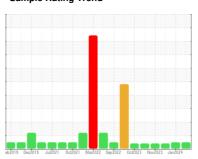


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id **923040-260203**

Component

Diesel Engine

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

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

Metal levels are typical for a new component breaking in.

Contamination

There is no indication of any contamination in the oil.

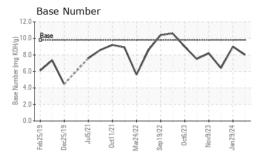
Fluid Condition

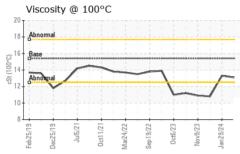
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| SAMPLE INFORMATION method finit/base current history1 history2 | GAL) | | eb2019 Dec20 | 19 Jul2021 Oct2021 Ma | 72022 Sep2022 Oct2023 Nov2023 | Jan2024 | |
|---|-------------------------|----------|--------------|-----------------------|-------------------------------|-------------|-------------|
| Sample Date | SAMPLE INFORM | MATION | method | limit/base | current | history1 | history2 |
| Machine Age mis Client Info 16529 14894 0 0 0 0 0 0 0 0 0 | Sample Number | | Client Info | | GFL0104963 | GFL0088134 | GFL0088215 |
| Oil Age mls Client Info Not Changd N/A Sample Status Client Info Not Changd N/A CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 <1.0 Water WC Method >0 <1.0 <1.0 <1.0 <1.0 WEAR METALS method Imitibase current history1 history2 Iron ppm ASTM D5185m >100 21 13 66 Chromium ppm ASTM D5185m >100 21 13 66 Chromium ppm ASTM D5185m >20 <1 0 2 Vickel ppm ASTM D5185m >4 0 0 <1 Iranium ppm ASTM D5185m >3 0 0 0 <1 Silver ppm ASTM D5185m >30 0 0 2 | Sample Date | | Client Info | | 13 Feb 2024 | 29 Jan 2024 | 18 Dec 2023 |
| Oil Changed Sample Status Client Info Not Changd NORMAL Changed NORMAL N/A ATTENTION CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 | Machine Age | mls | Client Info | | 16529 | 14894 | 0 |
| NORMAL NORMAL ATTENTION CONTAMINATION method limit/base current history1 history2 | Oil Age | mls | Client Info | | 0 | 0 | 0 |
| CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <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 >100 21 13 66 Chromium ppm ASTM D5185m >20 <1 0 2 Nickel ppm ASTM D5185m >4 0 0 <1 Silver ppm ASTM D5185m >3 0 0 0 Lead ppm ASTM D5185m >40 0 0 2 Copper ppm ASTM D5185m >33.0 1 1 7 Tin ppm ASTM D5185m >30.0 1 1 0 Cale | Oil Changed | | Client Info | | Not Changd | Changed | N/A |
| Fuel | Sample Status | | | | NORMAL | NORMAL | ATTENTION |
| Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imitibase current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 21 13 66 Chromium ppm ASTM D5185m >20 <1 0 2 Nickel ppm ASTM D5185m >4 0 0 <1 Silver ppm ASTM D5185m >4 0 0 0 Silver ppm ASTM D5185m >20 3 1 5 Silver ppm ASTM D5185m >40 0 0 2 Silver ppm ASTM D5185m >40 0 0 2 Copper ppm ASTM D5185m >15 0 0 0 Capper ppm ASTM D5185m >10 0 0 0 </th <th>CONTAMINATI</th> <th>ON</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th> | CONTAMINATI | ON | method | limit/base | current | history1 | history2 |
| WEAR METALS | Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 21 13 66 Chromium ppm ASTM D5185m >20 <1 | Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Iron | Glycol | | WC Method | | NEG | NEG | NEG |
| Chromium ppm ASTM D5185m >20 <1 0 2 Nickel ppm ASTM D5185m >4 0 0 <1 | WEAR METALS | 5 | method | limit/base | current | history1 | history2 |
| Nickel ppm ASTM D5185m >4 0 0 <1 Titanium ppm ASTM D5185m 0 0 0 <1 | Iron | ppm | ASTM D5185m | >100 | 21 | 13 | 66 |
| Titanium | | ppm | ASTM D5185m | | | 0 | 2 |
| Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 3 1 5 Lead ppm ASTM D5185m >40 0 0 2 Copper ppm ASTM D5185m >330 1 1 7 Tin ppm ASTM D5185m >15 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 0 4 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 0 Manganesium ppm ASTM D5185m 1010 918< | Nickel | ppm | ASTM D5185m | >4 | | | |
| Aluminum ppm ASTM D5185m >20 3 1 5 Lead ppm ASTM D5185m >40 0 0 2 Copper ppm ASTM D5185m >330 1 1 7 Tin ppm ASTM D5185m >15 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 <1 | | ppm | | | - | | |
| Lead ppm ASTM D5185m >40 0 0 2 Copper ppm ASTM D5185m >330 1 1 7 Tin ppm ASTM D5185m >15 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 0 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 1 0 4 Barium ppm ASTM D5185m 0 1 1 0 4 Barium ppm ASTM D5185m 0 1 1 1 0 0 Magnesium ppm ASTM D5185m 100 | | | | | | | |
| Copper ppm ASTM D5185m >330 1 1 7 Tin ppm ASTM D5185m >15 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 -1 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 0 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 -1 -1 4 Magnese ppm ASTM D5185m 0 -1 -1 4 Magnesium ppm ASTM D5185m 1010 918 942 885 Calcium ppm ASTM D5185m 1070 980 1074 1026 Phosphorus ppm ASTM D5185m 1270 1184 <t< td=""><td></td><td></td><td></td><td></td><th></th><td></td><td></td></t<> | | | | | | | |
| Tin ppm ASTM D5185m >15 0 0 0 Vanadium ppm ASTM D5185m 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 0 4 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 <1 <1 4 Magnesium ppm ASTM D5185m 0 <1 <1 <1 4 Magnesium ppm ASTM D5185m 1010 918 942 885 Calcium ppm ASTM D5185m 1070 980 1074 1026 Phosphorus ppm ASTM D5185m <th< td=""><td></td><td></td><td></td><td></td><th>-</th><td></td><td></td></th<> | | | | | - | | |
