

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 4665M Component

Fluid

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.

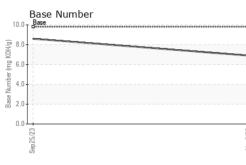
Fluid Condition

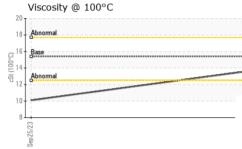
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| SAMPLE INFOR | MATION | method | limit/base | current | history1 | history2 |
|---|--|---|---|---|---|--|
| Sample Number | | Client Info | | GFL0059161 | GFL0085049 | |
| Sample Date | | Client Info | | 08 Nov 2023 | 25 Sep 2023 | |
| Machine Age | mls | Client Info | | 123560 | 17391 | |
| Oil Age | mls | Client Info | | 123560 | 17391 | |
| Oil Changed | | Client Info | | Changed | N/A | |
| Sample Status | | | | NORMAL | ABNORMAL | |
| CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >5 | <1.0 | 1.3 | |
| Glycol | | WC Method | | NEG | NEG | |
| WEAR METAL | .S | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >80 | 31 | 57 | |
| Chromium | ppm | ASTM D5185m | >5 | <1 | 3 | |
| Nickel | ppm | ASTM D5185m | >2 | <1 | <1 | |
| Titanium | ppm | ASTM D5185m | | 0 | <1 | |
| Silver | ppm | ASTM D5185m | >3 | ۰ <1 | <1 | |
| Aluminum | ppm | ASTM D5185m | | 2 | 54 | |
| Lead | ppm | ASTM D5185m | >30 | 2 <1 | 5 | |
| Copper | ppm | ASTM D5185m | | 2 | 34 | |
| Tin | | ASTM D5185m | >5 | 0 | 4 | |
| Vanadium | ppm | ASTM D5185m | >0 | 0 | 0 | |
| | ppm | ASTM D5185m | | 0 | 0 | |
| Cadmium | ppm | ASTIVI DOTIODITI | | U | 0 | |
| | | | | | | |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| Boron | ppm | ASTM D5185m | 0 | 0 | 31 | history2 |
| Boron Barium | ppm | ASTM D5185m ASTM D5185m | 0 | 0 6 | 31 5 | history2 |
| Boron Barium Molybdenum | | ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 | 0 6 62 | 31 5 48 | |
| Boron Barium Molybdenum Manganese | ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 | 0 6 62 <1 | 31 5 48 6 | |
| Boron Barium Molybdenum Manganese Magnesium | ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 | 0 6 62 <1 891 | 31 5 48 6 588 | |
| Boron Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 | 0 6 62 <1 891 1074 | 31 5 48 6 588 1600 | |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus | 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 | 0 6 62 <1 891 1074 1009 | 31 5 48 6 588 1600 755 | |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 1010 1070 1150 1270 | 0 6 62 <1 891 1074 | 31 5 48 6 588 1600 755 954 | |
| 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 ASTM D5185m | 0 0 60 0 1010 1070 1150 | 0 6 62 <1 891 1074 1009 | 31 5 48 6 588 1600 755 | |
| 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 1010 1070 1150 1270 | 0 6 62 <1 891 1074 1009 1188 | 31 5 48 6 588 1600 755 954 | |
| 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 | 0 6 62 <1 891 1074 1009 1188 3167 | 31 5 48 6 588 1600 755 954 2231 | |
| 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 | 0 6 62 <1 891 1074 1009 1188 3167 current | 31 5 48 6 588 1600 755 954 2231 history1 | |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon | 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 >20 | 0 6 62 <1 891 1074 1009 1188 3167 current 4 | 31 5 48 6 588 1600 755 954 2231 history1 ▲ 44 | history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium | 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 >20 | 0 6 62 <1 891 1074 1009 1188 3167 current 4 0 | 31 5 48 6 588 1600 755 954 2231 history1 ▲ 44 9 | history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED | ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 limit/base >20 | 0 6 62 <1 891 1074 1009 1188 3167 current 4 0 9 | 31 5 48 6 588 1600 755 954 2231 history1 ▲ 44 9 167 | history2 |
| 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 60 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 | 0 6 62 <1 891 1074 1009 1188 3167 current 4 0 9 | 31 5 48 6 588 1600 755 954 2231 ▲ 44 9 167 history1 | history2 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 1010 1070 1150 1270 2060 limit/base >20 limit/base >3 >20 | 0 6 62 <1 891 1074 1009 1188 3167 <i>current</i> 4 0 9 <i>current</i> | 31 5 48 6 588 1600 755 954 2231 history1 ▲ 44 9 167 history1 0.4 | history2 history2 |
| 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 1010 1070 1150 1270 2060 limit/base >20 limit/base >3 >20 | 0 6 62 <1 891 1074 1009 1188 3167 <i>current</i> 4 0 9 <i>current</i> 0.6 10.0 | 31 5 48 6 588 1600 755 954 2231 history1 ▲ 44 9 167 history1 0.4 8.2 | history2 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 ppm | ASTM D5185m ASTM D5185m | 0 0 1010 1070 1150 1270 2060 limit/base >20 limit/base >3 >20 >3 >20 | 0 6 62 <1 891 1074 1009 1188 3167 <u>current</u> 4 0 9 <u>current</u> 0.6 10.0 21.4 | 31 5 48 6 588 1600 755 954 2231 ▲ 44 9 167 history1 0.4 8.2 19.6 | history2 history2 history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D7844 *ASTM D7844 | 0 0 60 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20 imit/base >3 >20 imit/base | 0 6 62 <1 891 1074 1009 1188 3167 <i>current</i> 4 0 9 <i>current</i> 0.6 10.0 21.4 | 31 5 48 6 588 1600 755 954 2231 Nistory1 ▲ 44 9 167 Nistory1 0.4 8.2 19.6 Nistory1 | history2 history2 history2 history2 |



