

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 726040-361629

Component Diesel Engine

Fluid

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 NumberClient InfoGFL0084644GFL0084686GFL0078105Sample DateClient Info22 Oct 202312 Jun 202308 May 2023Machine AgemisClient Info017207Oil AgeClient Info000Oll ChangedClient InfoN/ANot ChangdNot ChangdSample StatusIImt/bascurrentNistory1Not ChangdGlycolWC Method>5<1.0<1.0<1.0GlycolWC Method>5<1.0NEGNEGWEAR METALSmethodImt/bascurrentNistory1Nistory2IronppmASTM 051656>4<1<1<1NickelppmASTM 051656>20<10SilverppmASTM 051656>20<100SilverppmASTM 051656>40<111CadmiumppmASTM 051656>40000AlminumppmASTM 051656>40<111TinppmASTM 051656>400000AdminumppmASTM 051656>4000000SilverppmASTM 05165610000000CorperppmASTM 0516560000000SilverppmA | SAMPLE INFORM | ΛΑΤΙΟΝ | method | limit/base | current | history1 | history2 |
|--|--|---|--|--|---|---|---|
| Sample Date Client Info 22 Oct 2023 12 Jun 2023 08 May 2023 Machine Age mis Client Info 0 191561 17207 Oil Age mis Client Info 0 0 0 0 Oil Changed Client Info N/A Not Changd Not Changd Not Changd CONTAMINATION method imit/base current history1 history2 Fuel WC Method 55 <1.0 <1.0 <1.0 Glycol WC Method 55 <1.0 <1.0 <1.0 Chromium ppm ASTM 05185m >110 9 14 8 Chromium ppm ASTM 05185m >2 0 <1 <1 Nickel ppm ASTM 05185m >2 0 <1 0 Auminum ppm ASTM 05185m >2 0 <1 <1 Norestim ASTM 05185m >2 0 <1 <1 Norestim | Sample Number | | Client Info | | GFL0084644 | GFL0084686 | GFL0078105 |
| Machine Age mils Client Info 0 191561 17207 Oil Age mils Client Info 0 0 0 Oil Changed Client Info N/A Not Changd Not Changd Sample Status Imit/base current History1 History2 Fuel WC Method >5 <1.0 <1.0 <1.0 Glycol WC Method >5 <1.0 <1.0 <1.0 Glycol WC Method >5 <1.0 <1.0 <1.0 WEAR METALS method Imit/base current history1 history2 Iron ppm ASTM D5185m >110 9 14 8 Chromium ppm ASTM D5185m >2 0 <1 1 Nickel ppm ASTM D5185m >2 0 <1 0 Catanium ppm ASTM D5185m >4 0 <1 1 Cadmium ppm ASTM D5185m | | | Client Info | | 22 Oct 2023 | 12 Jun 2023 | 08 May 2023 |
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| Fuel WC Method<>5 <1.0 | | ON | method | limit/hase | - | | |
| Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >4 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 <1 <1 Nickel ppm ASTM D5185m >2 0 <1 <1 Nickel ppm ASTM D5185m >2 0 <1 <1 Aluminum ppm ASTM D5185m >2 0 <1 0 Aluminum ppm ASTM D5185m >25 1 3 1 Copper ppm ASTM D5185m >4 0 <1 <1 Yanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 <1 <1 Managanese ppm ASTM D5185m 0 0 <109 1015 <tr< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th></tr<> | | | | | | | |
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| Chromium ppm ASTM D5185m >4 <1 | WEAR METALS | \$ | method | limit/base | current | history1 | history2 |
| Nickel ppm ASTM D5185m >2 0 <1 | Iron | ppm | ASTM D5185m | >110 | 9 | 14 | 8 |
| Titanium ppm ASTM D5185m >2 0 <1 | Chromium | ppm | ASTM D5185m | >4 | <1 | <1 | <1 |
| Silver ppm ASTM D5185m >2 0 <1 | Nickel | ppm | ASTM D5185m | >2 | 0 | <1 | <1 |
| Aluminum ppm ASTM D5185m >25 1 3 <1 | Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
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| Copper ppm ASTM D5185m >85 <1 | Aluminum | ppm | ASTM D5185m | >25 | 1 | 3 | <1 |
| Tin ppm ASTM D5185m >4 0 <1 | Lead | ppm | ASTM D5185m | >45 | 0 | 3 | 1 |
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| Magnesium ppm ASTM D5185m 1010 920 1009 1015 Calcium ppm ASTM D5185m 1070 1046 1163 1178 Phosphorus ppm ASTM D5185m 1150 952 1075 1091 Zinc ppm ASTM D5185m 1270 1202 1359 1325 Sulfur ppm ASTM D5185m 2060 2894 3802 3423 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 7 4 Sodium ppm ASTM D5185m >20 4 58 6 Potassium ppm ASTM D5185m >20 4 71 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 0.6 0.4 Nitration Abs/.tmm *ASTM D7415 <th>Molybdenum</th> <th>ppm</th> <th>ASTM D5185m</th> <th>60</th> <th>57</th> <th>74</th> <th>66</th> | Molybdenum | ppm | ASTM D5185m | 60 | 57 | 74 | 66 |
