

OIL ANALYSIS REPORT



Machine Id **2828**

Component Diesel Engine

Fluid PETRO CANADA DURON SHP 15W40 (11 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.

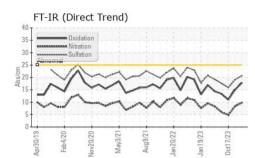
Fluid Condition

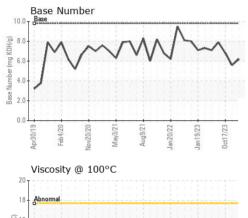
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

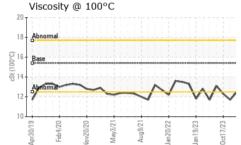
| SAMPLE INFORI | MATION | method | limit/base | current | history1 | history2 |
|---|--|---|---|--|--|--|
| Sample Number | | Client Info | | GFL0114505 | GFL0074620 | GFL0092473 |
| Sample Date | | Client Info | | 03 Apr 2024 | 08 Jan 2024 | 17 Oct 2023 |
| Machine Age | hrs | Client Info | | 14028 | 13460 | 13016 |
| Oil Age | hrs | Client Info | | 568 | 487 | 43 |
| Oil Changed | | Client Info | | Changed | Changed | Not Changd |
| Sample Status | | | | NORMAL | ATTENTION | ATTENTION |
| CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >5 | <1.0 | 0.2 | <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 | 12 | 9 | 2 |
| Chromium | ppm | ASTM D5185m | >20 | 1 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | <1 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | 2 | 2 | 1 |
| Lead | ppm | ASTM D5185m | >40 | 2 | 0 | <1 |
| Copper | ppm | ASTM D5185m | >330 | 1 | <1 | 0 |
| Tin | ppm | ASTM D5185m | >15 | <1 | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| | | | | | | |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| ADDITIVES Boron | ppm | method ASTM D5185m | limit/base | current 6 | history1 2 | history2 5 |
| | ppm ppm | | | | | - |
| Boron | | ASTM D5185m | 0 | 6 | 2 | 5 |
| Boron Barium | ppm | ASTM D5185m ASTM D5185m | 0 | 6 0 | 2 0 | 5 0 |
| Boron Barium Molybdenum | ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 | 6 0 65 | 2 0 58 | 5 0 56 |
| Boron Barium Molybdenum Manganese | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 | 6 0 65 <1 | 2 0 58 0 | 5 0 56 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 | 6 0 65 <1 870 | 2 0 58 0 818 | 5 0 56 0 762 |
| 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 | 6 0 65 <1 870 1072 | 2 0 58 0 818 959 | 5 0 56 0 762 902 |
| 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 | 6 0 65 <1 870 1072 967 | 2 0 58 0 818 959 922 | 5 0 56 0 762 902 831 |
| 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 | 6 0 65 <1 870 1072 967 1181 | 2 0 58 0 818 959 922 1109 | 5 0 56 0 762 902 831 1057 |
| 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 | 0 0 60 0 1010 1070 1150 1270 2060 | 6 0 65 <1 870 1072 967 1181 2790 | 2 0 58 0 818 959 922 1109 2811 | 5 0 56 0 762 902 831 1057 2738 |
| 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 | 6 0 65 <1 870 1072 967 1181 2790 current | 2 0 58 0 818 959 922 1109 2811 history1 | 5 0 56 0 762 902 831 1057 2738 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 ASTM D5185m | 0 0 60 1010 1070 1150 1270 2060 | 6 0 65 <1 870 1072 967 1181 2790 current 6 | 2 0 58 0 818 959 922 1109 2811 history1 4 | 5 0 56 0 762 902 831 1057 2738 history2 3 |
| 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 | 0 0 60 1010 1070 1150 1270 2060 limit/base >25 | 6 0 65 <1 870 1072 967 1181 2790 Current 6 9 | 2 0 58 0 818 959 922 1109 2811 history1 4 3 | 5 0 56 0 762 902 831 1057 2738 history2 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 limit/base >25 | 6 0 65 <1 870 1072 967 1181 2790 current 6 9 5 | 2 0 58 0 818 959 922 1109 2811 history1 4 3 2 | 5 0 56 0 762 902 831 1057 2738 history2 3 <1 2 |
| 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 limit/base >25 | 6 0 65 <1 870 1072 967 1181 2790 current 6 9 5 5 | 2 0 58 0 818 959 922 1109 2811 history1 4 3 2 2 history1 | 5 0 56 0 762 902 831 1057 2738 history2 3 <1 2 2 |
| 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 limit/base >25 >20 limit/base | 6 0 65 <1 870 1072 967 1181 2790 current 6 9 5 5 current 0.3 | 2 0 58 0 818 959 922 1109 2811 history1 4 3 2 2 history1 0.3 | 5 0 56 0 762 902 831 1057 2738 history2 3 <1 2 2 history2 0.1 |
| 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 limit/base >25 >20 limit/base >3 >20 | 6 0 65 <1 870 1072 967 1181 2790 current 6 9 5 current 0.3 9.8 | 2 0 58 0 818 959 922 1109 2811 history1 4 3 2 2 history1 0.3 8.4 | 5 0 56 0 762 902 831 1057 2738 history2 3 <1 2 3 <1 2 history2 0.1 4.8 |
| 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 | 6 0 65 <1 870 1072 967 1181 2790 <u>current</u> 6 9 5 5 <u>current</u> 0.3 9.8 20.7 | 2 0 58 0 818 959 922 1109 2811 history1 4 3 2 2 history1 0.3 8.4 19.1 | 5 0 56 0 762 902 831 1057 2738 history2 3 <1 2 history2 0.1 4.8 15.9 |



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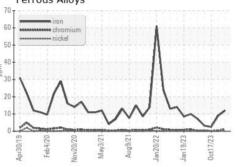


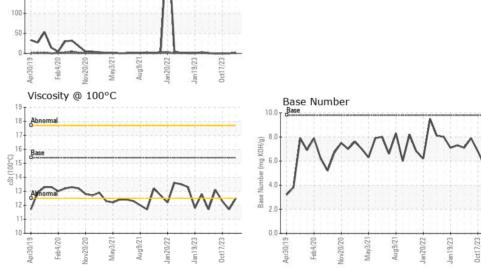
| VISUAL | | method | limit/base | current | history1 | history2 |
|------------------|--------|-----------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate | scalar | *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 | RTIES | method | limit/base | current | history1 | history2 |
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | 12.5 | 11.7 | 12.3 |
| GRAPHS | | | | | | |

Ferrous Alloys

Non-ferrous Metals

300





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 095 - Atlanta West Sample No. : GFL0114505 Received : 05 Apr 2024 2699 Cochran Industrial Blvd Lab Number : 06139501 Tested : 05 Apr 2024 Douglasville, GA Unique Number : 10964309 Diagnosed : 05 Apr 2024 - Wes Davis US 30127-1332 Test Package : FLEET Contact: Darrell Welch Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. darrell.welch@gflenv.com T: (800)207-6618 * - 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)

Report Id: GFL095 [WUSCAR] 06139501 (Generated: 04/05/2024 17:47:45) Rev: 1

Submitted By: Darrell Welch

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