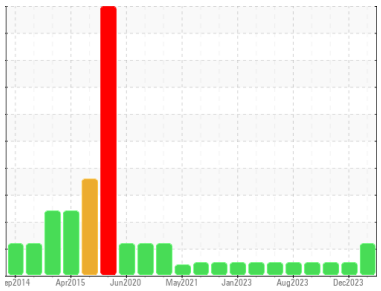
# OIL ANALYSIS REPORT

Sample Rating Trend



**FUEL**

Machine Id
## MACK 812099
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (9 GAL)**

## DIAGNOSIS

**Recommendation**
We advise that you check the fuel injection system. Resample at the next service interval to monitor.

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

**Contamination**
Light fuel dilution occurring.

**Fluid Condition**
Fuel is present in the oil and is lowering the viscosity. 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 | | **GFL0109078** | GFL0086250 | GFL0086206 |
| Sample Date | | Client Info | | **13 Feb 2024** | 20 Dec 2023 | 26 Sep 2023 |
| Machine Age | hrs | Client Info | | **6414** | 5986 | 5470 |
| Oil Age | hrs | Client Info | | **0** | 5986 | 5470 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **ABNORMAL** | 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 | >120 | **14** | 11 | 11 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >5 | **0** | 0 | 1 |
| Titanium | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **2** | 3 | <1 |
| Lead | ppm | ASTM D5185m | >40 | **0** | 0 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **1** | 2 | 2 |
| Tin | ppm | ASTM D5185m | >15 | **0** | 0 | <1 |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **16** | 64 | 13 |
| Barium | ppm | ASTM D5185m | 0 | **<1** | 0 | 2 |
| Molybdenum | ppm | ASTM D5185m | 60 | **63** | 87 | 67 |
| Manganese | ppm | ASTM D5185m | 0 | **0** | 3 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **705** | 640 | 872 |
| Calcium | ppm | ASTM D5185m | 1070 | **1038** | 1270 | 1127 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **806** | 773 | 1011 |
| Zinc | ppm | ASTM D5185m | 1270 | **1066** | 915 | 1204 |
| Sulfur | ppm | ASTM D5185m | 2060 | **2520** | 2886 | 2800 |

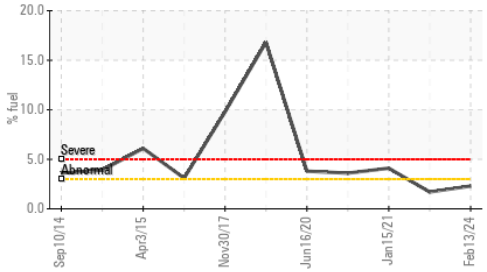
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **4** | 14 | 4 |
| Sodium | ppm | ASTM D5185m | | **0** | 11 | 3 |
| Potassium | ppm | ASTM D5185m | >20 | **4** | 4 | 0 |
| Fuel | % | ASTM D3524 | >3.0 | ▲ **2.3** | <1.0 | <1.0 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >4 | **0.5** | 0.4 | 0.5 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **9.1** | 8.9 | 7.2 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **19.2** | 19.2 | 18.4 |

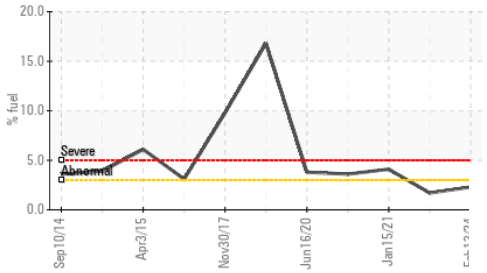
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **15.5** | 16.3 | 13.1 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **6.5** | 7.3 | 6.1 |

# OIL ANALYSIS REPORT

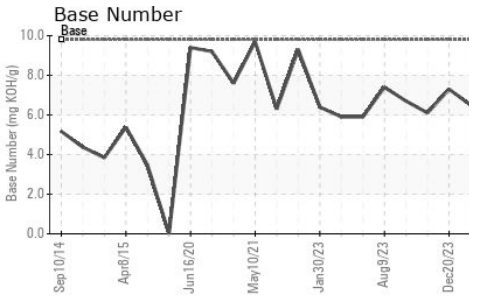
Fuel Dilution




Fuel Dilution




Base Number

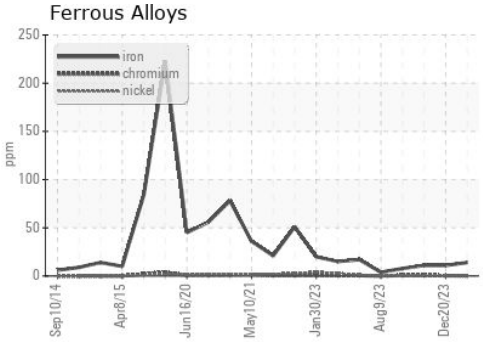



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

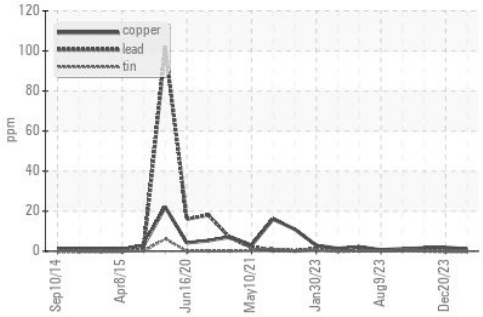
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | ▲ **11.8** | 12.9 | 12.3 |

## GRAPHS

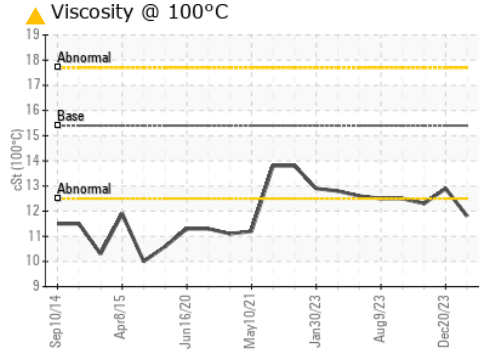
Ferrous Alloys



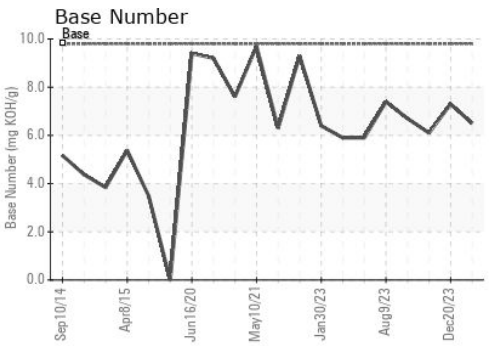

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0109078
**Lab Number** : 06095315
**Unique Number** : 10888168
**Test Package** : FLEET ( Additional Tests: FuelDilution, PercentFuel )

**Received** : 21 Feb 2024
**Tested** : 23 Feb 2024
**Diagnosed** : 23 Feb 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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