

OIL ANALYSIS REPORT

Sample Rating Trend





913130 Component Diesel Engine Fluid

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

SAMPLE INFORMATION method

| DIAGNOSIS | |
|----------------|--|
| Recommendation | |

Resample at the next service interval to monitor.

Machine Id

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 INFORM | | method | limit/base | current | history1 | history2 |
|---|--|---|--|---|---|--|
| Sample Number | | Client Info | | GFL0121975 | GFL0096875 | |
| Sample Date | | Client Info | | 10 Jun 2024 | 11 Jan 2024 | |
| Machine Age | hrs | Client Info | | 0 | 0 | |
| Oil Age | hrs | Client Info | | 600 | 600 | |
| Oil Changed | | Client Info | | Changed | Changed | |
| Sample Status | | | | NORMAL | NORMAL | |
| | | and the set | Preside Marca and | | la factoria and | history O |
| CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >3.0 | <1.0 | <1.0 | |
| Water | | WC Method | >0.2 | NEG | NEG | |
| Glycol | | WC Method | | NEG | NEG | |
| WEAR METAL | S | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >120 | 7 | 6 | |
| Chromium | ppm | ASTM D5185m | >20 | <1 | <1 | |
| Nickel | ppm | ASTM D5185m | >5 | 3 | 2 | |
| Titanium | ppm | ASTM D5185m | >2 | 0 | <1 | |
| Silver | ppm | ASTM D5185m | >2 | <1 | 0 | |
| Aluminum | ppm | ASTM D5185m | >20 | 2 | <1 | |
| Lead | ppm | ASTM D5185m | >40 | 0 | <1 | |
| Copper | ppm | ASTM D5185m | >330 | 2 | 2 | |
| Tin | ppm | ASTM D5185m | >15 | 0 | 1 | |
| Vanadium | ppm | ASTM D5185m | | 0 | <1 | |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | |
| | | | | | | |
| ADDITIVES | | method | | | | history2 |
| ADDITIVES Boron | ppm | method ASTM D5185m | limit/base | | history1 3 | history2 |
| | ppm ppm | | | current 8 0 | | |
| Boron Barium | ppm | ASTM D5185m | 0 | 8 | 3 | |
| Boron Barium Molybdenum | ppm ppm | ASTM D5185m ASTM D5185m | 0 | 8 0 | 3 0 | |
| Boron Barium Molybdenum Manganese | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 | 8 0 61 | 3 0 57 | |
| Boron Barium Molybdenum | ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 | 8 0 61 <1 | 3 0 57 <1 | |
| Boron Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 | 8 0 61 <1 942 | 3 0 57 <1 917 | |
| Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 | 8 0 61 <1 942 1073 | 3 0 57 <1 917 1038 | |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus | ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 1150 | 8 0 61 <1 942 1073 1038 | 3 0 57 <1 917 1038 1006 | |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur | ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 1150 1270 | 8 0 61 <1 942 1073 1038 1258 | 3 0 57 <1 917 1038 1006 1167 | |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN | ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 1150 1270 2060 | 8 0 61 <1 942 1073 1038 1258 3480 current | 3 0 57 <1 917 1038 1006 1167 2662 history1 | |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon | ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method | 0 0 60 0 1010 1070 1150 1270 2060 | 8 0 61 <1 942 1073 1038 1258 3480 current 4 | 3 0 57 <1 917 1038 1006 1167 2662 history1 3 | history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium | ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 1150 1270 2060 limit/base | 8 0 61 <1 942 1073 1038 1258 3480 current 4 3 | 3 0 57 <1 917 1038 1006 1167 2662 history1 3 2 | history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 | 8 0 61 <1 942 1073 1038 1258 3480 current 4 3 3 | 3 0 57 <1 917 1038 1006 1167 2662 history1 3 2 2 <1 | history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium | ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 1150 1270 2060 limit/base | 8 0 61 <1 942 1073 1038 1258 3480 current 4 3 3 3 Current | 3 0 57 <1 917 1038 1006 1167 2662 history1 3 2 <1 4 history1 | history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <u>limit/base</u> >20 | 8 0 61 <1 942 1073 1038 1258 3480 current 4 3 3 | 3 0 57 <1 917 1038 1006 1167 2662 history1 3 2 <1 2 <1 history1 0.2 | history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration | ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <u>limit/base</u> >20 | 8 0 61 <1 942 1073 1038 1258 3480 current 4 3 3 3 current 0.3 7.0 | 3 0 57 <1 917 1038 1006 1167 2662 history1 3 2 2 <1 3 2 <1 history1 0.2 6.0 | history2 history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <u>limit/base</u> >20 | 8 0 61 <1 942 1073 1038 1258 3480 <u>current</u> 4 3 3 3 <u>current</u> 0.3 | 3 0 57 <1 917 1038 1006 1167 2662 history1 3 2 <1 2 <1 history1 0.2 | history2 history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration | ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 imit/base >20 | 8 0 61 <1 942 1073 1038 1258 3480 current 4 3 3 3 current 0.3 7.0 | 3 0 57 <1 917 1038 1006 1167 2662 history1 3 2 2 <1 3 2 <1 history1 0.2 6.0 | history2 history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation | ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 20 20 20 20 20 20 20 20 20 20 20 | 8 0 61 <1 942 1073 1038 1258 3480 <u>current</u> 4 3 3 3 <u>current</u> 0.3 7.0 19.1 | 3 0 57 <1 917 1038 1006 1167 2662 history1 3 2 <1 3 2 <1 0.2 6.0 17.9 | history2 history2 history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation | ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415 | 0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 220 220 220 220 230 20 20 20 20 20 20 20 20 20 20 20 20 20 | 8 0 61 <1 942 1073 1038 1258 3480 Current 4 3 3 Current 0.3 7.0 19.1 Current | 3 0 57 <1 917 1038 1006 1167 2662 history1 3 2 <1 3 2 <1 0.2 6.0 17.9 history1 | history2 history2 history2 history2 history2 |



