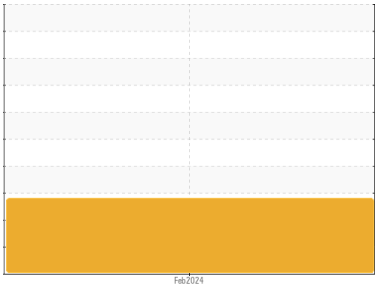
OIL DIAGNOSTICS

# OIL ANALYSIS REPORT

Sample Rating Trend




**DEGRADATION**

Machine Id
**738600**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 10W30 (--- GAL)**

## DIAGNOSIS

**Recommendation**
Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

**Wear**
Cylinder, crank, or cam shaft wear is indicated.

**Contamination**
There is an abnormal amount of solids and carbon present in the oil.

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

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **PCA0119048** | --- | --- |
| Sample Date | | Client Info | | **17 Feb 2024** | --- | --- |
| Machine Age | mls | Client Info | | **232864** | --- | --- |
| Oil Age | mls | Client Info | | **232864** | --- | --- |
| Oil Changed | | Client Info | | **Changed** | --- | --- |
| Sample Status | | | | **ABNORMAL** | --- | --- |

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

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | ▲ **111** | --- | --- |
| Chromium | ppm | ASTM D5185m | >20 | **4** | --- | --- |
| Nickel | ppm | ASTM D5185m | >4 | **<1** | --- | --- |
| Titanium | ppm | ASTM D5185m | | **1** | --- | --- |
| Silver | ppm | ASTM D5185m | >3 | **<1** | --- | --- |
| Aluminum | ppm | ASTM D5185m | >20 | **10** | --- | --- |
| Lead | ppm | ASTM D5185m | >40 | **0** | --- | --- |
| Copper | ppm | ASTM D5185m | >330 | **9** | --- | --- |
| Tin | ppm | ASTM D5185m | >15 | **<1** | --- | --- |
| Vanadium | ppm | ASTM D5185m | | **<1** | --- | --- |
| Cadmium | ppm | ASTM D5185m | | **0** | --- | --- |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 2 | **2** | --- | --- |
| Barium | ppm | ASTM D5185m | 0 | **0** | --- | --- |
| Molybdenum | ppm | ASTM D5185m | 50 | **67** | --- | --- |
| Manganese | ppm | ASTM D5185m | 0 | **2** | --- | --- |
| Magnesium | ppm | ASTM D5185m | 950 | **1079** | --- | --- |
| Calcium | ppm | ASTM D5185m | 1050 | **1240** | --- | --- |
| Phosphorus | ppm | ASTM D5185m | 995 | **1243** | --- | --- |
| Zinc | ppm | ASTM D5185m | 1180 | **1513** | --- | --- |
| Sulfur | ppm | ASTM D5185m | 2600 | **2649** | --- | --- |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **11** | --- | --- |
| Sodium | ppm | ASTM D5185m | | **3** | --- | --- |
| Potassium | ppm | ASTM D5185m | >20 | **13** | --- | --- |
| Fuel | % | ASTM D3524 | >5 | **<1.0** | --- | --- |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | ▲ **3.5** | --- | --- |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **18.5** | --- | --- |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **34.8** | --- | --- |

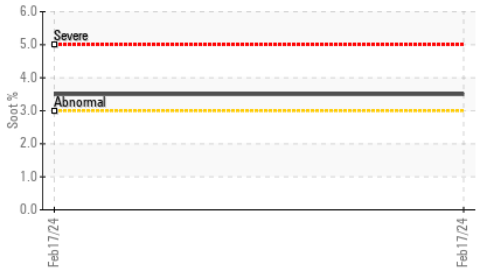
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **35.8** | --- | --- |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | ▲ **1.5** | --- | --- |

