

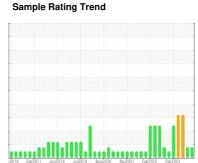
OIL ANALYSIS REPORT



GFL035 11196 Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (26 QTS)





DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

Light fuel dilution occurring. No other contaminants were detected in the oil.

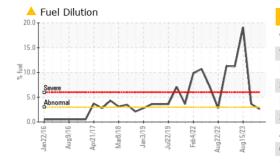
Fluid Condition

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

| • | N SHP 15W40 (2 | 0 Q13) | 12016 Feb20 | 17 Jun2018 Jul2019 | Aug2020 Apr2021 Feb2022 | Feb 2023 | |
|--|----------------|----------|-------------|--------------------|-------------------------|-------------|-------------|
| Sample Date | SAMPLE INFOR | MATION | method | limit/base | current | history1 | history2 |
| Machine Age hrs Client Info | Sample Number | | Client Info | | GFL0085178 | GFL0085152 | GFL0071567 |
| Dil Age | Sample Date | | Client Info | | 23 Jan 2024 | 27 Oct 2023 | 15 Aug 2023 |
| Client Info | Machine Age | hrs | Client Info | | 0 | 34506 | 34506 |
| MARGINAL ABNORMAL SEVERE | Oil Age | hrs | Client Info | | 600 | 600 | 600 |
| CONTAMINATION | Oil Changed | | Client Info | | Not Changd | Changed | Changed |
| Water WC Method >0.2 NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >130 20 37 28 Chromium ppm ASTM D5185m >10 -1 1 1 Nickel ppm ASTM D5185m >4 2 6 8 8 Silver ppm ASTM D5185m >2 0 0 -1 Silver ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >20 -1 0 0 Silver ppm ASTM D5185m >20 -1 0 0 Scopper ppm ASTM D5185m >20 -1 1 2 Tin ppm ASTM D5185m >20 -1 1 2 Tin ppm ASTM D5185m 0 6 <t< td=""><td>Sample Status</td><td></td><td></td><td></td><td>MARGINAL</td><td>ABNORMAL</td><td>SEVERE</td></t<> | Sample Status | | | | MARGINAL | ABNORMAL | SEVERE |
| Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >10 <1 | CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >130 20 37 28 Chromium ppm ASTM D5185m >10 <1 | Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Chromium | Glycol | | WC Method | | NEG | NEG | NEG |
| Chromium ppm ASTM D5185m >10 <1 1 1 Nickel ppm ASTM D5185m >4 2 6 ▲ 8 Titianium ppm ASTM D5185m >2 0 0 <1 Siliver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 0 0 Lead ppm ASTM D5185m >20 <1 0 0 Copper ppm ASTM D5185m >20 <1 1 2 Tin ppm ASTM D5185m >4 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 <1 Barium ppm ASTM D5185m 0 0 4 0 Barium ppm ASTM D5185m 0 | WEAR METAL | S | method | limit/base | current | history1 | history2 |
| Silver | ron | ppm | ASTM D5185m | >130 | 20 | 37 | 28 |
| Silver | Chromium | ppm | ASTM D5185m | >10 | <1 | 1 | 1 |
| Silver | Nickel | ppm | ASTM D5185m | >4 | 2 | 6 | <u> </u> |
| Aluminum | Titanium | ppm | ASTM D5185m | >2 | 0 | 0 | <1 |
| Lead ppm ASTM D5185m >20 <1 0 0 Copper ppm ASTM D5185m >12.5 <1 1 2 Tin ppm ASTM D5185m >4 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 <1 Cadmium ppm ASTM D5185m 0 6 5 3 Boron ppm ASTM D5185m 0 6 5 3 Barium ppm ASTM D5185m 0 0 4 0 Molybdenum ppm ASTM D5185m 0 59 59 51 Manganese ppm ASTM D5185m 0 -1 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 856 801 778 Calcium ppm ASTM D5185m 1070 1060 924 89 838 Zinc ppm ASTM D5185m 1270< | Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Copper ppm ASTM D5185m >125 <1 1 2 Tin ppm ASTM D5185m >4 <1 | Aluminum | ppm | ASTM D5185m | >20 | 6 | 12 | 8 |
| Tin ppm ASTM D5185m >4 <1 <1 <1 <1 <1 Canadium ppm ASTM D5185m 0 0 0 <1 Candium ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Lead | ppm | ASTM D5185m | >20 | <1 | 0 | 0 |
| 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 6 5 3 Barium ppm ASTM D5185m 0 0 4 0 Molybdenum ppm ASTM D5185m 0 0 4 0 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 856 801 778 Calcium ppm ASTM D5185m 1070 1060 924 897 Phosphorus ppm ASTM D5185m 1270 1200 1086 1035 Sulfur ppm ASTM D5185m 2060 2911 2475 2988 CONTAMINANTS method limit/base current history1 <t< td=""><td>Copper</td><td>ppm</td><td>ASTM D5185m</td><td>>125</td><td><1</td><td>1</td><td>2</td></t<> | Copper | ppm | ASTM D5185m | >125 | <1 | 1 | 2 |
| Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 6 5 3 Barium ppm ASTM D5185m 0 0 4 0 Molybdenum ppm ASTM D5185m 60 59 59 51 Manganese ppm ASTM D5185m 0 <1 | Tin | ppm | ASTM D5185m | >4 | <1 | <1 | <1 |
| ADDITIVES | √anadium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Boron ppm ASTM D5185m 0 6 5 3 Barium ppm ASTM D5185m 0 0 4 0 Molybdenum ppm ASTM D5185m 60 59 59 59 51 Manganese ppm ASTM D5185m 1010 856 801 778 Calcium ppm ASTM D5185m 1070 1060 924 897 Phosphorus ppm ASTM D5185m 1150 1014 989 838 Zinc ppm ASTM D5185m 1270 1200 1086 1035 Sulfur ppm ASTM D5185m 2060 2911 2475 2988 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 8 5 Sodium ppm ASTM D5185m >20 8 6 3 Fuel % ASTM D3524 >3.0 ▲ 2.6 ▲ 3.6 ♠ 19.1 INFRA-RED method limit/base current history1 history2 Socit % % *ASTM D7844 >6 0.5 0.9 0.5 Nitration Abs/m *ASTM D7415 >30 18.3 20.3 19.6 FLUID DEGRADATION method limit/base current history1 history2 Cxidation Abs/.1mm *ASTM D7415 >30 18.3 20.3 19.6 | Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Barium ppm ASTM D5185m 0 0 4 0 Molybdenum ppm ASTM D5185m 60 59 59 51 Manganese ppm ASTM D5185m 0 <1 | ADDITIVES | | method | limit/base | current | history1 | history2 |
| Molybdenum ppm ASTM D5185m 60 59 59 51 Manganese ppm ASTM D5185m 0 <1 | Boron | ppm | ASTM D5185m | 0 | 6 | 5 | 3 |
| Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 856 801 778 Calcium ppm ASTM D5185m 1070 1060 924 897 Phosphorus ppm ASTM D5185m 1150 1014 989 838 Zinc ppm ASTM D5185m 1270 1200 1086 1035 Sulfur ppm ASTM D5185m 2060 2911 2475 2988 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 8 5 Sodium ppm ASTM D5185m >20 8 6 3 Potassium ppm ASTM D5185m >20 8 6 3 Fuel % ASTM D5185m >20 8 6 3 INFRA-RED method limit/base | Barium | ppm | ASTM D5185m | 0 | 0 | 4 | 0 |
| Magnesium ppm ASTM D5185m 1010 856 801 778 Calcium ppm ASTM D5185m 1070 1060 924 897 Phosphorus ppm ASTM D5185m 1150 1014 989 838 Zinc ppm ASTM D5185m 1270 1200 1086 1035 Sulfur ppm ASTM D5185m 2060 2911 2475 2988 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 8 5 Sodium ppm ASTM D5185m >20 8 6 3 Potassium ppm ASTM D5185m >20 8 6 3 Fuel % ASTM D5185m >20 8 6 3 Fuel % ASTM D5185m >20 8 6 3 Fuel % ASTM D544 >6 | Molybdenum | ppm | ASTM D5185m | 60 | 59 | 59 | 51 |
| Calcium ppm ASTM D5185m 1070 1060 924 897 Phosphorus ppm ASTM D5185m 1150 1014 989 838 Zinc ppm ASTM D5185m 1270 1200 1086 1035 Sulfur ppm ASTM D5185m 2060 2911 2475 2988 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 8 5 Sodium ppm ASTM D5185m >20 8 6 3 Potassium ppm ASTM D5185m >20 8 6 3 Fuel % ASTM D3524 >3.0 ▲ 2.6 ▲ 3.6 ● 19.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.4 10.9 10.8 Sulfation Abs/.1mm< | Manganese | ppm | ASTM D5185m | 0 | <1 | <1 | <1 |
| Phosphorus ppm ASTM D5185m 1150 1014 989 838 Zinc ppm ASTM D5185m 1270 1200 1086 1035 Sulfur ppm ASTM D5185m 2060 2911 2475 2988 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 8 5 Sodium ppm ASTM D5185m >20 8 6 3 Potassium ppm ASTM D5185m >20 8 6 3 Fuel % ASTM D5185m >20 8 6 3 Fuel % ASTM D3524 >3.0 ▲ 2.6 ▲ 3.6 ● 19.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.4 10.9 10.8 Sulfation Abs/.1mm *ASTM D7415 | Magnesium | ppm | ASTM D5185m | 1010 | 856 | 801 | 778 |
| Zinc ppm ASTM D5185m 1270 1200 1086 1035 Sulfur ppm ASTM D5185m 2060 2911 2475 2988 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 8 5 Sodium ppm ASTM D5185m >20 8 6 3 Potassium ppm ASTM D5185m >20 8 6 3 Fuel % ASTM D3524 >3.0 ▲ 2.6 ▲ 3.6 ♠ 19.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.9 0.5 Nitration Abs/cm *ASTM D7624 >20 8.4 10.9 10.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 20.3 19.6 FLUID DEGRADATION method | Calcium | ppm | ASTM D5185m | 1070 | 1060 | 924 | 897 |
