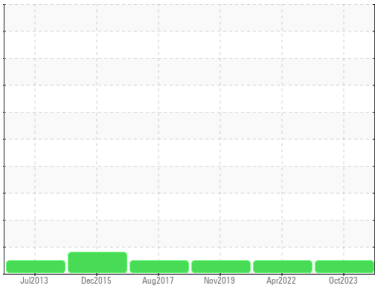
OIL DIAGNOSTICS

# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Area
**KEMP QUARRIES / KEMP STONE - FAIRLAND [62857]**
Machine Id
**CRN014**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

## DIAGNOSIS

**Recommendation**
Resample at the next service interval to monitor. ( Customer Sample Comment: PM-1 changed filters and fluid )

**Wear**
All 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 | | **PCA0087051** | PCA0034290 | PCA36261077 |
| Sample Date | | Client Info | | **31 Oct 2023** | 13 Apr 2022 | 18 Nov 2019 |
| Machine Age | hrs | Client Info | | **1374** | 1150 | 324 |
| Oil Age | hrs | Client Info | | **1374** | 0 | 0 |
| Oil Changed | | Client Info | | **Changed** | Changed | N/A |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >5 | **<1.0** | <1.0 | --- |
| Glycol | | WC Method | | **NEG** | NEG | 0.0 |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **62** | 70 | 50 |
| Chromium | ppm | ASTM D5185m | >20 | **5** | 3 | 2 |
| Nickel | ppm | ASTM D5185m | >4 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | 0 |
| Silver | ppm | ASTM D5185m | >3 | **0** | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **2** | 2 | 3 |
| Lead | ppm | ASTM D5185m | >40 | **3** | 2 | 1 |
| Copper | ppm | ASTM D5185m | >330 | **6** | 6 | 3 |
| Tin | ppm | ASTM D5185m | >15 | **11** | 11 | 5 |
| 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 | 0 | **4** | 13 | 49 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **59** | 62 | 27 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | <1 | 0 |
| Magnesium | ppm | ASTM D5185m | 1010 | **947** | 988 | 483 |
| Calcium | ppm | ASTM D5185m | 1070 | **1073** | 1185 | 1388 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1043** | 1103 | 752 |
| Zinc | ppm | ASTM D5185m | 1270 | **1302** | 1199 | 713 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3122** | 2792 | --- |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **8** | 9 | 11 |
| Sodium | ppm | ASTM D5185m | | **7** | 15 | 23 |
| Potassium | ppm | ASTM D5185m | >20 | **13** | 31 | 0 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.6** | 0.8 | 0.9 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **8.0** | 10.3 | --- |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **19.2** | 21.2 | --- |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **14.8** | 17.4 | 2 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **8.9** | 9.5 | --- |

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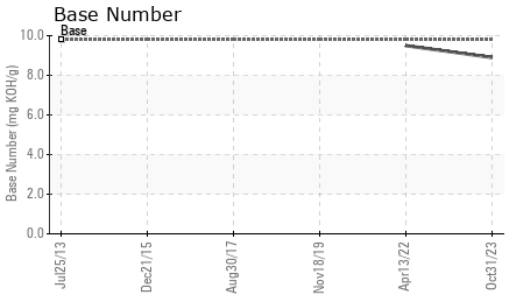
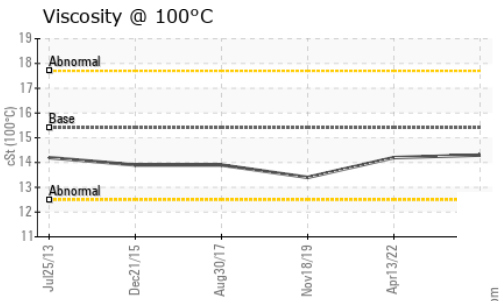
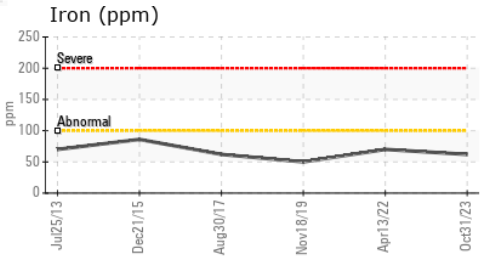


