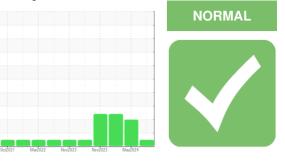


OIL ANALYSIS REPORT

Sample Rating Trend



4564M Component Diesel Engine

PETRO CANADA DURON SHP 15W40 (5 GAL)

| Recommendation | |
|----------------|--|

DIAGNOSIS

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Area

(BA85865)

Wear

All component wear rates are normal.

Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

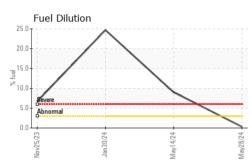
Fluid Condition

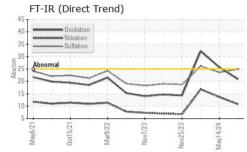
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

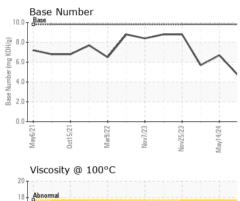
| SAMPLE INFORI | MATION | method | limit/base | current | history1 | history2 |
|---|---|---|---|--|---|---|
| Sample Number | | Client Info | | GFL0124775 | GFL0115058 | GFL0106674 |
| Sample Date | | Client Info | | 28 May 2024 | 14 May 2024 | 30 Jan 2024 |
| Machine Age | hrs | Client Info | | 27561 | 22474 | 21889 |
| Oil Age | hrs | Client Info | | 672 | 585 | 551 |
| Oil Changed | | Client Info | | Changed | Changed | Changed |
| Sample Status | | | | NORMAL | SEVERE | SEVERE |
| CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| | 0 | and the set | 11.0011/10.000 | | In the second | la la tarra O |
| WEAR METAL | 5 | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >75 | 43 | 45 | 33 |
| Chromium | ppm | ASTM D5185m | >5 | <1 | 3 | 2 |
| Nickel | ppm | ASTM D5185m | >4 | 2 | 1 | <1 |
| Titanium | ppm | ASTM D5185m | >2 | 0 | <1 | 0 |
| Silver | ppm | ASTM D5185m | >2 | <1 | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >15 | 3 | 7 | 4 |
| Lead | ppm | ASTM D5185m | >25 | 5 | 2 | 0 |
| Copper | ppm | ASTM D5185m | >100 | 1 | 2 | 1 |
| Tin | ppm | ASTM D5185m | >4 | 2 | 1 | 0 |
| Vanadium | ppm | ASTM D5185m | | 0 | <1 | <1 |
| Cadmium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| 188111120 | | method | mmbase | Guircin | mistory | motoryz |
| Boron | ppm | ASTM D5185m | 0 | 2 | 0 | <1 |
| | ppm ppm | | | | · · · · · · · · · · · · · · · · · · · | |
| Boron | | ASTM D5185m | 0 | 2 | 0 | <1 |
| Boron Barium | ppm | ASTM D5185m ASTM D5185m | 0 0 60 | 2 <1 | 0 | <1 0 |
| Boron Barium Molybdenum | ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 | 2 <1 64 | 0 0 56 | <1 0 44 |
| Boron Barium Molybdenum Manganese | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 | 2 <1 64 1 | 0 0 56 <1 | <1 0 44 <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 <1 64 1 998 | 0 0 56 <1 882 | <1 0 44 <1 639 |
| 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 | 2 <1 64 1 998 1151 | 0 0 56 <1 882 974 | <1 0 44 <1 639 741 |
| 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 <1 64 1 998 1151 1113 | 0 0 56 <1 882 974 821 | <1 0 44 <1 639 741 692 |
| 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 <1 64 1 998 1151 1113 1406 | 0 0 56 <1 882 974 821 1153 | <1 0 44 <1 639 741 692 801 |
| 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 | 2 <1 64 1 998 1151 1113 1406 3190 | 0 0 56 <1 882 974 821 1153 2830 | <1 0 44 <1 639 741 692 801 1984 |
| 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 0 1010 1070 1150 1270 2060 | 2 <1 64 1 998 1151 1113 1406 3190 current | 0 0 56 <1 882 974 821 1153 2830 history1 | <1 0 44 <1 639 741 692 801 1984 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 | 2 <1 64 1 998 1151 1113 1406 3190 current 6 | 0 0 56 <1 882 974 821 1153 2830 history1 11 15 6 | <1 0 44 <1 639 741 692 801 1984 history2 9 |
| 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 1010 1070 1150 1270 2060 kimit/base >25 | 2 <1 64 1 998 1151 1113 1406 3190 current 6 8 | 0 0 56 <1 882 974 821 1153 2830 history1 11 15 | <1 0 44 <1 639 741 692 801 1984 history2 9 61 |
| 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 | 2 <1 64 1 998 1151 1113 1406 3190 current 6 8 5 | 0 0 56 <1 882 974 821 1153 2830 history1 11 15 6 | <1 0 44 <1 639 741 692 801 1984 history2 9 61 2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel | ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m | 0 0 60 1010 1070 1150 1270 2060 limit/base >25 >20 >20 | 2 <1 64 1 998 1151 1113 1406 3190 current 6 8 5 0.3 | 0 0 56 <1 882 974 821 1153 2830 history1 11 15 6 6 9.0 | <1 0 44 <1 639 741 692 801 1984 history2 9 61 2 2 24.7 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED | ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 2060 225 >20 >20 >20 >3.0 imit/base >6 | 2 <1 64 1 998 1151 1113 1406 3190 current 6 8 5 0.3 Current | 0 0 56 <1 882 974 821 1153 2830 history1 11 15 6 < ▲ 9.0 history1 | <1 0 44 <1 639 741 692 801 1984 history2 9 61 2 9 61 2 2 ▲ 24.7 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel 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 <i>limit/base</i> >25 >20 >3.0 | 2 <1 64 1 998 1151 1113 1406 3190 <i>current</i> 6 8 5 0.3 <i>current</i> 1.4 | 0 0 56 <1 882 974 821 1153 2830 history1 11 15 6 6 ▲ 9.0 history1 0.9 | <1 0 44 <1 639 741 692 801 1984 history2 9 61 2 9 61 2 2 2 4 24.7 history2 1.4 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D3524 method *ASTM D7844 | 0 0 0 1010 1070 1150 1270 2060 2060 225 >20 >3.0 imit/base >20 imit/base | 2 <1 64 1 998 1151 1113 1406 3190 <i>current</i> 6 8 5 0.3 <i>current</i> 1.4 10.8 | 0 0 56 <1 882 974 821 1153 2830 history1 11 15 6 9.0 • 9.0 • history1 0.9 13.7 | <1 0 44 <1 639 741 692 801 1984 history2 9 61 2 2 24.7 history2 1.4 1.4 16.8 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel 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 2060 >25 >20 >20 >3.0 limit/base >6 >20 >20 >3.0 | 2 <1 64 1 998 1151 1113 1406 3190 Current 6 8 5 0.3 Current 1.4 10.8 24.9 Current | 0 0 56 <1 882 974 821 1153 2830 history1 11 15 6 3 9.0 history1 0.9 13.7 23.6 history1 | <1 0 44 <1 639 741 692 801 1984 <p>bistory2 9 61 2 9 61 2 4.7 history2 1.4 16.8 26.2</p> |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD | 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 >20 >3.0 imit/base >6 >20 >3.0 | 2 <1 64 1 998 1151 1113 1406 3190 current 6 8 5 0.3 current 1.4 10.8 24.9 | 0 0 56 <1 882 974 821 1153 2830 history1 11 15 6 3 9.0 history1 0.9 13.7 23.6 | <1 0 44 <1 639 741 692 801 1984 <p>history2 9 61 2 24.7 history2 1.4 16.8 26.2</p> |