OIL ANALYSIS REPORT

| FT-IR (Direct Trend) | VISUAL | method | limit/base curr | ent history1 history2 |
|---|--|-----------------------|---|---|
| 30 - Oxidation | White Metal | scalar *Visual | NONE NONE | NONE |
| 25 | Yellow Metal | scalar *Visual | NONE NONE | |
| B) 20 | Precipitate | scalar *Visual | NONE NONE | |
| | Silt | scalar *Visual | NONE NONE | |
| | Debris | scalar *Visual | NONE NONE | |
| 10 | Sand/Dirt | scalar *Visual | NONE NONE | |
| 24 | | scalar *Visual | NORML NORM | |
| Jan 11/24 | Appearance Odor | scalar *Visual | NORML NORM | |
| | Emulsified Water | scalar *Visual | >0.2 NEG | NEG |
| Base Number | Free Water | scalar *Visual | NEG | NEG |
| | FLUID PROP | | limit/base curr | |
| (0.8 °C) (0.8 °C) (0.0 °C) (0. | Visc @ 100°C | cSt ASTM D44 | | 14.2 |
| ь щи 4.0- ее д.0- | GRAPHS | | | |
| g 2.0 | Ferrous Alloys | | | |
| 0.0 | iron 8 | | | |
| Lan Lan | 6 | | | |
| Viscosity @ 100°C | E d | | | |
| 18 - Abnormal | 4 | | | |
| 17 | 2 - | | | |
| 0 16 Base 0 15 | | ******* | | |
| | an11/24 | | 0/24 - | |
| 13 Abnormal | Jan 1 | | Jun 10/24 | |
| 12 | Non-ferrous Met | als | | |
| Jan 11/24 | 10 T conner 1 | | | |
| - and | copper lead | | | |
| | tin tin | | | |
| | 6 | | | |
| | E. | | | |
| | | | | |
| | 2 | | | |
| | | | | |
| | 11/24 | | 0/24 | |
| | Jan 11 | | Jun 10/24 | |
| | Viscosity @ 100 | °C | Base N | umber |
| | 19 T | | 10.0 Base | |
| | 18 - Abnormal | | | |
| | 17 | | (B 8.0 | |
| | Base 15 15 15 15 15 14 | | - 0.8 - 0.4 KOH(0) - 0.4 KOH(0) - 0.4 KOH(0) | |
| | 2 15 - to | | () | |
| | | | § 4.0 | |
| | 13 Abnormal | | 2.0- | |
| | 12- | | | |
| | 24 11 11 | | 74 U.0 V. | 24 |
| | Jan 11/24 | | Jun 10/24 Jan 11/24 | Jun 10/24 |
| | | 501 Madison Ave Ca | | FL Environmental - 401 - Fort Wayne Hauling |
| Sample I | No. : GFL0121975 | Received : | 17 Jun 2024 | 4429 ALLEN MARTIN DR |
| | nber : 06211394 | | 18 Jun 2024 | FORT WAYNE, IN |
| | mber : 11084258 | Diagnosed : | 18 Jun 2024 - Wes Davis | US 46806 |
| | kage : FLEET eport, contact Customer Se | nvice at 1_800_007 10 | 69 | Contact: Zachory Roehm zroehm@gflenv.com |
| | that are outside of the ISO | | | Zroenn@glienv.com T: |
| | to specifications are based | | | |
| | | | | |

Report Id: GFL401 [WUSCAR] 06211394 (Generated: 06/21/2024 22:08:38) Rev: 1

Submitted By: See also GFL401 - ZACHORY ROEHM