| Sulfur ppm ASTM D5185m 2060 2911 2475 2988 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 8 5 Sodium ppm ASTM D5185m 19 5 3 Potassium ppm ASTM D5185m >20 8 6 3 Fuel % ASTM D3524 >3.0 ▲ 2.6 ▲ 3.6 ■ 19.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.9 0.5 Nitration Abs/cm *ASTM D7624 >20 8.4 10.9 10.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 20.3 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *AST | Phosphorus | ppm | ASTM D5185m | 1150 | 1014 | 989 | 838 |
| CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 8 5 Sodium ppm ASTM D5185m 19 5 3 Potassium ppm ASTM D5185m >20 8 6 3 Fuel % ASTM D3524 >3.0 2.6 3.6 19.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.9 0.5 Nitration Abs/cm *ASTM D7624 >20 8.4 10.9 10.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 20.3 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 17.7 18.1 | Zinc | ppm | ASTM D5185m | 1270 | 1200 | 1086 | 1035 |
| Silicon ppm ASTM D5185m >25 6 8 5 Sodium ppm ASTM D5185m 19 5 3 Potassium ppm ASTM D5185m >20 8 6 3 Fuel % ASTM D3524 >3.0 2.6 3.6 19.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.9 0.5 Nitration Abs/cm *ASTM D7624 >20 8.4 10.9 10.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 20.3 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 17.7 18.1 | Sulfur | ppm | ASTM D5185m | 2060 | 2911 | 2475 | 2988 |
| Sodium ppm ASTM D5185m 19 5 3 Potassium ppm ASTM D5185m >20 8 6 3 Fuel % ASTM D3524 >3.0 ▲ 2.6 ▲ 3.6 ♠ 19.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.9 0.5 Nitration Abs/cm *ASTM D7624 >20 8.4 10.9 10.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 20.3 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 17.7 18.1 | CONTAMINAN | ITS | method | limit/base | current | history1 | history2 |
| Potassium ppm ASTM D5185m >20 8 6 3 Fuel % ASTM D3524 >3.0 ▲ 2.6 ▲ 3.6 ♠ 19.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.9 0.5 Nitration Abs/cm *ASTM D7624 >20 8.4 10.9 10.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 20.3 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 17.7 18.1 | Silicon | ppm | ASTM D5185m | >25 | 6 | 8 | 5 |
| Fuel % ASTM D3524 >3.0 | Sodium | ppm | ASTM D5185m | | 19 | 5 | 3 |
| INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.9 0.5 Nitration Abs/cm *ASTM D7624 >20 8.4 10.9 10.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 20.3 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 17.7 18.1 | Potassium | ppm | ASTM D5185m | >20 | 8 | 6 | 3 |
| Soot % % *ASTM D7844 > 6 0.5 0.9 0.5 Nitration Abs/cm *ASTM D7624 > 20 8.4 10.9 10.8 Sulfation Abs/.1mm *ASTM D7415 > 30 18.3 20.3 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 > 25 14.7 17.7 18.1 | Fuel | % | ASTM D3524 | >3.0 | 2.6 | ▲ 3.6 | 19.1 |
| Nitration Abs/cm *ASTM D7624 >20 8.4 10.9 10.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 20.3 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 17.7 18.1 | INFRA-RED | | method | limit/base | current | history1 | history2 |
| Sulfation Abs/.1mm *ASTM D7415 >30 18.3 20.3 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 17.7 18.1 | Soot % | % | *ASTM D7844 | >6 | 0.5 | 0.9 | 0.5 |
| FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 17.7 18.1 | Nitration | Abs/cm | *ASTM D7624 | >20 | 8.4 | 10.9 | 10.8 |
| Oxidation Abs/.1mm *ASTM D7414 >25 14.7 17.7 18.1 | | | | | | 20.3 | |
| | FLUID DEGRAI | DATION | method | limit/base | current | history1 | history2 |
| | Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 14.7 | 17.7 | 18.1 |
| | | | | | | | |



