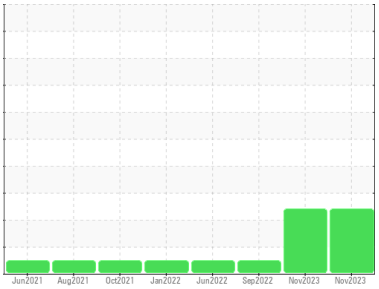
# PROBLEM SUMMARY

Machine Id
**4685M**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

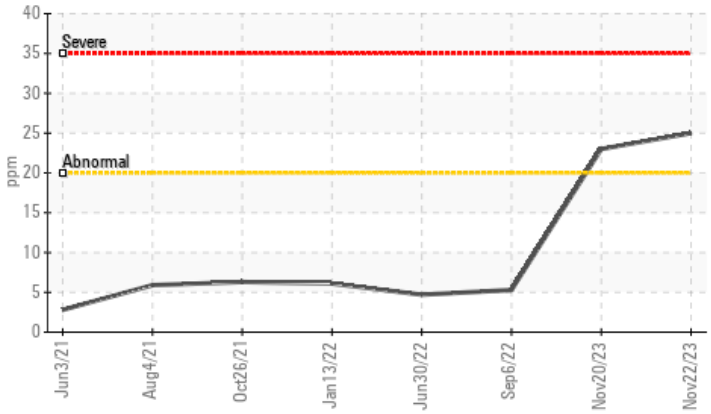
**Sample Rating Trend**



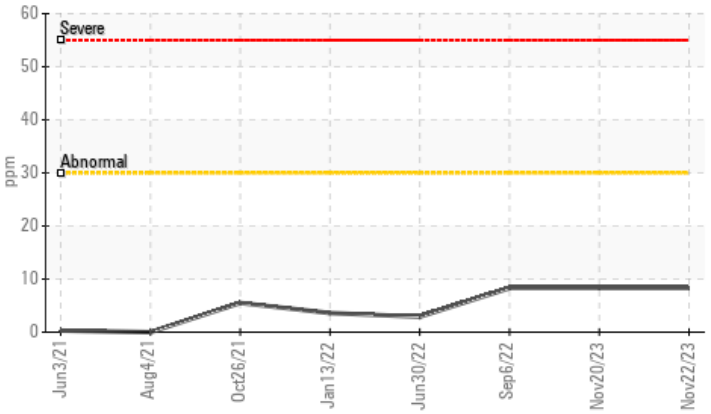

**DIRT**

## COMPONENT CONDITION SUMMARY

Silicon (ppm)




Aluminum (ppm)




## RECOMMENDATION

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Resample at the next service interval to monitor.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | ABNORMAL | ABNORMAL | NORMAL |
|---|---|---|---|---|---|---|
| Aluminum | ppm | ASTM D5185m | >30 | ▲ **8** | ▲ 8 | 8 |
| Silicon | ppm | ASTM D5185m | >20 | ▲ **25** | ▲ 23 | 5 |

**Customer Id:** GFL415
**Sample No.:** GFL0089111
**Lab Number:** 06016113
**Test Package:** FLEET

*To manage this report scan the QR code*

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jhester@wearcheckusa.com

*To change component or sample information:*
Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Check Dirt Access | --- | --- | ? | We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. |

## HISTORICAL DIAGNOSIS

**20 Nov 2023 Diag: Don Baldridge**

DIRT

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. Resample at the next service interval to monitor.All component wear rates are normal. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. 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.

view report

**06 Sep 2022 Diag: Wes Davis**

NORMAL

Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

view report

**30 Jun 2022 Diag: Wes Davis**

NORMAL

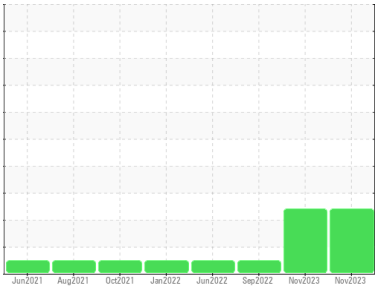
Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

view report

# OIL ANALYSIS REPORT

Machine Id
**4685M**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

Sample Rating Trend




**DIRT**

## DIAGNOSIS

**Recommendation**
We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Resample at the next service interval to monitor.

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

**Contamination**
Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

**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 | | **GFL0089111** | GFL0101573 | GFL0057208 |
| Sample Date | | Client Info | | **22 Nov 2023** | 20 Nov 2023 | 06 Sep 2022 |
| Machine Age | hrs | Client Info | | **15636** | 15628 | 12065 |
| Oil Age | hrs | Client Info | | **12065** | 12065 | 4739 |
| Oil Changed | | Client Info | | **Not Changd** | Changed | Changed |
| Sample Status | | | | **ABNORMAL** | ABNORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >5 | **<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 | >80 | **65** | 67 | 23 |
| Chromium | ppm | ASTM D5185m | >5 | **6** | 6 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | **2** | 2 | 0 |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >30 | ▲ **8** | ▲ 8 | 8 |
| Lead | ppm | ASTM D5185m | >30 | **0** | <1 | <1 |
| Copper | ppm | ASTM D5185m | >150 | **2** | 2 | 1 |
| Tin | ppm | ASTM D5185m | >5 | **0** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **<1** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | <1 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **0** | <1 | 10 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **59** | 60 | 62 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **1038** | 1051 | 871 |
| Calcium | ppm | ASTM D5185m | 1070 | **1149** | 1180 | 1077 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **960** | 929 | 1006 |
| Zinc | ppm | ASTM D5185m | 1270 | **1371** | 1288 | 1222 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3147** | 3103 | 2962 |

