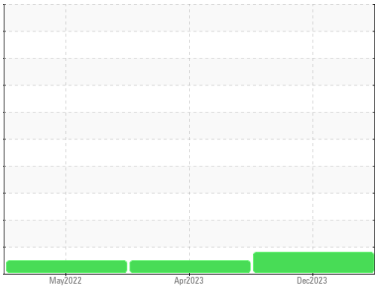
OIL DIAGNOSTICS

# OIL ANALYSIS REPORT

Sample Rating Trend




**WEAR**

Machine Id
**311161**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 10W30 (--- QTS)**

## DIAGNOSIS

**Recommendation**
No corrective action is recommended at this time. Resample at the next service interval to monitor.

**Wear**
The aluminum level is abnormal. All other component wear rates are normal.

**Contamination**
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 | | **PCA0113380** | PCA0095914 | PCA0072457 |
| Sample Date | | Client Info | | **01 Dec 2023** | 17 Apr 2023 | 10 May 2022 |
| Machine Age | mls | Client Info | | **0** | 85238 | 38931 |
| Oil Age | mls | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | Not Changd | Changed |
| Sample Status | | | | **ABNORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >5 | **<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 D5185m | >100 | **46** | 33 | 32 |
| Chromium | ppm | ASTM D5185m | >20 | **2** | 1 | 2 |
| Nickel | ppm | ASTM D5185m | >4 | **<1** | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | ▲ **22** | 15 | 13 |
| Lead | ppm | ASTM D5185m | >40 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >330 | **4** | 3 | 5 |
| Tin | ppm | ASTM D5185m | >15 | **1** | <1 | 1 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 2 | **10** | 15 | 20 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 2 | 0 |
| Molybdenum | ppm | ASTM D5185m | 50 | **93** | 93 | 52 |
| Manganese | ppm | ASTM D5185m | 0 | **1** | 1 | 1 |
| Magnesium | ppm | ASTM D5185m | 950 | **922** | 885 | 945 |
| Calcium | ppm | ASTM D5185m | 1050 | **1103** | 1043 | 1167 |
| Phosphorus | ppm | ASTM D5185m | 995 | **948** | 922 | 974 |
| Zinc | ppm | ASTM D5185m | 1180 | **1240** | 1156 | 1119 |
| Sulfur | ppm | ASTM D5185m | 2600 | **2945** | 3066 | 2752 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **6** | 6 | 5 |
| Sodium | ppm | ASTM D5185m | | **3** | 2 | <1 |
| Potassium | ppm | ASTM D5185m | >20 | **36** | 28 | 12 |

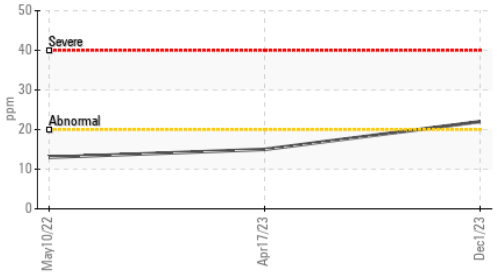
| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.7** | 0.4 | 0.4 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **11.2** | 9.2 | 9.1 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **22.5** | 17.9 | 18.7 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **18.7** | 15.5 | 14.4 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | **6.4** | 6.7 | 7.7 |

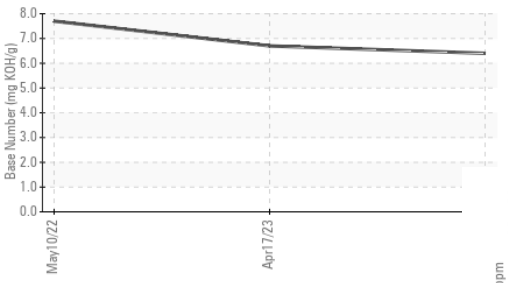
# OIL ANALYSIS REPORT

OIL DIAGNOSTICS

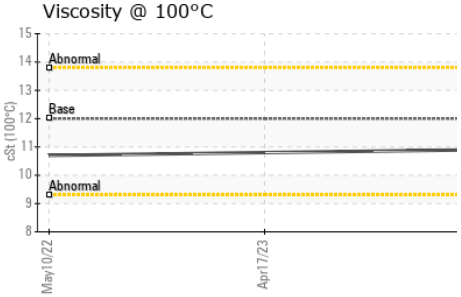
Aluminum (ppm)




