

OIL ANALYSIS REPORT

Sample Rating Trend NORMAL

Area (C0804129) {UNASSIGNED}

Diesel Engine PETRO CANADA DURON SHP 15W40 (8 GAL)

834023

DIAGNOSIS

| SAMPLE INFORM | MATION | method | limit/base | current | history1 | history2 |
|---|---|--|---|---|---|--|
| Sample Number | | Client Info | | GFL0122175 | GFL0118094 | GFL0115695 |
| Sample Date | | Client Info | | 24 May 2024 | 15 May 2024 | 12 Apr 2024 |
| Machine Age | hrs | Client Info | | 2146 | 2106 | 1902 |
| Oil Age | hrs | Client Info | | 390 | 350 | 146 |
| Oil Changed | | Client Info | | Changed | Not Changd | Not Changd |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >3.0 | <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 | >90 | 17 | 16 | 7 |
| Chromium | ppm | ASTM D5185m | >20 | <1 | <1 | 0 |
| Nickel | ppm | ASTM D5185m | >2 | <1 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | <1 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | 3 | 2 | <1 |
| Lead | ppm | ASTM D5185m | >40 | 2 | 0 | 0 |
| Copper | ppm | ASTM D5185m | >330 | 4 | 4 | 0 |
| Tin | ppm | ASTM D5185m | >15 | 1 | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| | | | | - | | |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| ADDITIVES Boron | ppm | method ASTM D5185m | limit/base 0 | - | | history2 7 |
| | ppm ppm | | 0 | current | history1 | |
| Boron | | ASTM D5185m | 0 | current 4 | history1 4 | 7 |
| Boron Barium | ppm | ASTM D5185m ASTM D5185m | 0 0 60 | current 4 0 | history1 4 0 | 7 0 |
| Boron Barium Molybdenum | ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 | current 4 0 67 | history1 4 0 67 | 7 0 59 |
| Boron Barium Molybdenum Manganese | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 | current 4 0 67 1 | history1 4 0 67 1 | 7 0 59 0 |
| Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 | current 4 0 67 1 953 | history1 4 0 67 1 900 | 7 0 59 0 840 |
| Boron Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 | Current 4 0 67 1 953 1129 | history1 4 0 67 1 900 1059 | 7 0 59 0 840 1010 |
| 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 | Current 4 0 67 1 953 1129 1010 | history1 4 0 67 1 900 1059 1001 | 7 0 59 0 840 1010 934 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | 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 | current 4 0 67 1 953 1129 1010 1266 | history1 4 0 67 1 900 1059 1001 1201 | 7 0 59 0 840 1010 934 1118 |
| 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 ASTM D5185m ASTM D5185m | 0 0 60 1010 1070 1150 1270 2060 limit/base | Current 4 0 67 1 953 1129 1010 1266 3268 | history1 4 0 67 1 900 1059 1001 1201 3099 | 7 0 59 0 840 1010 934 1118 3033 |
| 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 1010 1070 1150 1270 2060 limit/base | current 4 0 67 1 953 1129 1010 1266 3268 current | history1 4 0 67 1 900 1059 1001 1201 3099 history1 | 7 0 59 0 840 1010 934 1118 3033 history2 |
| 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 1010 1070 1150 1270 2060 limit/base | current 4 0 67 1 953 1129 1010 1266 3268 current 5 | history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 | 7 0 59 0 840 1010 934 1118 3033 history2 4 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium | 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 0 1010 1070 1150 1270 2060 limit/base >25 | current 4 0 67 1 953 1129 1010 1266 3268 current 5 6 | history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 6 | 7 0 59 0 840 1010 934 1118 3033 history2 4 4 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium | 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 | current 4 0 67 1 953 1129 1010 1266 3268 current 5 6 5 6 5 | history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 6 1 | 7 0 59 0 840 1010 934 1118 3033 history2 4 4 0 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED | ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm | ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >6 | current 4 0 67 1 953 1129 1010 1266 3268 current 5 6 5 6 5 6 5 current | history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 6 1 wistory1 | 7 0 59 0 840 1010 934 1118 3033 history2 4 4 4 0 bistory2 |
| 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 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >6 | current 4 0 67 1 953 1129 1010 1266 3268 current 5 6 5 6 5 0 | history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 6 1 wistory1 0.1 | 7 0 59 0 840 1010 934 1118 3033 history2 4 4 4 0 history2 0 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration | ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm spm | ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >6 >20 | current 4 0 67 1 953 1129 1010 1266 3268 current 5 6 5 6 5 0 8.8 | history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 6 1 history1 0.1 7.7 | 7 0 59 0 840 1010 934 1118 3033 history2 4 4 4 0 history2 0 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 spm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >6 >20 >30 | current 4 0 67 1 953 1129 1010 1266 3268 current 5 6 5 0 8.8 18.9 | history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 6 1 history1 0.1 7.7 18.4 | 7 0 59 0 840 1010 934 1118 3033 history2 4 4 4 0 0 history2 0 6.6 17.6 |
| 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 ppm | ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415 | 0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >6 >20 imit/base >6 >20 30 | current 4 0 67 1 953 1129 1010 1266 3268 current 5 6 5 current 0 8.8 18.9 current | history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 6 1 history1 4 6 1 0.1 7.7 18.4 history1 | 7 0 59 0 840 1010 934 1118 3033 history2 4 4 4 0 history2 0 history2 0 6.6 17.6 |

Recommendation Resample at the next service interval to monitor.

Wear All component wear rates are normal.

Contamination

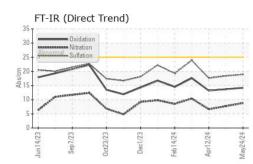
There is no indication of any contamination in the oil.

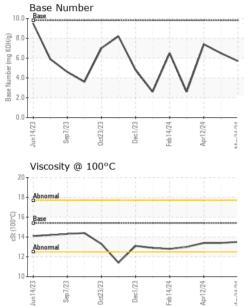
Fluid Condition

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



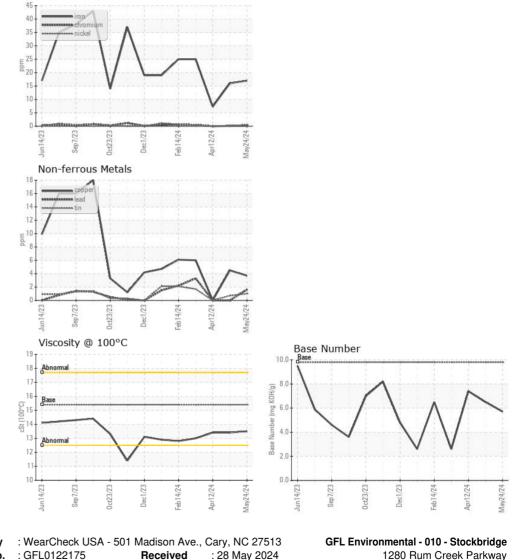
OIL ANALYSIS REPORT





| VISUAL | | method | limit/base | current | history1 | history2 |
|------------------|--------|-----------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | LIGHT | 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 | 13.5 | 13.4 | 13.4 |
| GRAPHS | | | | | | |

Ferrous Alloys



Laboratory Sample No. : GFL0122175 Received : 28 May 2024 1280 Rum Creek Parkway Lab Number : 06193408 Tested : 30 May 2024 Stockbridge, GA Unique Number : 11050160 Diagnosed : 30 May 2024 - Wes Davis US 30281 Test Package : FLEET Contact: JOSHUA TINKER Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. joshuatinker@gflenv.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: F:

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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Submitted By: JOSHUA TINKER Page 2 of 2