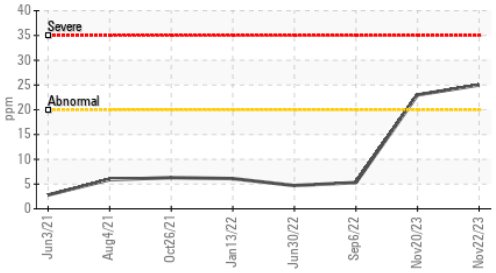
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >20 | ▲ **25** | ▲ 23 | 5 |
| Sodium | ppm | ASTM D5185m | | **6** | 6 | <1 |
| Potassium | ppm | ASTM D5185m | >20 | **2** | 2 | 19 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.1** | 0.2 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **6.7** | 6.8 | 9.1 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **18.7** | 18.8 | 20.8 |

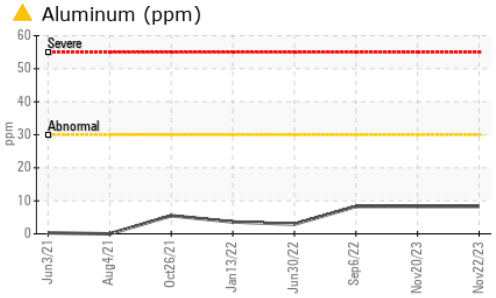
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **14.8** | 15.1 | 17.6 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **9.1** | 8.8 | 9.5 |

# OIL ANALYSIS REPORT

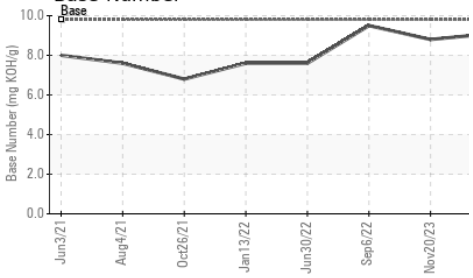
Silicon (ppm)



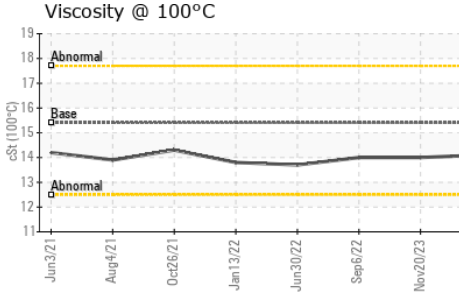

Aluminum (ppm)




Base Number




Viscosity @ 100°C

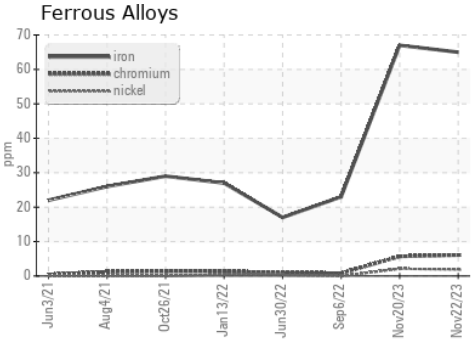



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

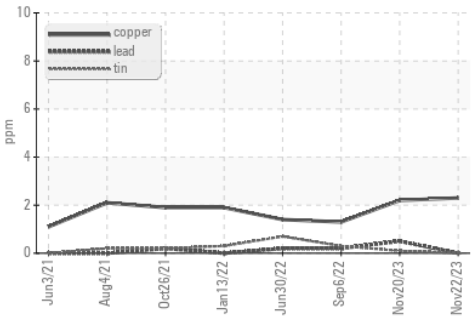
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **14.1** | 14.0 | 14.0 |

## GRAPHS

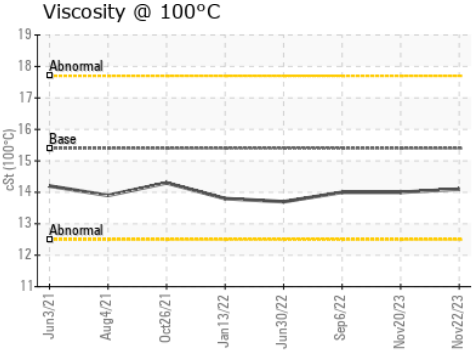
Ferrous Alloys



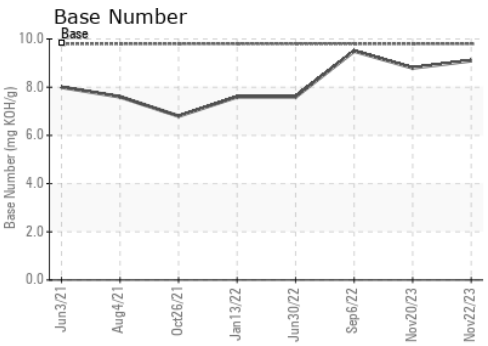

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0089111
**Lab Number** : 06016113
**Unique Number** : 10755257
**Test Package** : FLEET

**Received** : 24 Nov 2023
**Diagnosed** : 27 Nov 2023
**Diagnostician** : Jonathan Hester

*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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