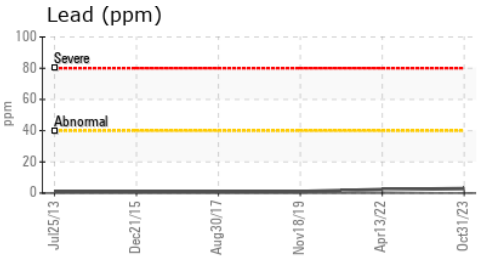



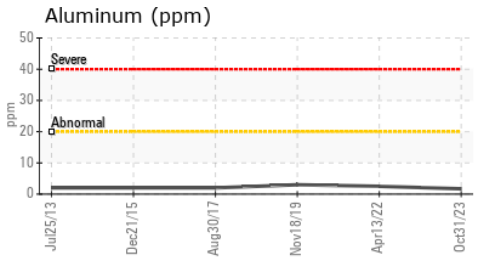

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Silt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

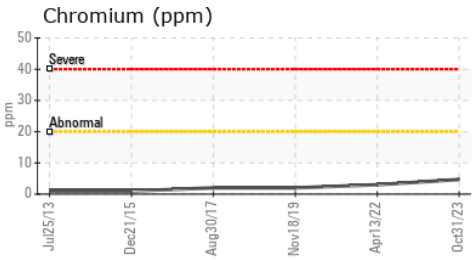
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **14.3** | 14.2 | 13.4 |

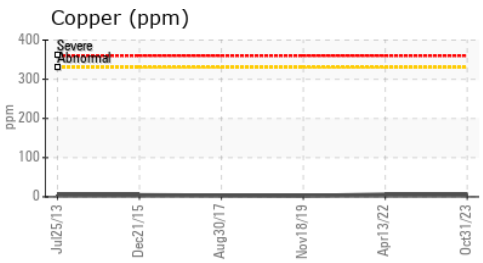
## GRAPHS

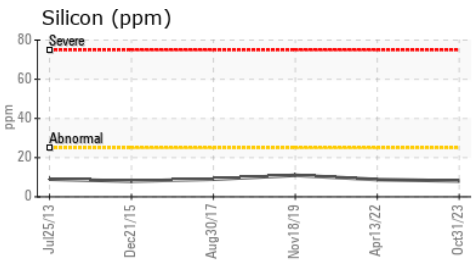


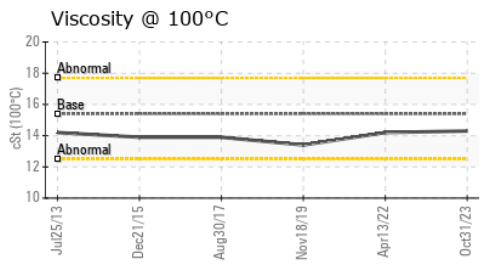



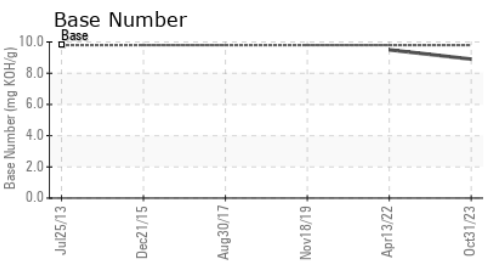




**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : PCA0087051 **Received** : 13 Nov 2023
**Lab Number** : 06006066 **Diagnosed** : 15 Nov 2023
**Unique Number** : 10739828 **Diagnostician** : Don Baldridge
**Test Package** : MOB 1 ( Additional Tests: TBN )

Certificate L2367

*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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