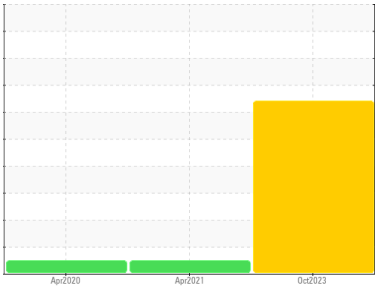
# OIL ANALYSIS REPORT

Sample Rating Trend




**WATER**

Machine Id
## FORD 505
Component
**Gasoline Engine**
Fluid
**PETRO CANADA DURON XL SYN BLEND 15W40 (--- GAL)**

## DIAGNOSIS

**Recommendation**

We advise that you check for the source of the coolant leak. Check for low coolant level. We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

**Wear**

Cylinder, crank, or cam shaft wear is indicated.

**Contamination**

Sodium and/or potassium levels are high. There is a moderate concentration of water present in the oil. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. High concentration of visible dirt/debris present in the oil.

**Fluid Condition**

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 | | **PCA0105051** | PCA0030469 | PCA0016990 |
| Sample Date | | Client Info | | **04 Oct 2023** | 30 Apr 2021 | 15 Apr 2020 |
| Machine Age | mls | Client Info | | **158861** | 129157 | 113620 |
| Oil Age | mls | Client Info | | **7500** | 7500 | 7500 |
| Oil Changed | | Client Info | | **Changed** | Changed | Changed |
| Sample Status | | | | **ABNORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >4.0 | **<1.0** | <1.0 | <1.0 |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >150 | ▲ **116** | 18 | 33 |
| Chromium | ppm | ASTM D5185m | >20 | **2** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >5 | **0** | <1 | <1 |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Silver | ppm | ASTM D5185m | >2 | **0** | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >40 | ▲ **20** | 2 | 3 |
| Lead | ppm | ASTM D5185m | >50 | **0** | <1 | <1 |
| Copper | ppm | ASTM D5185m | >155 | **2** | 1 | 3 |
| Tin | ppm | ASTM D5185m | >10 | **0** | <1 | 0 |
| Antimony | ppm | ASTM D5185m | | **---** | 0 | 0 |
| 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 | 1 | **9** | 4 | 48 |
| Barium | ppm | ASTM D5185m | 1 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **54** | 56 | 1 |
| Manganese | ppm | ASTM D5185m | 1 | **1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **871** | 837 | 15 |
| Calcium | ppm | ASTM D5185m | 1070 | **1108** | 1038 | 1311 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **856** | 856 | 571 |
| Zinc | ppm | ASTM D5185m | 1270 | **1156** | 1044 | 664 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3033** | 2465 | 1640 |

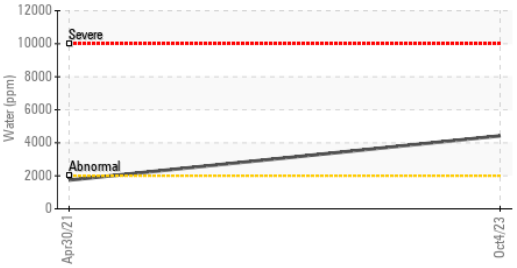
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >30 | ▲ **58** | 7 | 10 |
| Sodium | ppm | ASTM D5185m | >400 | **26** | 3 | 6 |
| Potassium | ppm | ASTM D5185m | >20 | ▲ **39** | <1 | 1 |
| Water | % | ASTM D6304 | >0.2 | ▲ **0.442** | 0.174 | --- |
| ppm Water | ppm | ASTM D6304 | >2000 | ▲ **4420** | 1740 | --- |
| Glycol | % | *ASTM D2982 | | **NEG** | NEG | NEG |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | | **0.1** | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **13.9** | 14.6 | 10.3 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **25.2** | 25.4 | 26.3 |

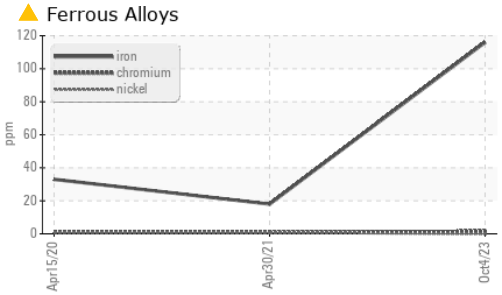
# OIL ANALYSIS REPORT

OIL DIAGNOSTICS

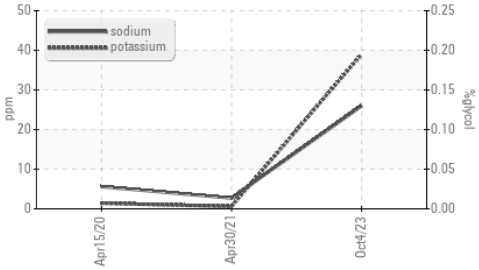
Water (KF)