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| Soot % % *ASTM D7844 >3 0.9 0.6 0.4 Nitration Abs/cm *ASTM D7624 >20 10.8 9.0 7.5 Sulfation Abs/.1mm *ASTM D7415 >30 25.7 21.6 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.4 17.8 15.1 | Zinc Sulfur CONTAMINAN Silicon | ppm ppm TS ppm | ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m | 1150 1270 2060 limit/base | 952 1202 2894 current 5 | 1075 1359 3802 history1 7 | 1091 1325 3423 history2 4 |
| Soot % % *ASTM D7844 >3 0.9 0.6 0.4 Nitration Abs/cm *ASTM D7624 >20 10.8 9.0 7.5 Sulfation Abs/.1mm *ASTM D7415 >30 25.7 21.6 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.4 17.8 15.1 | Zinc Sulfur CONTAMINAN Silicon Sodium | ppm ppm TS ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 1150 1270 2060 limit/base >30 | 952 1202 2894 current 5 6 | 1075 1359 3802 history1 7 ▲ 58 | 1091 1325 3423 history2 4 6 |
| Nitration Abs/cm *ASTM D7624 >20 10.8 9.0 7.5 Sulfation Abs/.1mm *ASTM D7415 >30 25.7 21.6 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.4 17.8 15.1 | Zinc Sulfur CONTAMINAN Silicon Sodium Potassium | ppm ppm TS ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m | 1150 1270 2060 limit/base >30 >20 | 952 1202 2894 current 5 6 4 | 1075 1359 3802 history1 7 ▲ 58 ▲ 71 | 1091 1325 3423 history2 4 6 2 |
| Sulfation Abs/.1mm *ASTM D7415 >30 25.7 21.6 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.4 17.8 15.1 | Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED | ppm ppm TS ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method | 1150 1270 2060 limit/base >30 >20 limit/base | 952 1202 2894 current 5 6 4 current | 1075 1359 3802 history1 7 ▲ 58 ▲ 71 history1 | 1091 1325 3423 history2 4 6 2 2 history2 |
| FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.4 17.8 15.1 | Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % | ppm ppm TS ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method | 1150 1270 2060 iimit/base >30 >20 iimit/base >3 | 952 1202 2894 current 5 6 4 current 0.9 | 1075 1359 3802 history1 7 ▲ 58 ▲ 71 history1 0.6 | 1091 1325 3423 history2 4 6 2 2 history2 0.4 |
| Oxidation Abs/.1mm *ASTM D7414 >25 19.4 17.8 15.1 | Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration | ppm ppm TS ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624 | 1150 1270 2060 iimit/base >30 >20 iimit/base >3 >20 | 952 1202 2894 current 5 6 4 current 0.9 10.8 | 1075 1359 3802 history1 7 ▲ 58 ▲ 71 history1 0.6 9.0 | 1091 1325 3423 history2 4 6 2 history2 0.4 7.5 |
| | Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation | ppm ppm TS ppm ppm ppm ppm % Abs/cm Abs/.1mm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7844 | 1150 1270 2060 imit/base >30 >20 imit/base >3 >20 >30 | 952 1202 2894 current 5 6 4 current 0.9 10.8 25.7 | 1075 1359 3802 history1 7 58 58 71 0.6 9.0 21.6 | 1091 1325 3423 history2 4 6 2 2 history2 0.4 7.5 19.8 |
| Base Number (BN) mg KOH/g ASTM D2896 9.8 4.2 7.9 8.6 | Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD | ppm ppm TS ppm ppm ppm ppm % Abs/cm Abs/.1mm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7415 | 1150 1270 2060 imit/base >30 >20 imit/base >30 >20 >30 | 952 1202 2894 <u>current</u> 5 6 4 <u>current</u> 0.9 10.8 25.7 <u>current</u> | 1075 1359 3802 history1 7 ▲ 58 ▲ 71 history1 0.6 9.0 21.6 history1 | 1091 1325 3423 history2 4 6 2 history2 0.4 7.5 19.8 history2 |
| | Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD Oxidation | ppm ppm TS ppm ppm ppm ppm % Abs/cm Abs/.1mm Abs/.1mm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7415 | 1150 1270 2060 imit/base >30 >20 imit/base >30 >30 imit/base >25 | 952 1202 2894 current 5 6 4 current 0.9 10.8 25.7 current 19.4 | 1075 1359 3802 history1 7 ▲ 58 ▲ 71 history1 0.6 9.0 21.6 history1 17.8 | 1091 1325 3423 history2 4 6 2 bistory2 0.4 7.5 19.8 history2 15.1 |



