

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 920053

Component

Diesel Engine

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.

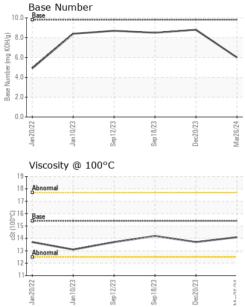
Fluid Condition

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 | | GFL0116863 | GFL0107104 | GFL0091551 |
| Sample Date | | Client Info | | 26 Mar 2024 | 20 Dec 2023 | 18 Sep 2023 |
| Machine Age | hrs | Client Info | | 8509 | 7874 | 7329 |
| Oil Age | hrs | Client Info | | 600 | 600 | 600 |
| Oil Changed | | Client Info | | Changed | Not Changd | N/A |
| Sample Status | | | | NORMAL | NORMAL | 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 | 20.L | NEG | NEG | NEG |
| - | 0 | | | - | - | |
| WEAR METAL | 5 | method | limit/base | current | history1 | history2 |
| Iron | ppm | | >110 | 13 | 10 | 4 |
| Chromium | ppm | ASTM D5185m | >4 | <1 | <1 | 0 |
| Nickel | ppm | ASTM D5185m | >2 | <1 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >25 | 2 | 3 | 1 |
| Lead | ppm | ASTM D5185m | >45 | 0 | 0 | 0 |
| Copper | ppm | ASTM D5185m | >85 | 2 | <1 | 1 |
| Tin | ppm | ASTM D5185m | >4 | 2 | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| | | | | | | |
| ADDITIVES | •• | method | limit/base | current | history1 | history2 |
| ADDITIVES Boron | ppm | method ASTM D5185m | limit/base | | history1 0 | history2 2 |
| | | | | current | | |
| Boron | ppm | ASTM D5185m | 0 | current <1 | 0 | 2 |
| Boron Barium | ppm ppm | ASTM D5185m ASTM D5185m | 0 | current <1 0 | 0 | 2 0 |
| Boron Barium Molybdenum | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 | current <1 0 60 | 0 0 58 | 2 0 58 |
| Boron Barium Molybdenum Manganese | ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 | current <1 0 60 <1 | 0 0 58 0 | 2 0 58 0 |
| Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 | current <1 0 60 <1 985 | 0 0 58 0 914 | 2 0 58 0 945 |
| Boron Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 | <1 0 60 <1 985 1108 | 0 0 58 0 914 1053 | 2 0 58 0 945 1140 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus | 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 | <1060<19851108975 | 0 0 58 0 914 1053 1020 | 2 0 58 0 945 1140 1005 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | ppm 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 | <1 0 60 <1 985 1108 975 1255 | 0 0 58 0 914 1053 1020 1196 | 2 0 58 0 945 1140 1005 1237 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur | 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 | <pre>current <1 0 60 <1 985 1108 975 1255 3218</pre> | 0 0 58 0 914 1053 1020 1196 3396 | 2 0 58 0 945 1140 1005 1237 3580 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN | ppm 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 | current <1 0 60 <1 985 1108 975 1255 3218 current | 0 0 58 0 914 1053 1020 1196 3396 history1 | 2 0 58 0 945 1140 1005 1237 3580 history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon | ppm 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 0 1010 1070 1150 1270 2060 Limit/base >30 | <1 0 60 <1 985 1108 975 1255 3218 | 0 0 58 0 914 1053 1020 1196 3396 history1 3 | 2 0 58 0 945 1140 1005 1237 3580 history2 4 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium | ppm ppm 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 | 0 0 60 0 1010 1070 1150 1270 2060 Limit/base >30 | <1 0 60 <1 985 1108 975 1255 3218 current 3 5 | 0 0 58 0 914 1053 1020 1196 3396 history1 3 0 | 2 0 58 0 945 1140 1005 1237 3580 history2 4 2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 limit/base >30 | <1 0 60 <1 985 1108 975 1255 3218 current 3 5 1 | 0 0 58 0 914 1053 1020 1196 3396 history1 3 0 3 | 2 0 58 0 945 1140 1005 1237 3580 history2 4 2 2 <1 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 Imit/base >30 >20 | <1 0 60 <1 985 1108 975 1255 3218 current 3 5 1 current 3 5 1 current | 0 0 58 0 914 1053 1020 1196 3396 history1 3 0 3 3 | 2 0 58 0 945 1140 1005 1237 3580 history2 4 2 <1 + |
| 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 Imit/base >30 >20 Imit/base | <1 0 60 <1 985 1108 975 1255 3218 current 3 5 1 current 0.8 | 0 0 58 0 914 1053 1020 1196 3396 history1 3 0 3 history1 0.3 | 2 0 58 0 945 1140 1005 1237 3580 history2 4 2 <1 kistory2 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 TS ppm ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 imit/base >30 220 imit/base >3 >20 | current <1 0 60 <1 985 1108 975 1255 3218 current 3 5 1 current 0.8 9.7 | 0 0 58 0 914 1053 1020 1196 3396 history1 3 0 3 history1 0.3 6.4 | 2 0 58 0 945 1140 1005 1237 3580 history2 4 2 <1 2 <1 history2 0.1 5.3 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415 | 0 0 0 1010 1070 1150 1270 2060 2060 2060 2060 200 200 200 200 20 | <1 0 60 <1 985 1108 975 1255 3218 current 3 5 1 current 0.8 9.7 21.3 | 0 0 58 0 914 1053 1020 1196 3396 history1 3 0 3 history1 0.3 6.4 18.4 history1 | 2 0 58 0 945 1140 1005 1237 3580 history2 4 2 <1 history2 0.1 5.3 17.7 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 ppm ppm TS ppm ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 Imit/base >30 20 Imit/base >3 >20 | <1 0 60 <1 985 1108 975 1255 3218 current 3 5 1 current 0.8 9.7 21.3 | 0 0 58 0 914 1053 1020 1196 3396 history1 3 0 3 history1 0.3 6.4 18.4 | 2 0 58 0 945 1140 1005 1237 3580 history2 4 2 <1 kistory2 0.1 5.3 17.7 |



