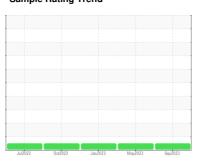


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id 726052
Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

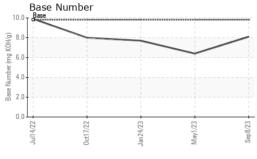
Fluid Condition

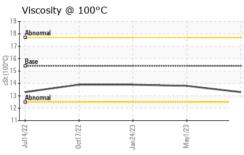
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| SAMPLE INFORMATION method limit/base current history1 history2 | GAL) | | Jul2022 | 0ct2022 | Jan2023 May2023 | Sep2023 | |
|---|---------------|----------|-------------|------------|-----------------|-------------|-------------|
| Sample Date Client Info 20007 19204 18753 | SAMPLE INFORI | MATION | method | limit/base | current | history1 | history2 |
| Machine Age hrs Client Info 20007 19204 18753 Oil Age hrs Client Info 0 585 0 Oil Changed Client Info N/A Changed N/A Sample Status NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >2.0 <1.0 <1.0 <1.0 Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 9 11 8 Chromium ppm ASTM D5185m >20 0 <1 <1 Nickel ppm ASTM D5185m >30 0 0 0 Silver ppm ASTM D5185m >40 1 <1 <1 <1 <1 <1 <1 <1 < | Sample Number | | Client Info | | GFL0092917 | GFL0067572 | GFL0067562 |
| Oil Age hrs Client Info NA Changed N/A N/A Changed N/A Sample Status Client Info N/A Changed N/A N/A NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method 20 <1.0 <1.0 <1.0 Glycol WC Method 1/mitbles current history1 history2 Iron ppm ASTM D5185m >10.0 9 11 8 Chromium ppm ASTM D5185m >20 0 <1 <1 Chromium ppm ASTM D5185m >20 0 <1 <1 Chromium ppm ASTM D5185m >20 0 0 0 Chromium ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >40 1 <1 <1 <1 Cadd ppm </th <th>Sample Date</th> <th></th> <th>Client Info</th> <th></th> <th>08 Sep 2023</th> <th>01 May 2023</th> <th>24 Jan 2023</th> | Sample Date | | Client Info | | 08 Sep 2023 | 01 May 2023 | 24 Jan 2023 |
| Oil Changed Sample Status Client Info N/A Changed NORMAL N/A NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL | Machine Age | hrs | Client Info | | 20007 | 19204 | 18753 |
| Sample Status | Oil Age | hrs | Client Info | | 0 | 585 | 0 |
| CONTAMINATION method limit/base current history1 history2 Fuel WC Method >2.0 <1.0 <1.0 <1.0 <1.0 Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 9 11 8 Chromium ppm ASTM D5185m >20 0 <1 <1 Nickel ppm ASTM D5185m >4 0 0 0 Silver ppm ASTM D5185m >4 0 0 0 Aluminum ppm ASTM D5185m >20 2 0 1 Lead ppm ASTM D5185m >40 1 <1 <1 <1 Copper ppm ASTM D5185m >330 <1 <1 <1 <1 Vanadium ppm ASTM D5185m >1 | Oil Changed | | Client Info | | N/A | Changed | N/A |
| Fuel | Sample Status | | | | NORMAL | NORMAL | NORMAL |
| Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 9 11 8 Chromium ppm ASTM D5185m >20 0 <1 <1 Nickel ppm ASTM D5185m >4 0 0 0 Silver ppm ASTM D5185m >4 0 0 0 Silver ppm ASTM D5185m >20 2 0 1 Lead ppm ASTM D5185m >20 2 0 1 Copper ppm ASTM D5185m >40 1 <1 <1 Tin ppm ASTM D5185m >15 <1 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 10 50 63 | CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 9 11 8 Chromium ppm ASTM D5185m 20 0 <1 <1 Nickel ppm ASTM D5185m 20 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 2 0 1 Lead ppm ASTM D5185m >20 2 0 1 Lead ppm ASTM D5185m >20 2 0 1 Caddium ppm ASTM D5185m >15 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 10 50 63 Barium ppm ASTM D5185m 0 10 50 <t< th=""><th>Fuel</th><th></th><th>WC Method</th><th>>2.0</th><th></th><th><1.0</th><th><1.0</th></t<> | Fuel | | WC Method | >2.0 | | <1.0 | <1.0 |
| Iron | Glycol | | WC Method | | NEG | NEG | NEG |
| Chromium ppm ASTM D5185m >20 0 <1 | WEAR METAL | S | method | limit/base | current | history1 | history2 |
| Nickel | Iron | ppm | ASTM D5185m | >100 | 9 | 11 | 8 |
| Titanium ppm ASTM D5185m 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 2 0 1 Lead ppm ASTM D5185m >40 1 <1 <1 Copper ppm ASTM D5185m >30 <1 <1 <1 Tin ppm ASTM D5185m >15 <1 <1 <1 Vanadium ppm ASTM D5185m >15 <1 <1 <1 Cadmium ppm ASTM D5185m <1 0 0 0 ADDITIVES method limit/base current history1 history2 Barium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Barium ppm ASTM D5185m 0 0 0 0 <th>Chromium</th> <th>ppm</th> <th>ASTM D5185m</th> <th>>20</th> <th>0</th> <th><1</th> <th><1</th> | Chromium | ppm | ASTM D5185m | >20 | 0 | <1 | <1 |
| Silver | Nickel | ppm | ASTM D5185m | >4 | 0 | 0 | 0 |
| Aluminum | Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Lead ppm ASTM D5185m >40 1 <1 | Silver | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Copper ppm ASTM D5185m >330 <1 | Aluminum | ppm | ASTM D5185m | >20 | 2 | 0 | 1 |
| Tin ppm ASTM D5185m >15 <1 | Lead | ppm | ASTM D5185m | >40 | 1 | <1 | <1 |
| Vanadium ppm ASTM D5185m <1 | Copper | ppm | ASTM D5185m | >330 | <1 | <1 | <1 |
| Cadmium ppm ASTM D5185m 0 | Tin | ppm | ASTM D5185m | >15 | <1 | <1 | <1 |
| ADDITIVES | Vanadium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| Boron ppm ASTM D5185m 0 10 50 63 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 61 16 6 Manganese ppm ASTM D5185m 1010 965 679 656 Calcium ppm ASTM D5185m 1070 1194 1340 1383 Phosphorus ppm ASTM D5185m 1070 1194 1340 1383 Phosphorus ppm ASTM D5185m 1270 1274 907 816 Sulfur ppm ASTM D5185m 2060 3676 3076 3591 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 4 Sodium ppm ASTM D5185m >20 2 4 2 INFRA-RED method limit/base< | Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 61 16 6 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 965 679 656 Calcium ppm ASTM D5185m 1070 1194 1340 1383 Phosphorus ppm ASTM D5185m 1150 1021 770 687 Zinc ppm ASTM D5185m 1270 1274 907 816 Sulfur ppm ASTM D5185m 2060 3676 3076 3591 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 3 4 4 Sodium ppm ASTM D5185m 3 1 3 Potassium ppm ASTM D5185m >20 2 | ADDITIVES | | method | limit/base | current | history1 | history2 |
