

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 829085

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.

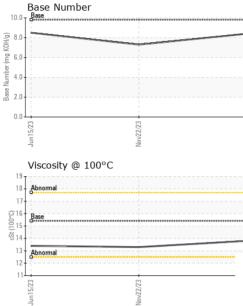
Fluid Condition

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

| SAMPLE INFORI | MATION | method | limit/base | current | history1 | history2 |
|---|---|--|---|--|--|--|
| Sample Number | | Client Info | | GFL0103590 | GFL0085304 | GFL0085321 |
| Sample Date | | Client Info | | 21 Dec 2023 | 22 Nov 2023 | 15 Jun 2023 |
| Machine Age | hrs | Client Info | | 5629 | 5629 | 5629 |
| Oil Age | hrs | Client Info | | 596 | 610 | 1220 |
| Oil Changed | | Client Info | | N/A | N/A | N/A |
| Sample Status | | | | NORMAL | ATTENTION | NORMAL |
| CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| WEAR METAL | S | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >100 | 6 | 19 | 14 |
| Chromium | ppm | ASTM D5185m | >20 | <1 | 1 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | 0 | <1 | 0 |
| Titanium | ppm | ASTM D5185m | | <1 | <1 | 0 |
| Silver | ppm | ASTM D5185m | >3 | 0 | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | 3 | 2 | <1 |
| Lead | ppm | ASTM D5185m | >40 | <1 | 1 | <1 |
| Copper | ppm | ASTM D5185m | >330 | 34 | 1 50 | 12 |
| Tin | ppm | ASTM D5185m | >15 | <1 | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| | | | | | | |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| ADDITIVES Boron | ppm | method ASTM D5185m | limit/base 0 | current 2 | history1 4 | history2 9 |
| | ppm ppm | ASTM D5185m | | | | |
| Boron | | ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 | 2 | 4 | 9 0 56 |
| Boron Barium | ppm | ASTM D5185m ASTM D5185m | 0 0 60 | 2 9 | 4 | 9 0 |
| Boron Barium Molybdenum | ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 | 2 9 59 | 4 0 61 | 9 0 56 |
| Boron Barium Molybdenum Manganese | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 | 2 9 59 0 | 4 0 61 <1 | 9 0 56 <1 |
| Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 | 2 9 59 0 917 | 4 0 61 <1 972 | 9 0 56 <1 958 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | 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 | 2 9 59 0 917 1046 | 4 0 61 <1 972 1101 939 1223 | 9 0 56 <1 958 1096 |
| 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 | 0 0 60 0 1010 1070 1150 | 2 9 59 0 917 1046 1044 | 4 0 61 <1 972 1101 939 | 9 0 56 <1 958 1096 1018 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN | 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 | 2 9 59 0 917 1046 1044 1178 3257 current | 4 0 61 <1 972 1101 939 1223 | 9 0 56 <1 958 1096 1018 1272 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon | ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m | 0 0 60 1010 1070 1150 1270 2060 | 2 9 59 0 917 1046 1044 1178 3257 | 4 0 61 <1 972 1101 939 1223 2911 | 9 0 56 <1 958 1096 1018 1272 3587 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium | ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m | 0 0 60 1010 1070 1150 1270 2060 Limit/base | 2 9 59 0 917 1046 1044 1178 3257 current | 4 0 61 <1 972 1101 939 1223 2911 history1 6 <1 | 9 0 56 <1 958 1096 1018 1272 3587 history2 4 3 |
| 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 ASTM D5185m | 0 0 60 1010 1070 1150 1270 2060 Limit/base | 2 9 59 0 917 1046 1044 1178 3257 current 3 | 4 0 61 <1 972 1101 939 1223 2911 history1 6 | 9 0 56 <1 958 1096 1018 1272 3587 history2 4 |
| 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 method ASTM D5185m ASTM D5185m | 0 0 60 1010 1070 1150 1270 2060 Limit/base | 2 9 59 0 917 1046 1044 1178 3257 current 3 < | 4 0 61 <1 972 1101 939 1223 2911 history1 6 <1 | 9 0 56 <1 958 1096 1018 1272 3587 history2 4 3 |
| 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 0 1010 1070 1150 1270 2060 2060 225 >25 >20 limit/base >3 | 2 9 59 0 917 1046 1044 1178 3257 current 3 <1 2 | 4 0 61 <1 972 1101 939 1223 2911 history1 6 < 2 | 9 0 56 <1 958 1096 1018 1272 3587 history2 4 3 3 <1 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED | 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 limit/base >3 | 2 9 59 0 917 1046 1044 1178 3257 current 3 <1 2 Current | 4 0 61 <1 972 1101 939 1223 2911 history1 6 <1 2 history1 | 9 0 56 <1 958 1096 1018 1272 3587 history2 4 3 3 <1 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 TS ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 | 2 9 59 0 917 1046 1044 1178 3257 current 3 3 <1 2 current 0.2 | 4 0 61 <1 972 1101 939 1223 2911 history1 6 <1 2 history1 0.5 | 9 0 56 <1 958 1096 1018 1272 3587 history2 4 3 3 <1 history2 0.4 |
| 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 ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 20 <i>limit/base</i> >3 >20 | 2 9 59 0 917 1046 1044 1178 3257 <i>current</i> 3 <1 2 <i>current</i> 0.2 5.8 | 4 0 61 <1 972 1101 939 1223 2911 history1 6 <1 2 history1 0.5 8.8 | 9 0 56 <1 958 1096 1018 1272 3587 history2 4 3 3 <1 history2 0.4 7.5 |
| 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 ppm ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >3 >20 >3 | 2 9 59 0 917 1046 1044 1178 3257 current 3 <1 2 current 0.2 5.8 18.6 | 4 0 61 <1 972 1101 939 1223 2911 history1 6 <1 2 history1 0.5 8.8 20.9 | 9 0 56 <1 958 1096 1018 1272 3587 history2 4 3 3 <1 history2 0.4 7.5 20.3 |
| 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 ppm TS ppm ppm ppm ppm ppm | ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7615 | 0 0 0 1010 1070 1150 2260 2060 225 220 220 imit/base >3 20 >30 30 | 2 9 59 0 917 1046 1044 1178 3257 current 3 < 17 2 current 0.2 5.8 18.6 current | 4 0 61 <1 972 1101 939 1223 2911 history1 6 <1 2 history1 0.5 8.8 20.9 history1 | 9 0 56 <1 958 1096 1018 1272 3587 history2 4 3 3 <1 history2 0.4 7.5 20.3 history2 |