OIL ANALYSIS REPORT



| ***** | | | VISUAL | | | 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 |
| Sep 18/23 | Dec20/23 | Mar26/24 | Appearance | scalar | *Visual | NORML | NORML | NORML | NORML |
| Sep 20 | Der | Main and Angel | 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 | ERTIES | method | limit/base | current | history1 | history2 |
| | | | Visc @ 100°C | cSt | ASTM D445 | 15.4 | 14.1 | 13.7 | 14.2 |
| | | | GRAPHS | | | | | | |
| | | | Ferrous Alloys | | | | | | |
| 23 | | 3 5 | iron | | 1 | | | | |
| Sep18/23 | Dec20/23 | 1 a c~1 | 60 - chromium | | | | | | |
| ő | ć | | 50 | | | | | | |
| | | | ₽ ⁴⁰ 30 | | | | | | |
| | | | 30 | | | | | | |
| | | | 20 | | | | | | |
| | | | 10 | | | | | | |
| | | | 0 | | | | | | |
| | | | 23 23 | 1/23 | /23 | /24 | | | |
| | | | 10, 10, 12 | 1 18 | 20 | 26 | | | |
| | | | Jan 20/22 Jan 10/23 | Sep 12/23 | Dec20/23 | Mar26/24 | | | |
| | | | Non-ferrous Meta | | Dec20 | Mar26 | | | |
| | | | | | Dec20 | Mar26 | | | |
| | | | Non-ferrous Meta | | Dec20 | Mar26 | | | |
| | | | Non-ferrous Meta | | Dec20 | Mar26 | | | |
| | | | Non-ferrous Meta | | Dec20 | Mar26 | | | |
| | | | Non-ferrous Meta | | Dec20 | Mar26 | | | |
| | | | Non-ferrous Meta | | Dec20 | Mar26 | | | |
| | | | Non-ferrous Meta | | Dec20 | Mar26 | | | |
| | | | Non-ferrous Meta | | Dec20 | Mar26 | | | |
| | | | Non-ferrous Meta | als | | | | | |
| | | | Non-ferrous Meta | | | Mar26/24 Mar26 | | | |
| | | | Non-ferrous Meta | als | | | Rase Number | | |
| | | | Non-ferrous Meta | als | | Mar26/24 | Base Number | - | |
| | | | Non-ferrous Meta | als | | + t- 10.0 | | - | |
| | | | Non-ferrous Meta | als | | + t- 10.0 | | - | |
| | | | Non-ferrous Meta | als | | + t- 10.0 | | | |
| | | | Non-ferrous Meta | als | | + t- 10.0 | | | |
| | | | Non-ferrous Meta | als | | 10.0 Base Mumber (mg K0H(0) Mar26/24 Mar29/20 Ma | | | |
| | | | Non-ferrous Meta | als | | 0.01 pag 0.03 (um g K0H(0) 0.03 (um g K0H(0) 0.03 (um g K0H(0) | | | |
| | | | Non-ferrous Meta | als F7771dag C | Dec2023 | 10.0 Wat2922 Wat2920 Base Mumber Mag Base Source Base Source Base Source Base Source Base Source Sou | Base | | |
| | | | Non-ferrous Meta | als F7771dag C | Dec2023 | 10.0 Wat2922 Wat2920 Base Mumber Mag Base Source Base Source Base Source Base Source Base Source Sou | Base | | 20/23 |
| | | | Non-ferrous Meta | als | Dec20/23 | 10.0- (b)HOX but with a second | | Sep18/23 | Dec20/23 |
| | La | boratory | Non-ferrous Meta | als 57771 dag C C | Dec20/23 | 10.0 Base Number (ng) Wat28(2) Base Number (ng) Wat28(2) Base Number (ng) Base | Jan 20/22 | Sep12/23 | |
| | | boratory mple No. | Non-ferrous Meta | als 57771 dag C C | EZU02200 EZU02200 | 10.0 Base Number (ng) Wat28(2) Base Number (ng) Wat28(2) Base Number (ng) Base | Jan 20/22 | | |
| | Sa La | mple No. b Number | Non-ferrous Meta | als 57771dag C D1 Madiso | EZU02290 EZU02290 EEZU02290 EEZU02290 EEZU02290 EEZU02290 | 10.0 (0,Hoy Bu) Jaquing 80.0 (0,Hoy Bu) Jaquing 80.0 (0,0) | GFL I | Sep12/23 | - 465 - Pontiac 888 Baldwir Pontiac, M |
| | Sa La Uni | imple No. b Number ique Number | Non-ferrous Meta | als ECZ01 deg C D1 Madiso Recei Teste | EZU02290 EZU02290 EEZU02290 EEZU02290 EEZU02290 EEZU02290 | 10.0 (9)Hoy Bul Jaquing 80.0 (9)Hoy Bul Jaqu | GFL I | Sapi Brzz Environmental | - 465 - Pontiac 888 Baldwir Pontiac, M US 48340 |
| | Sa La Uni Te: | mple No. b Number ique Number st Package | Non-ferrous Meta | als EZIII des C D1 Madiso Recei Teste Diagr | error Ave., Cary ived : 27 ed : 28 nosed : 01 | 10.0 | GFL I | Environmental Contact: F | - 465 - Pontiac 888 Baldwir |

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Submitted By: Ricky Matthews

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