| Molybdenum ppm ASTM D5185m 60 61 16 6 Manganese ppm ASTM D5185m 0 <1 | Boron | ppm | ASTM D5185m | 0 | 10 | 50 | 63 |
| Manganese ppm ASTM D5185m 0 <1 | Barium | ppm | ASTM D5185m | 0 | 0 | 0 | 0 |
| Magnesium ppm ASTM D5185m 1010 965 679 656 Calcium ppm ASTM D5185m 1070 1194 1340 1383 Phosphorus ppm ASTM D5185m 1150 1021 770 687 Zinc ppm ASTM D5185m 1270 1274 907 816 Sulfur ppm ASTM D5185m 2060 3676 3076 3591 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 4 Sodium ppm ASTM D5185m >20 2 4 2 INFRA-RED method limit/base current history1 history2 Soot % "ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm "ASTM D7624 >20 8.0 9.6 9.9 Sulfation Abs/.1mm "ASTM D7415 | Molybdenum | ppm | ASTM D5185m | 60 | 61 | 16 | 6 |
| Calcium ppm ASTM D5185m 1070 1194 1340 1383 Phosphorus ppm ASTM D5185m 1150 1021 770 687 Zinc ppm ASTM D5185m 1270 1274 907 816 Sulfur ppm ASTM D5185m 2060 3676 3076 3591 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 4 Sodium ppm ASTM D5185m >20 2 4 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 8.0 9.6 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 19.8 21.1 FLUID DEGRADATION | Manganese | ppm | ASTM D5185m | 0 | <1 | <1 | <1 |
| Phosphorus ppm ASTM D5185m 1150 1021 770 687 Zinc ppm ASTM D5185m 1270 1274 907 816 Sulfur ppm ASTM D5185m 2060 3676 3076 3591 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 4 Sodium ppm ASTM D5185m >25 3 1 3 Potassium ppm ASTM D5185m >20 2 4 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/.1mm *ASTM D7415 >30 18.9 19.8 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *A | Magnesium | ppm | ASTM D5185m | 1010 | 965 | 679 | 656 |
| Zinc ppm ASTM D5185m 1270 1274 907 816 Sulfur ppm ASTM D5185m 2060 3676 3076 3591 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 4 Sodium ppm ASTM D5185m >20 2 4 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 8.0 9.6 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 19.8 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.5 14.7 14.7 | Calcium | ppm | ASTM D5185m | 1070 | 1194 | 1340 | 1383 |
| Sulfur ppm ASTM D5185m 2060 3676 3076 3591 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 4 Sodium ppm ASTM D5185m >25 3 1 3 Potassium ppm ASTM D5185m >20 2 4 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 8.0 9.6 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 19.8 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.5 14.7 14.7 | Phosphorus | ppm | ASTM D5185m | 1150 | 1021 | 770 | 687 |
| CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 4 Sodium ppm ASTM D5185m 3 1 3 Potassium ppm ASTM D5185m >20 2 4 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 8.0 9.6 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 19.8 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.5 14.7 14.7 | Zinc | ppm | ASTM D5185m | 1270 | 1274 | 907 | 816 |
| Silicon ppm ASTM D5185m >25 3 4 4 Sodium ppm ASTM D5185m 3 1 3 Potassium ppm ASTM D5185m >20 2 4 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 8.0 9.6 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 19.8 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.5 14.7 14.7 | Sulfur | ppm | ASTM D5185m | 2060 | 3676 | 3076 | 3591 |
| Sodium ppm ASTM D5185m 3 1 3 Potassium ppm ASTM D5185m >20 2 4 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 8.0 9.6 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 19.8 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.5 14.7 14.7 | CONTAMINAN | TS | method | limit/base | current | history1 | history2 |
| Potassium ppm ASTM D5185m >20 2 4 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 8.0 9.6 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 19.8 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.5 14.7 14.7 | Silicon | ppm | ASTM D5185m | >25 | 3 | 4 | 4 |
| INFRA-RED | Sodium | ppm | ASTM D5185m | | 3 | 1 | 3 |
| Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 8.0 9.6 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 19.8 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.5 14.7 14.7 | Potassium | ppm | ASTM D5185m | >20 | 2 | 4 | 2 |
| Nitration Abs/cm *ASTM D7624 >20 8.0 9.6 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 19.8 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.5 14.7 14.7 | INFRA-RED | | method | limit/base | current | history1 | history2 |
| Sulfation Abs/.1mm *ASTM D7415 >30 18.9 19.8 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.5 14.7 14.7 | Soot % | % | *ASTM D7844 | >3 | 0.4 | 0.4 | 0.4 |
| Sulfation Abs/.1mm *ASTM D7415 >30 18.9 19.8 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.5 14.7 14.7 | Nitration | Abs/cm | *ASTM D7624 | >20 | 8.0 | 9.6 | 9.9 |
| Oxidation Abs/.1mm *ASTM D7414 >25 14.5 14.7 14.7 | Sulfation | Abs/.1mm | *ASTM D7415 | >30 | | | 21.1 |
| | FLUID DEGRA | OATION | method | limit/base | current | history1 | history2 |
| | Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 14.5 | 14.7 | 14.7 |
| | | | | | | | 7.7 |



