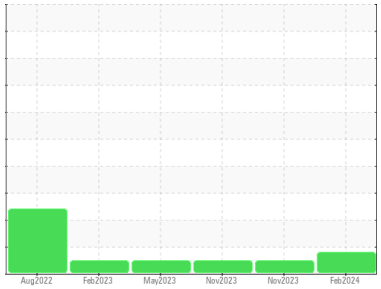
# OIL ANALYSIS REPORT

Machine Id
**912021**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

Sample Rating Trend




**WEAR**

## DIAGNOSIS

**Recommendation**
Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

**Wear**
Exhaust valve wear is indicated.

**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 acceptable for the time in service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0108942** | GFL0101520 | GFL0101585 |
| Sample Date | | Client Info | | **29 Feb 2024** | 15 Nov 2023 | 09 Nov 2023 |
| Machine Age | hrs | Client Info | | **5226** | 4420 | 4379 |
| Oil Age | hrs | Client Info | | **4420** | 4379 | 3091 |
| Oil Changed | | Client Info | | **Changed** | Changed | N/A |
| Sample Status | | | | **ABNORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >3.0 | **<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 | >120 | **47** | 6 | 5 |
| Chromium | ppm | ASTM D5185m | >20 | **2** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >5 | ▲ **11** | <1 | 1 |
| Titanium | ppm | ASTM D5185m | >2 | **<1** | <1 | <1 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | **6** | 2 | 2 |
| Lead | ppm | ASTM D5185m | >40 | **<1** | 0 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **5** | 5 | 1 |
| Tin | ppm | ASTM D5185m | >15 | **1** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | <1 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **4** | 6 | 1 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | <1 |
| Molybdenum | ppm | ASTM D5185m | 60 | **102** | 56 | 60 |
| Manganese | ppm | ASTM D5185m | 0 | **1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **1497** | 874 | 919 |
| Calcium | ppm | ASTM D5185m | 1070 | **1673** | 1041 | 1123 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1584** | 958 | 1042 |
| Zinc | ppm | ASTM D5185m | 1270 | **1935** | 1191 | 1221 |
| Sulfur | ppm | ASTM D5185m | 2060 | **4033** | 2641 | 3041 |

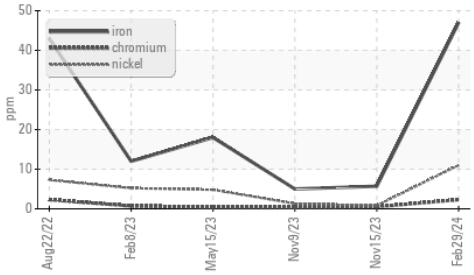
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **10** | 5 | 4 |
| Sodium | ppm | ASTM D5185m | | **14** | 4 | 0 |
| Potassium | ppm | ASTM D5185m | >20 | **5** | 1 | 2 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >4 | **1.1** | 0.3 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **11.2** | 6.7 | 6.2 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **24.3** | 19.5 | 19.1 |

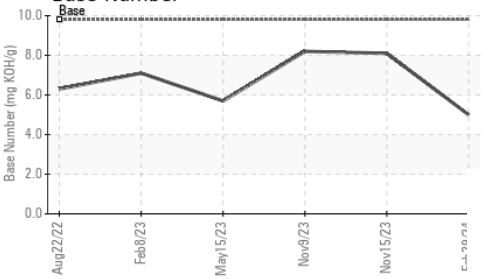
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **22.1** | 15.0 | 14.6 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **5.0** | 8.1 | 8.2 |

# OIL ANALYSIS REPORT

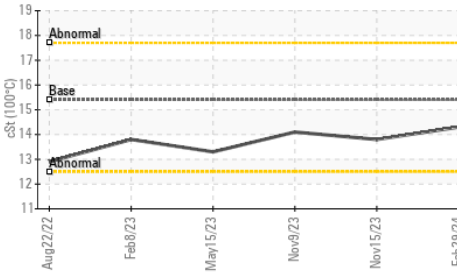
Ferrous Alloys




Base Number




Viscosity @ 100°C

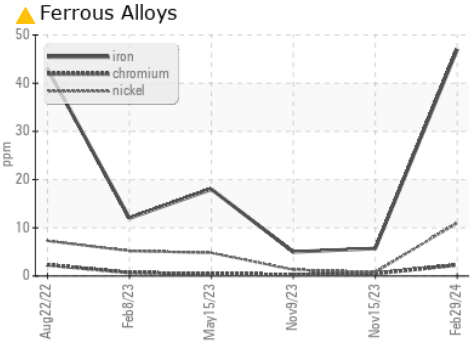



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

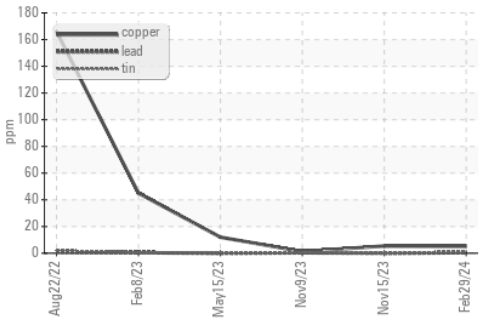
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **14.3** | 13.8 | 14.1 |

## GRAPHS

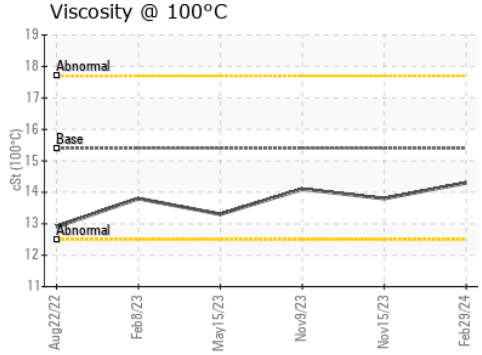
Ferrous Alloys



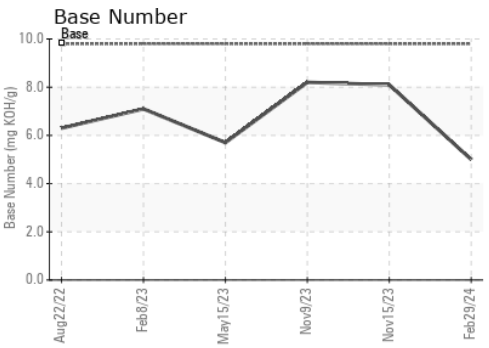

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0108942
**Lab Number** : 06106939
**Unique Number** : 10910436
**Test Package** : FLEET

**Received** : 04 Mar 2024
**Tested** : 04 Mar 2024
**Diagnosed** : 06 Mar 2024 - Sean Felton

*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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