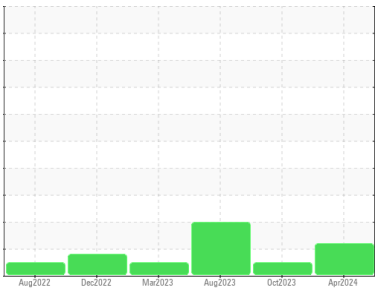
# OIL ANALYSIS REPORT

Sample Rating Trend




**WEAR**

Machine Id
**736803**
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**
Cylinder, crank, or cam shaft wear is indicated. All other 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. No other contaminants were detected in the oil.

**Fluid Condition**
The oil viscosity is higher than normal. The BN result indicates that there is suitable alkalinity remaining in the oil.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **PCA0120700** | PCA0110469 | PCA0103036 |
| Sample Date | | Client Info | | **04 Apr 2024** | 27 Oct 2023 | 03 Aug 2023 |
| Machine Age | mls | Client Info | | **249257** | 188914 | 153886 |
| Oil Age | mls | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | Not Changd | Changed |
| Sample Status | | | | **ABNORMAL** | NORMAL | ABNORMAL |

| 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 | ▲ **156** | 61 | ▲ 176 |
| Chromium | ppm | ASTM D5185m | >20 | **5** | 2 | 6 |
| Nickel | ppm | ASTM D5185m | >4 | **<1** | <1 | 1 |
| Titanium | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Silver | ppm | ASTM D5185m | >3 | **0** | <1 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | **36** | 16 | 61 |
| Lead | ppm | ASTM D5185m | >40 | **<1** | <1 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **21** | 18 | 73 |
| Tin | ppm | ASTM D5185m | >15 | **<1** | <1 | 4 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | <1 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 2 | **3** | 6 | 7 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 50 | **75** | 69 | 61 |
| Manganese | ppm | ASTM D5185m | 0 | **2** | 1 | 4 |
| Magnesium | ppm | ASTM D5185m | 950 | **1025** | 884 | 885 |
| Calcium | ppm | ASTM D5185m | 1050 | **1552** | 1375 | 1446 |
| Phosphorus | ppm | ASTM D5185m | 995 | **1178** | 1009 | 945 |
| Zinc | ppm | ASTM D5185m | 1180 | **1409** | 1266 | 1241 |
| Sulfur | ppm | ASTM D5185m | 2600 | **2872** | 2699 | 2336 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **9** | 6 | 11 |
| Sodium | ppm | ASTM D5185m | | **4** | 0 | 6 |
| Potassium | ppm | ASTM D5185m | >20 | **64** | 38 | 137 |

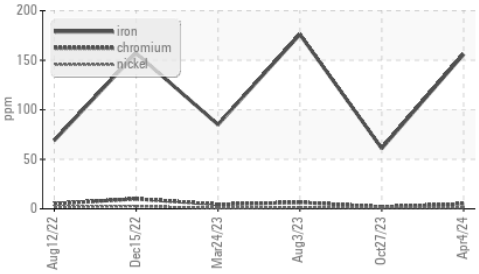
| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **1.7** | 1.2 | 2.4 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **17.2** | 12.7 | 22.6 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **31.0** | 25.5 | 34.4 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **37.4** | 26.0 | 48.0 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | **4.0** | 5.1 | ▲ 1.4 |

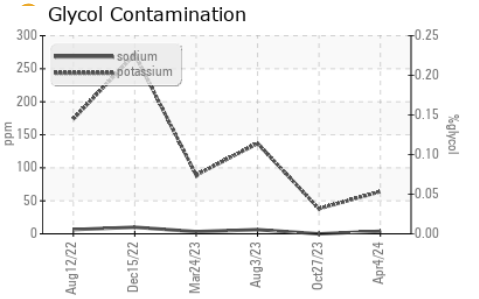
# OIL ANALYSIS REPORT

OIL DIAGNOSTICS

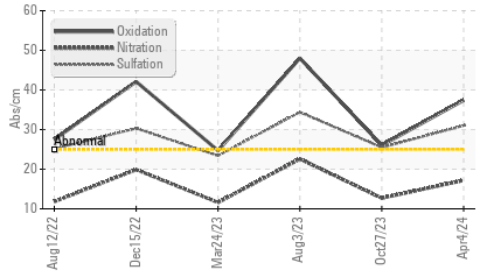
Ferrous Alloys



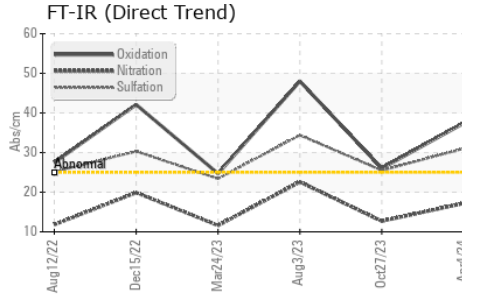

Glycol Contamination



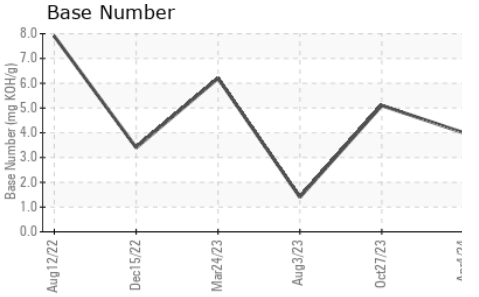

FT-IR (Direct Trend)