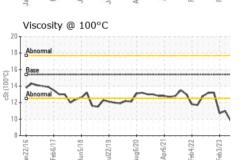
OIL ANALYSIS REPORT



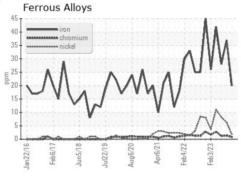
| VISUAL | | method | limit/base | current | history1 | history2 |
|-------------------------|--------|---------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate | 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 |
| | DTIEO | | 11 11 11 | | 1111 | 111 |

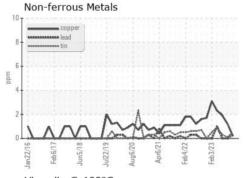
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|------|--------|---------|----------|---------|---|---------|----|
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| 4.0 | A A | IV | V | | | | |
| 1.0 | / \/ \ | | | | | | |
| 2.0- | /// | 1 | ЩШ | Щ | | | |
| | //\ | Jun5/18 | Jul22/19 | Aug6/20 | | Feb4/22 | |

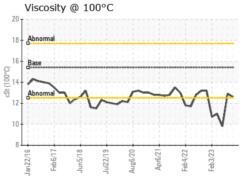


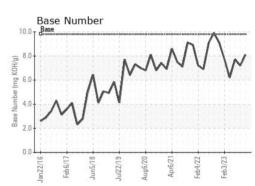


GRAPHS













Laboratory Sample No. Lab Number Unique Number

: GFL0085178 : 06072662 : 10849339

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved Diagnosed

: 29 Jan 2024 : 31 Jan 2024

Diagnostician : Wes Davis Test Package : FLEET (Additional Tests: PercentFuel)

Certificate L2367 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)

GFL Environmental - 035 - Greensboro

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Contact: JORGE COSTA jorge.costa@gflenv.com T: (336)668-3712