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 Odor | scalar | *Visual *Visual | NORML NORML | | NORML NORML | NORML NORML |
| Emulsified Water | scalar scalar | *Visual | >0.2 | NORML NEG | NORML | NORML |
| Free Water | scalar | *Visual | | NEG | NEG | NEG |
| FLUID PROPE | | method | limit/base | current | history1 | history |
| Visc @ 100°C | cSt | | 15.4 | 13.8 | 13.3 | 13.4 |
| GRAPHS | | | | | | |
| Ferrous Alloys | | | | | | |
| | | | 1 | | | |
| Non-ferrous Metal | Nov22/23 | | Dec21/23 | | | |
| Non-ferrous Metal | | | Dec21/23 | | | |
| Non-ferrous Metal | s | | Dec21/23 | Base Number | | |
| Non-ferrous Metal | s | | Dec21/23 | Base Number | - | |
| Non-ferrous Metal | s | | Dec21/23 | | | |
| Non-ferrous Metal | s | | 0.01 ase ymuper (uo KOH(0) 4.0. | | | |
| Non-ferrous Metal | s | | Dec21/23 | | | |

Ę Ś De 3 Ś De : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 958 - Tri County HC Morton Laboratory Sample No. : GFL0103590 Recieved : 26 Dec 2023 1090 W. Jefferson St. Lab Number : 06045392 Diagnosed : 27 Dec 2023 Morton, IL Unique Number : 10806000 Diagnostician : Wes Davis US 61550 Test Package : FLEET Contact: Bryan Link Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. blink@gflenv.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F:

Submitted By: Also GFL958,958A, 958B - Bryan Link