| Vanadium ppm ASTM D5185m 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 0 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 58 60 58 Manganese ppm ASTM D5185m 01010 918 942 885 Calcium ppm ASTM D5185m 1010 918 942 885 Calcium ppm ASTM D5185m 1070 980 1074 1026 Phosphorus ppm ASTM D5185m 1150 1015 1050 868 Zinc ppm ASTM D5185m 2060 2899 3154 2801 CONTAMINANTS method limit/base current history1 | | | | | | | |
| Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 0 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 <1 | | | | >15 | | | |
| ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 0 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 58 60 58 Manganese ppm ASTM D5185m 0 <1 | | | | | - | | |
| Boron | | ppm | | | | | |
| Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 58 60 58 Manganese ppm ASTM D5185m 0 <1 <1 4 Magnesium ppm ASTM D5185m 1010 918 942 885 Calcium ppm ASTM D5185m 1070 980 1074 1026 Phosphorus ppm ASTM D5185m 1150 1015 1050 868 Zinc ppm ASTM D5185m 1270 1184 1299 1193 Sulfur ppm ASTM D5185m 2060 2899 3154 2801 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 13 Sodium ppm ASTM D5185m >20 0 0 <1 INFRA-RED method limit/base< | | | | | | | |
| Molybdenum ppm ASTM D5185m 60 58 60 58 Manganese ppm ASTM D5185m 0 <1 <1 4 Magnesium ppm ASTM D5185m 1010 918 942 885 Calcium ppm ASTM D5185m 1070 980 1074 1026 Phosphorus ppm ASTM D5185m 1150 1015 1050 868 Zinc ppm ASTM D5185m 1270 1184 1299 1193 Sulfur ppm ASTM D5185m 2060 2899 3154 2801 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 13 Sodium ppm ASTM D5185m >20 0 0 <1 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7624 >20 | | | | | | | |
| Manganese ppm ASTM D5185m 0 <1 <1 4 Magnesium ppm ASTM D5185m 1010 918 942 885 Calcium ppm ASTM D5185m 1070 980 1074 1026 Phosphorus ppm ASTM D5185m 1150 1015 1050 868 Zinc ppm ASTM D5185m 1270 1184 1299 1193 Sulfur ppm ASTM D5185m 2060 2899 3154 2801 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 13 Sodium ppm ASTM D5185m >20 0 0 <1 | | | | | | | |
| Magnesium ppm ASTM D5185m 1010 918 942 885 Calcium ppm ASTM D5185m 1070 980 1074 1026 Phosphorus ppm ASTM D5185m 1150 1015 1050 868 Zinc ppm ASTM D5185m 1270 1184 1299 1193 Sulfur ppm ASTM D5185m 2060 2899 3154 2801 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 13 Sodium ppm ASTM D5185m >25 6 4 22 Potassium ppm ASTM D5185m >20 0 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 6.9 5.9 10.6 Sulfation Abs/.1mm *AS | • | | | | | | |
| Calcium ppm ASTM D5185m 1070 980 1074 1026 Phosphorus ppm ASTM D5185m 1150 1015 1050 868 Zinc ppm ASTM D5185m 1270 1184 1299 1193 Sulfur ppm ASTM D5185m 2060 2899 3154 2801 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 13 Sodium ppm ASTM D5185m >20 0 0 <1 | • | | | | | | |
| Phosphorus ppm ASTM D5185m 1150 1015 1050 868 Zinc ppm ASTM D5185m 1270 1184 1299 1193 Sulfur ppm ASTM D5185m 2060 2899 3154 2801 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 13 Sodium ppm ASTM D5185m >20 0 0 <1 | • | | | | | | |
| Zinc ppm ASTM D5185m 1270 1184 1299 1193 Sulfur ppm ASTM D5185m 2060 2899 3154 2801 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 13 Sodium ppm ASTM D5185m >20 0 0 <1 | | | | | | | |
| Sulfur ppm ASTM D5185m 2060 2899 3154 2801 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 13 Sodium ppm ASTM D5185m >20 0 0 <1 | | | | | | | |
| Silicon ppm ASTM D5185m >25 6 4 13 Sodium ppm ASTM D5185m 6 4 22 Potassium ppm ASTM D5185m >20 0 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.3 1.3 Nitration Abs/cm *ASTM D7624 >20 6.9 5.9 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.6 18.1 22.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.6 14.3 19.6 | | | | | | | |
| Sodium ppm ASTM D5185m 6 4 22 Potassium ppm ASTM D5185m >20 0 0 <1 | CONTAMINAN ⁻ | TS | method | limit/base | current | history1 | history2 |
| Sodium ppm ASTM D5185m 6 4 22 Potassium ppm ASTM D5185m >20 0 0 <1 | | | ASTM D5185m | >25 | 6 | | |
| Potassium ppm ASTM D5185m >20 0 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.3 1.3 Nitration Abs/cm *ASTM D7624 >20 6.9 5.9 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.6 18.1 22.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.6 14.3 19.6 | | | ASTM D5185m | | | | |
| Soot % % *ASTM D7844 >3 0.5 0.3 1.3 Nitration Abs/cm *ASTM D7624 >20 6.9 5.9 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.6 18.1 22.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.6 14.3 19.6 | Potassium | | ASTM D5185m | >20 | | 0 | <1 |
| Nitration Abs/cm *ASTM D7624 >20 6.9 5.9 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.6 18.1 22.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.6 14.3 19.6 | INFRA-RED | | method | limit/base | current | history1 | history2 |
| Sulfation Abs/.1mm *ASTM D7415 >30 22.6 18.1 22.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.6 14.3 19.6 | Soot % | % | *ASTM D7844 | >3 | 0.5 | 0.3 | 1.3 |
| FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.6 14.3 19.6 | Nitration | Abs/cm | *ASTM D7624 | >20 | 6.9 | 5.9 | 10.6 |
| Oxidation Abs/.1mm *ASTM D7414 >25 19.6 14.3 19.6 | Sulfation | Abs/.1mm | *ASTM D7415 | >30 | | 18.1 | 22.6 |
| | FLUID DEGRAD | ATION | method | limit/base | current | history1 | history2 |
| Base Number (BN) mg KOH/g ASTM D2896 9.8 8.0 9.0 6.4 | Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 19.6 | 14.3 | 19.6 |
| | Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | 8.0 | 9.0 | 6.4 |