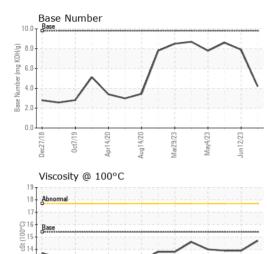
13 Abnorm

12

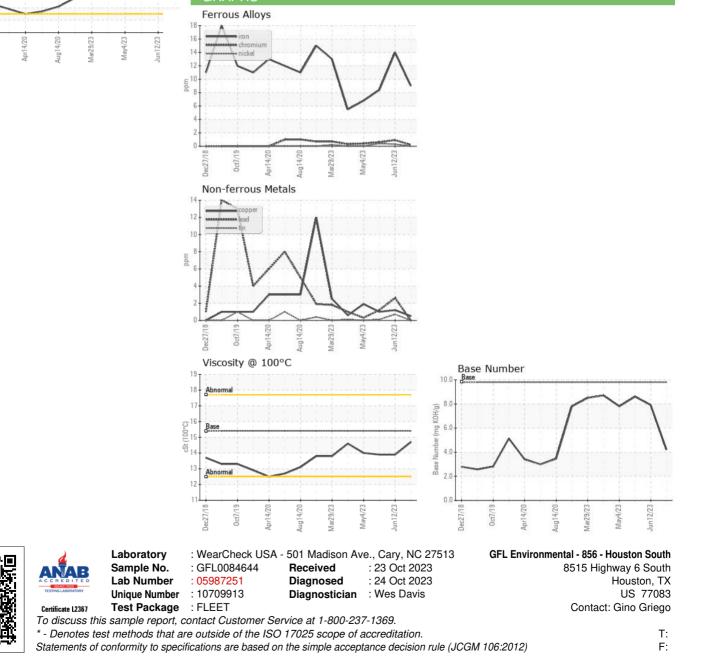
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OIL ANALYSIS REPORT



| 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 | RTIES | method | limit/base | current | history1 | history2 |
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | 14.7 | 13.9 | 13.9 |
| GRAPHS | | | | | | |



Report Id: GFL856 [WUSCAR] 05987251 (Generated: 10/24/2023 15:03:09) Rev: 1

Contact/Location: See also 983,856,859 - Gino Griego - GFL856