Base Number




Viscosity @ 100°C

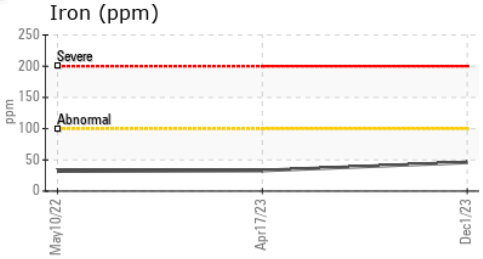



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

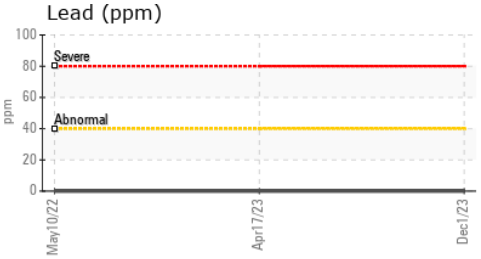
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 12.00 | **10.9** | 10.8 | 10.7 |

## GRAPHS

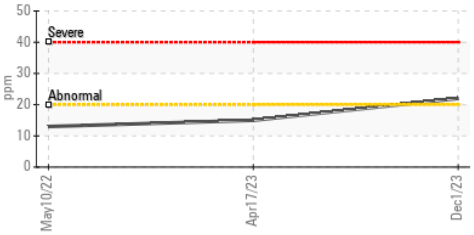
Iron (ppm)



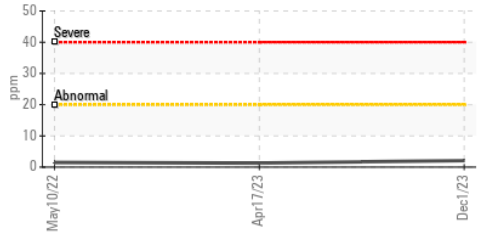

Lead (ppm)



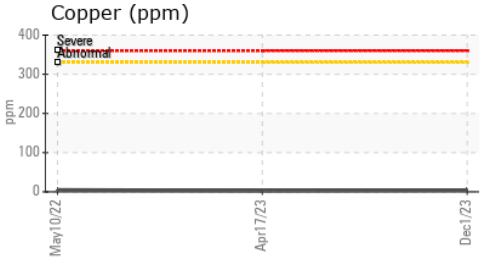

Aluminum (ppm)



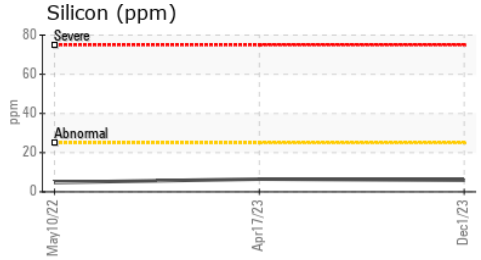

Chromium (ppm)



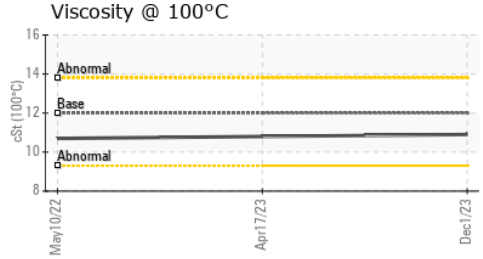

Copper (ppm)



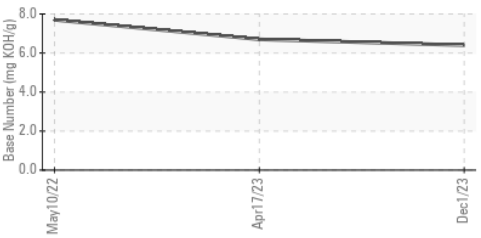

Silicon (ppm)




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : PCA0113380 **Recieved** : 13 Dec 2023
**Lab Number** : 06034052 **Diagnosed** : 18 Dec 2023
**Unique Number** : 10789281 **Diagnostician** : Don Baldridge
**Test Package** : MOB 1 ( Additional Tests: TBN )

*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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