OIL ANALYSIS REPORT

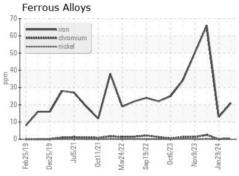


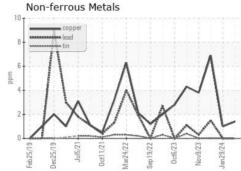


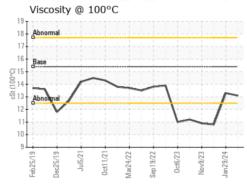
| VISUAL | | method | limit/base | current | history1 | history2 |
|-------------------------|--------|---------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate |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

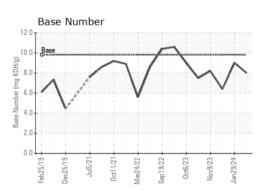
| FLUID PROPE | ERTIES | method | | | | history2 |
|--------------|--------|-----------|------|------|------|----------|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | 13.1 | 13.3 | ▲ 10.8 |

GRAPHS













Certificate L2367

Laboratory Sample No. Unique Number : 10890386

Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Lab Number : 06097533

: GFL0104963

Received **Tested** Diagnosed

: 22 Feb 2024 : 23 Feb 2024

: 23 Feb 2024 - Wes Davis

GFL Environmental - 820 - Joplin Hauling

3700 West 7th Street Joplin, MO

US 64801 Contact: James Jarrett

jjarrett@gflenv.com

T: (417)310-2802

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)

F: