

OIL ANALYSIS REPORT

Sample Rating Trend



Area (YA139888) 3720 Component Diesel Engine

Fluid

PETRO CANADA DURON SHP 15W40 (46 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.

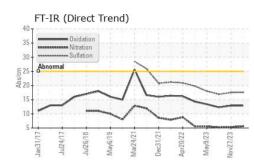
Fluid Condition

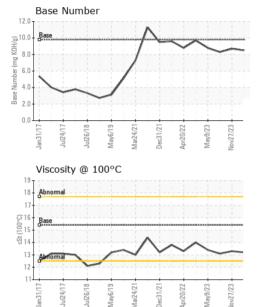
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| SAMPLE INFORM | MATION | method | limit/base | current | history1 | history2 |
|---|--|--|--|--|--|--|
| Sample Number | | Client Info | | GFL0111975 | GFL0098794 | GFL0092507 |
| Sample Date | | Client Info | | 21 Feb 2024 | 27 Nov 2023 | 17 Aug 2023 |
| Machine Age | hrs | Client Info | | 68534 | 68534 | 0 |
| Oil Age | hrs | Client Info | | 68534 | 68534 | 423 |
| Oil Changed | | Client Info | | N/A | N/A | 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 | >75 | 4 | 1 | 6 |
| Chromium | ppm | ASTM D5185m | >5 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | 0 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >15 | 2 | 1 | 2 |
| Lead | ppm | ASTM D5185m | >25 | 0 | 0 | <1 |
| Copper | ppm | ASTM D5185m | >100 | <1 | 0 | <1 |
| Tin | ppm | ASTM D5185m | >4 | 0 | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| | | | | | | |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| ADDITIVES Boron | ppm | method ASTM D5185m | limit/base | current 5 | history1 16 | history2 2 |
| | ppm ppm | | | | | |
| Boron Barium | ppm | ASTM D5185m | 0 | 5 | 16 | 2 |
| Boron | | ASTM D5185m ASTM D5185m | 0 | 5 8 | 16 0 | 2 0 |
| Boron Barium Molybdenum | ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 | 5 8 56 | 16 0 57 | 2 0 59 |
| Boron Barium Molybdenum Manganese | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 | 5 8 56 0 | 16 0 57 <1 | 2 0 59 <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 | 5 8 56 0 796 | 16 0 57 <1 868 | 2 0 59 <1 943 |
| 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 | 5 8 56 0 796 995 | 16 0 57 <1 868 1012 | 2 0 59 <1 943 1168 |
| 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 | 5 8 56 0 796 995 929 | 16 0 57 <1 868 1012 999 | 2 0 59 <1 943 1168 1012 |
| 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 | 5 8 56 0 796 995 929 1086 | 16 0 57 <1 868 1012 999 1177 | 2 0 59 <1 943 1168 1012 1233 |
| 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 | 5 8 56 0 796 995 929 1086 3008 | 16 0 57 <1 868 1012 999 1177 2953 | 2 0 59 <1 943 1168 1012 1233 3676 |
| 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 | 0 0 60 1010 1070 1150 1270 2060 | 5 8 56 0 796 995 929 1086 3008 current | 16 0 57 <1 868 1012 999 1177 2953 history1 | 2 0 59 <1 943 1168 1012 1233 3676 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 ASTM D5185m | 0 0 60 0 1010 1070 1150 1270 2060 limit/base | 5 8 56 0 796 995 929 1086 3008 current 3 | 16 0 57 <1 868 1012 999 1177 2953 history1 3 | 2 0 59 <1 943 1168 1012 1233 3676 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 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 | 5 8 56 0 796 995 929 1086 3008 <u>current</u> 3 0 | 16 0 57 <1 868 1012 999 1177 2953 history1 3 2 | 2 0 59 <1 943 1168 1012 1233 3676 history2 3 3 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 >20 | 5 8 56 0 796 995 929 1086 3008 <u>current</u> 3 0 2 | 16 0 57 <1 868 1012 999 1177 2953 history1 3 2 2 <1 | 2 0 59 <1 943 1168 1012 1233 3676 history2 3 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 >20 | 5 8 56 0 796 995 929 1086 3008 <i>current</i> 3 0 2 | 16 0 57 <1 868 1012 999 1177 2953 history1 3 2 <1 4 history1 | 2 0 59 <1 943 1168 1012 1233 3676 history2 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 ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20 | 5 8 56 0 796 995 929 1086 3008 <u>current</u> 3 0 2 2 <u>current</u> 0.1 | 16 0 57 <1 868 1012 999 1177 2953 history1 3 2 <1 3 2 <1 0.1 | 2 0 59 <1 943 1168 1012 1233 3676 history2 3 3 1 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 TS ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 20 1imit/base >20 | 5 8 56 0 796 995 929 1086 3008 <i>current</i> 3 0 2 <i>current</i> 0.1 5.6 | 16 0 57 <1 868 1012 999 1177 2953 history1 3 2 2 <1 3 2 <1 history1 0.1 5.3 | 2 0 59 <1 943 1168 1012 1233 3676 history2 3 3 3 1 history2 0.1 5.2 |
| 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 <u>imit/base</u> >6 >20 20 | 5 8 56 0 796 995 929 1086 3008 <u>current</u> 3 0 2 2 <u>current</u> 0.1 5.6 17.6 | 16 0 57 <1 868 1012 999 1177 2953 history1 3 2 <1 3 2 <1 0.1 5.3 17.5 | 2 0 59 <1 943 1168 1012 1233 3676 history2 3 3 1 history2 0.1 5.2 16.9 |



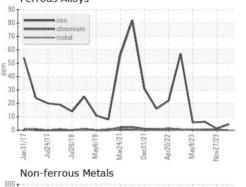
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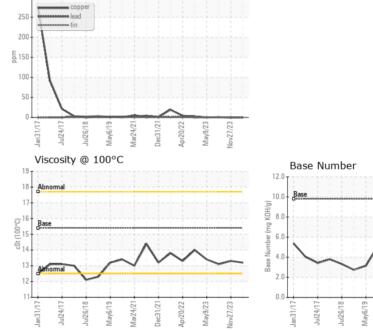


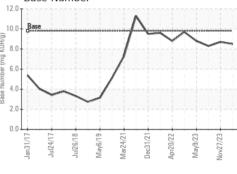


| VISUAL | | method | limit/base | current | history1 | history2 |
|------------------|--------|-----------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate | scalar | *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 | 13.2 | 13.3 | 13.1 |
| GRAPHS | | | | | | |

Ferrous Alloys







Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 19DR - Deep Run/TriEast Sample No. : GFL0111975 Received : 26 Feb 2024 2287 Leslie R Stroud Road Kinston, NC Lab Number : 06100016 Tested : 27 Feb 2024 US 28504-9477 Unique Number : 10898246 Diagnosed : 27 Feb 2024 - Wes Davis Test Package : FLEET Contact: Spencer Liggon Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. spencer.liggon@gflenv.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (800)207-6618 F:

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

Report Id: GFL19DR [WUSCAR] 06100016 (Generated: 05/24/2024 14:39:20) Rev: 1

Submitted By: TIMOTHY WATSON

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