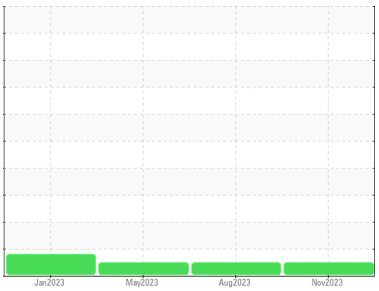
OIL DIAGNOSTICS

# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Area
## G.LOPES CONSTRUCTION INC./ON-ROAD
Machine Id
## 359
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

## DIAGNOSIS

**Recommendation**
No corrective action is recommended at this time. Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

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

**Contamination**
Fuel content negligible. 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 | | **PCA0109775** | PCA0098393 | PCA0090794 |
| Sample Date | | Client Info | | **20 Nov 2023** | 23 Aug 2023 | 09 May 2023 |
| Machine Age | hrs | Client Info | | **92000** | 72000 | 52000 |
| Oil Age | hrs | Client Info | | **92000** | 72000 | 52000 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| 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 | **27** | 35 | 19 |
| Chromium | ppm | ASTM D5185m | >20 | **4** | 6 | 5 |
| Nickel | ppm | ASTM D5185m | >4 | **<1** | 1 | <1 |
| Titanium | ppm | ASTM D5185m | | **<1** | 2 | <1 |
| Silver | ppm | ASTM D5185m | >3 | **<1** | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **17** | 26 | 16 |
| Lead | ppm | ASTM D5185m | >40 | **<1** | <1 | 1 |
| Copper | ppm | ASTM D5185m | >330 | **34** | 64 | 61 |
| Tin | ppm | ASTM D5185m | >15 | **<1** | 2 | 2 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **12** | 1 | 2 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 2 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **57** | 85 | 63 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | 1 | 1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **815** | 1280 | 1031 |
| Calcium | ppm | ASTM D5185m | 1070 | **1215** | 1518 | 1213 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1006** | 1267 | 976 |
| Zinc | ppm | ASTM D5185m | 1270 | **1169** | 1655 | 1324 |
| Sulfur | ppm | ASTM D5185m | 2060 | **2406** | 3320 | 2568 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **9** | 11 | 7 |
| Sodium | ppm | ASTM D5185m | | **3** | <1 | 3 |
| Potassium | ppm | ASTM D5185m | >20 | **40** | 53 | 28 |
| Fuel | % | ASTM D3524 | >5 | **0.2** | <1.0 | <1.0 |

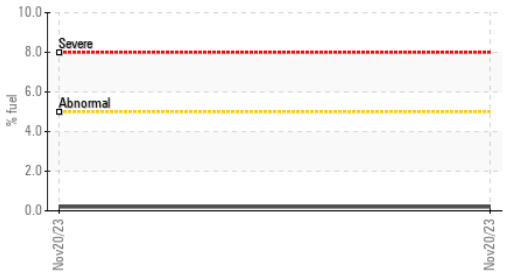
| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.3** | 0.3 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **8.0** | 8.5 | 7.9 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **19.7** | 20.2 | 20.0 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **15.5** | 17.3 | 16.9 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **9.03** | 8.54 | 8.80 |

