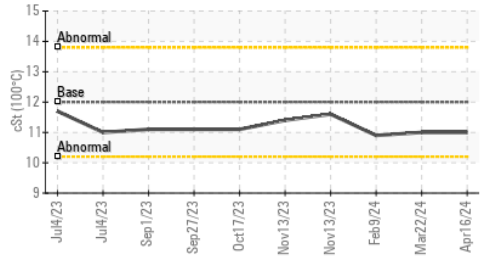

Copper (ppm)



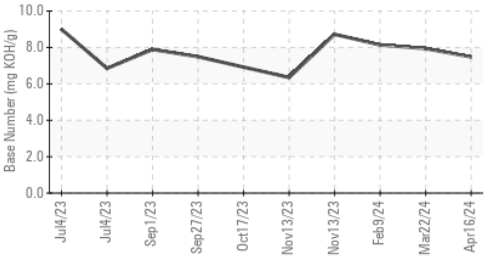

Silicon (ppm)




Viscosity @ 100°C




Base Number




ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : WC0926311 **Received** : 22 Apr 2024
**Lab Number** : 02630445 **Tested** : 23 Apr 2024
**Unique Number** : 5763577 **Diagnosed** : 23 Apr 2024 - Kevin Marson
**Test Package** : MOB 2 ( Additional Tests: FT-IR(Diff) )

*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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