# OIL ANALYSIS REPORT

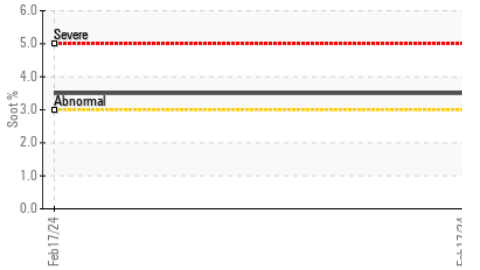
OIL DIAGNOSTICS

Ferrous Alloys


Soot %




Soot %



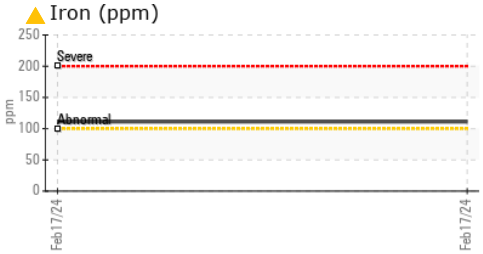

Viscosity @ 100°C


| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | --- | --- |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | --- | --- |
| Precipitate | scalar | *Visual | NONE | **NONE** | --- | --- |
| Silt | scalar | *Visual | NONE | **NONE** | --- | --- |
| Debris | scalar | *Visual | NONE | **NONE** | --- | --- |
| Sand/Dirt | scalar | *Visual | NONE | **NONE** | --- | --- |
| Appearance | scalar | *Visual | NORML | **NORML** | --- | --- |
| Odor | scalar | *Visual | NORML | **NORML** | --- | --- |
| Emulsified Water | scalar | *Visual | >0.2 | **NEG** | --- | --- |
| Free Water | scalar | *Visual | | **NEG** | --- | --- |

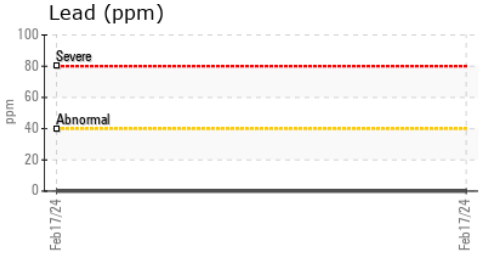
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 12.00 | **12.7** | --- | --- |

## GRAPHS

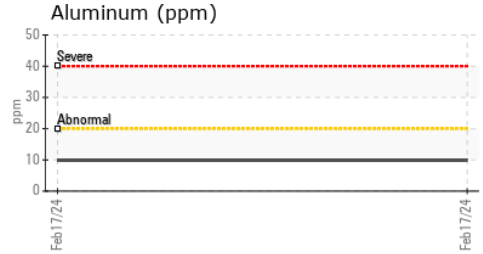
Iron (ppm)



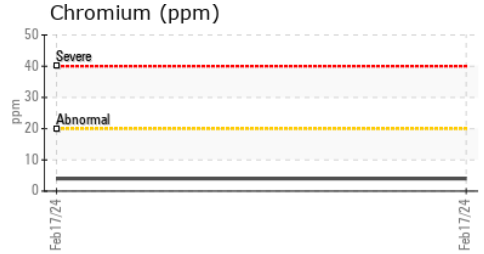

Lead (ppm)



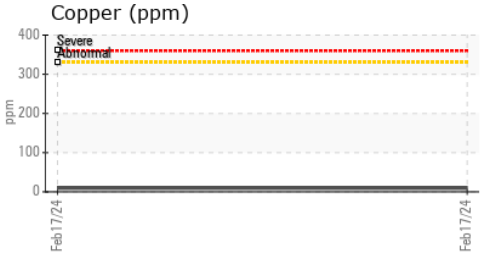

Aluminum (ppm)



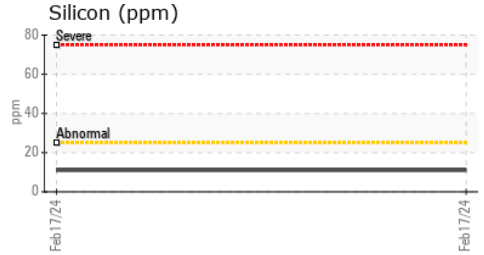

Chromium (ppm)



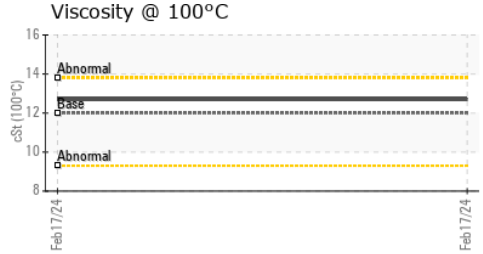

Copper (ppm)



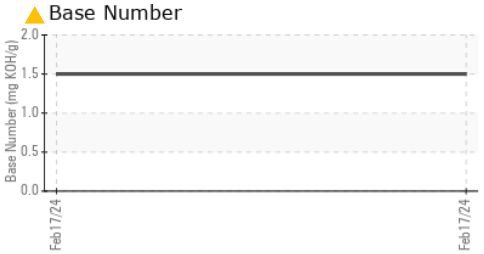

Silicon (ppm)




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : PCA0119048
**Lab Number** : 06107127
**Unique Number** : 10910624
**Test Package** : MOB 1 ( Additional Tests: FuelDilution, TBN )

**Received** : 04 Mar 2024
**Tested** : 05 Mar 2024
**Diagnosed** : 06 Mar 2024 - Jonathan Hester

*To discuss this sample report, contact Customer Service at 1-800-237-1369.*
** - Denotes test methods that are outside of the ISO 17025 scope of accreditation.*
*Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)*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