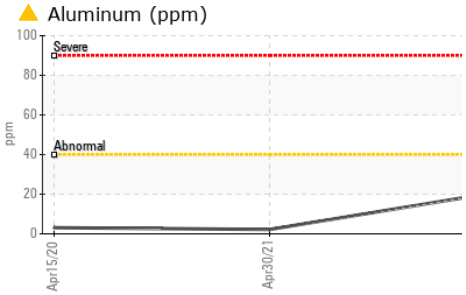

Ferrous Alloys



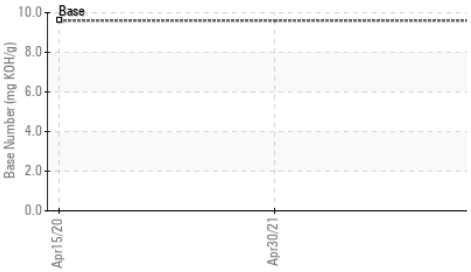

Glycol Contamination




Aluminum (ppm)




Base Number



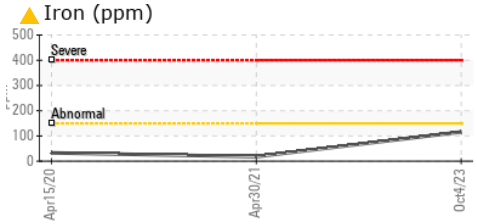

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **22.1** | 22.9 | 25.4 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.6 | **7.7** | --- | --- |

| 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 | ▲ **HEAVY** | 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 | ▲ **0.2%** | NEG | NEG |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

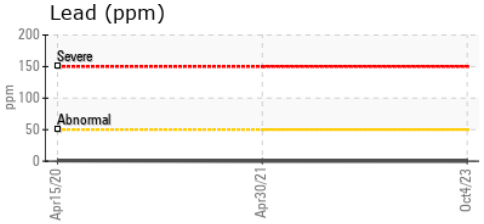
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.5 | **14.2** | 14.4 | 5.9 |

## GRAPHS

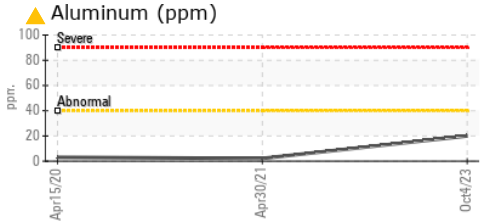
Iron (ppm)



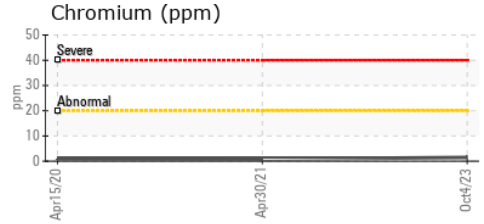

Lead (ppm)



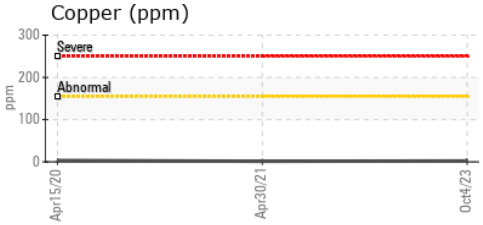

Aluminum (ppm)



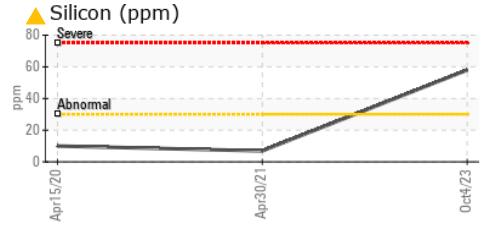

Chromium (ppm)



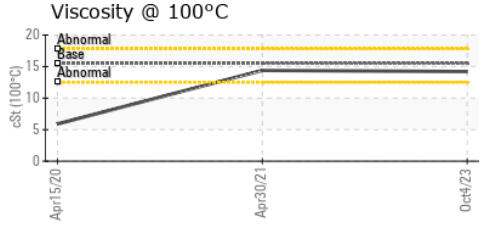

Copper (ppm)



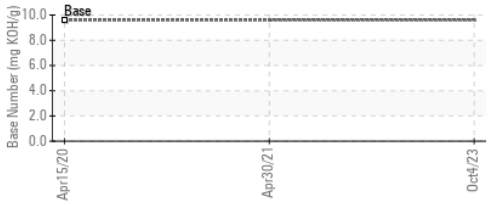

Silicon (ppm)




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : PCA0105051 **Received** : 11 Oct 2023
**Lab Number** : 05976387 **Diagnosed** : 16 Oct 2023
**Unique Number** : 10688337 **Diagnostician** : Jonathan Hester
**Test Package** : MOB 1 ( Additional Tests: Glycol, KF, 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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