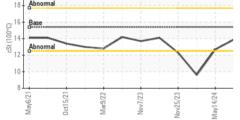


OIL ANALYSIS REPORT



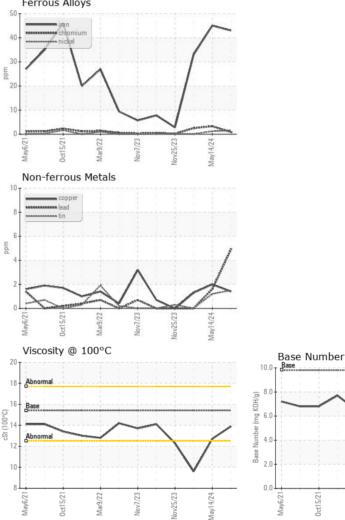


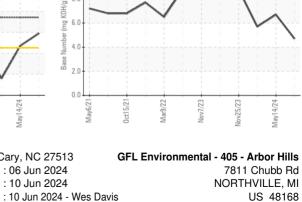




| VISUAL | | method | limit/base | current | history1 | history2 |
|------------------|--------|-----------|------------|---------|----------|-------------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate | scalar | *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 | 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 | 13.9 | 12.7 | 9 .6 |
| GRAPHS | | | | | | |

Ferrous Alloys





Certificate 12367

Unique Number : 11063326 Diagnosed Test Package : FLEET (Additional Tests: PercentFuel) To discuss this sample report, contact Customer Service at 1-800-237-1369. * - 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)

: GFL0124775

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Received

Tested

: 06 Jun 2024

: 10 Jun 2024

Report Id: GFL405 [WUSCAR] 06201203 (Generated: 06/10/2024 08:32:57) Rev: 1

Laboratory

Sample No.

Lab Number : 06201203

Submitted By: John Nahal Page 2 of 2

ahopkins@gflenv.com

T:

F:

Contact: Anthony Hopkins