FT-IR (Direct Trend)




Base Number

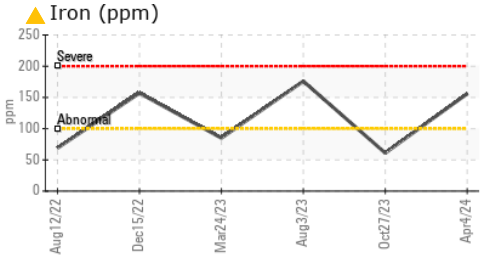



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 |

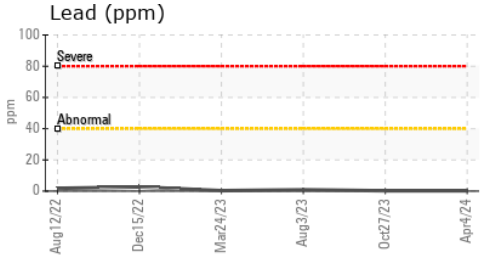
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 12.00 | **14.0** | 11.8 | 13.6 |

## GRAPHS

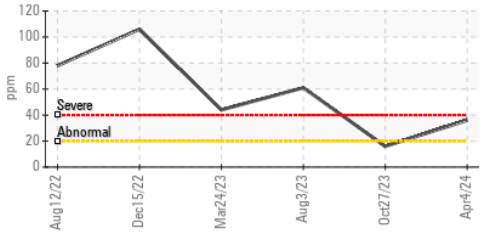
Iron (ppm)



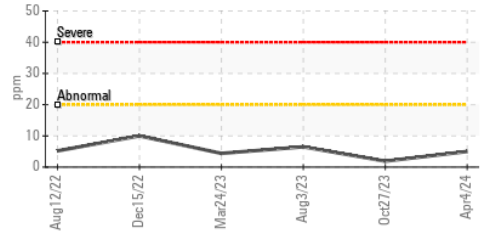

Lead (ppm)



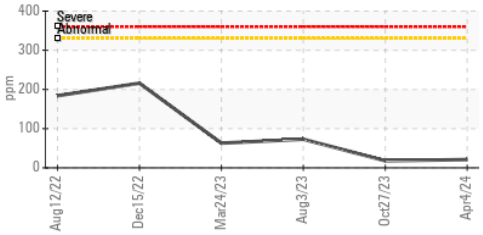

Aluminum (ppm)



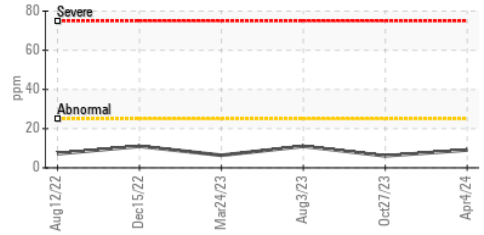

Chromium (ppm)



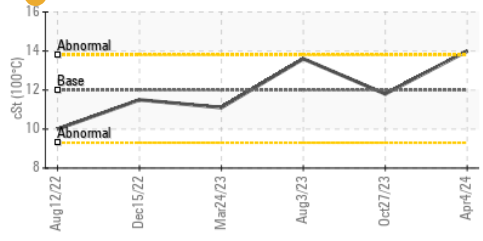

Copper (ppm)



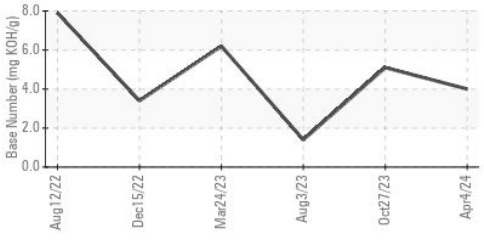

Silicon (ppm)




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : PCA0120700
**Lab Number** : 06142718
**Unique Number** : 10967526
**Test Package** : MOB 1 ( Additional Tests: TBN )

**Received** : 09 Apr 2024
**Tested** : 09 Apr 2024
**Diagnosed** : 11 Apr 2024 - Don Baldridge

*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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Report Id: MILRUT [WUSCAR] 06142718 (Generated: 04/11/2024 16:08:15) Rev: 1

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