OIL ANALYSIS REPORT



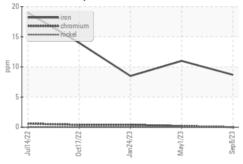


| VISUAL | | method | limit/base | current | history1 | history2 |
|-------------------------|--------|---------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate |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

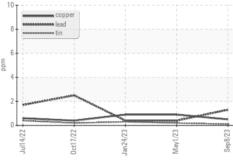
| FLUID PROPE | RHES | metnoa | ilmit/base | current | nistory i | nistory2 |
|--------------|------|-----------|------------|---------|-----------|----------|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | 13.3 | 13.8 | 13.9 |

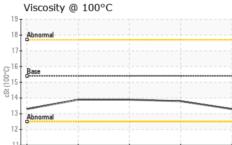
GRAPHS

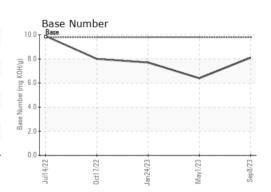
Ferrous Alloys















Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10647015 Test Package : FLEET

: GFL0092917 : 05951056

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 14 Sep 2023 Diagnosed : 16 Sep 2023 Diagnostician : Wes Davis

May1/23

GFL Environmental - 641 - Alpena 1241 KING SETTLEMENT RD ALPENA, MI

US 49707 Contact: DYLAN TOLAN dylan.tolan@gflenv.com

T: (989)854-7203

* - 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)

0ct17/22

Report Id: GFL641 [WUSCAR] 05951056 (Generated: 09/16/2023 01:14:03) Rev: 1

Submitted By: GFL463 and GFL641 - DYLAN TOLAN