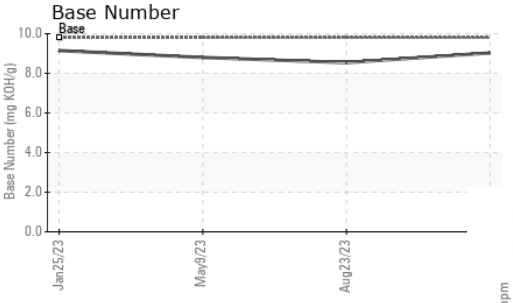
# OIL ANALYSIS REPORT

OIL DIAGNOSTICS

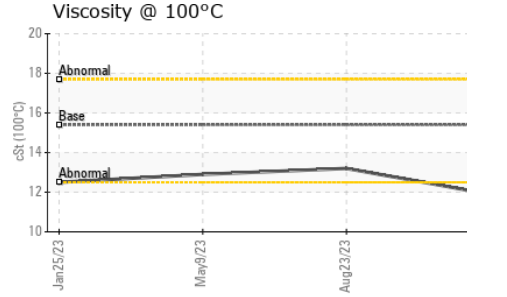
Fuel Dilution




Base Number




Viscosity @ 100°C

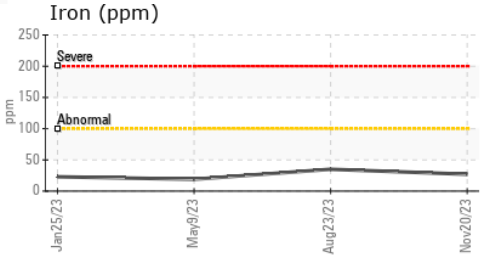



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

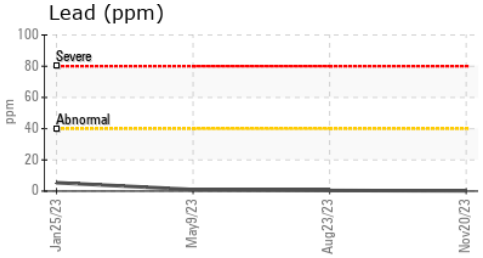
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **11.9** | 13.2 | 12.9 |

## GRAPHS

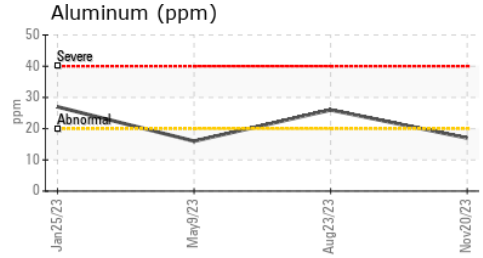
Iron (ppm)



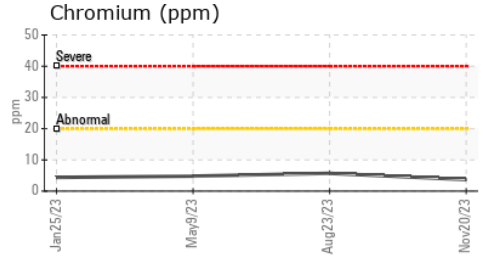

Lead (ppm)



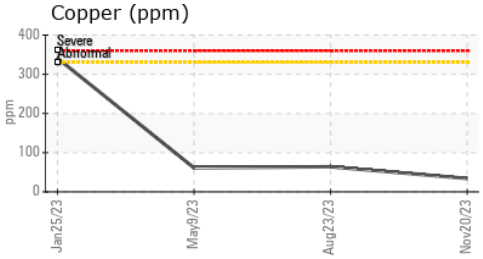

Aluminum (ppm)



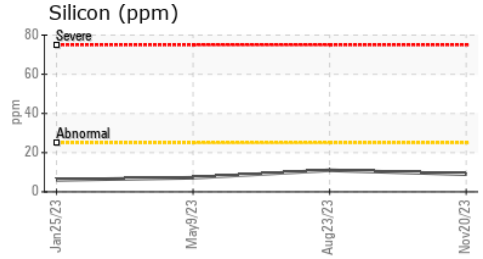

Chromium (ppm)



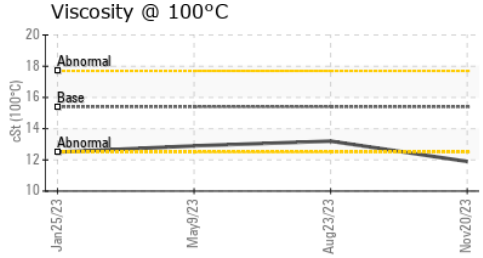

Copper (ppm)



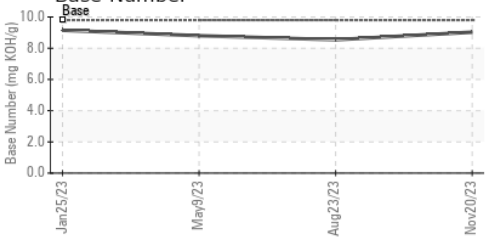

Silicon (ppm)




Viscosity @ 100°C




Base Number




ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY
Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : PCA0109775 **Received** : 24 Nov 2023
**Lab Number** : 06016674 **Diagnosed** : 28 Nov 2023
**Unique Number** : 10755818 **Diagnostician** : Wes Davis
**Test Package** : MOB 2 ( Additional Tests: FuelDilution, PercentFuel )

*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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