OIL ANALYSIS REPORT





| | VISUAL | | method | limit/base | | | history2 |
|---|--|---------------------------------------|---------------------------------------|---|-------------------|---------------------------------------|--|
| | White Metal | scalar | *Visual | NONE | NONE | NONE | |
| | Yellow Metal | scalar | *Visual | NONE | NONE | NONE | |
| | Precipitate | scalar | *Visual | NONE | NONE | NONE | |
| | Silt | scalar | *Visual | NONE | NONE | NONE | |
| | Debris | scalar | *Visual | NONE | NONE | NONE | |
| | Sand/Dirt | scalar | *Visual | NONE | NONE | NONE | |
| /23 | Appearance | scalar | *Visual | NORML | NORML | NORML | |
| Nav8/23 | Odor | scalar | *Visual | NORML | NORML | NORML | |
| | Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG | |
| | Free Water | scalar | *Visual | 20.L | NEG | NEG | |
| | FLUID PROPE | | method | limit/base | current | history1 | history2 |
| | Visc @ 100°C | cSt | ASTM D445 | | 13.6 | ▲ 10.1 | |
| | GRAPHS | 001 | A31101 D443 | 13.4 | 15.0 | 10.1 | |
| | Ferrous Alloys | | | | | | |
| | 60 T | | | | | | |
| | 50 - nickel | | | | | | |
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| | 3ep 25/23 | | | Nov8/23 | | | |
| | Non-ferrous Meta | als | | | | | |
| | ³⁵ T | | | | | | |
| | 30 - copper | | | | | | |
| | 25- | | | | | | |
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| | Sep25/23 | - | | Nov8/23 - | | | |
| | | С | | | Base Numb | er | |
| | Viscosity @ 100° | С | | 10.0 | | er | |
| | Viscosity @ 100° | С | | 10.0 | | er | |
| | Viscosity @ 100° Abnomal | С | | 10.0 | | er | |
| | Viscosity @ 100° Abnomal | C | | 10.0 | | er | |
| | Viscosity @ 100° ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁰ | C | | 10.0 | | er | |
| | Viscosity @ 100° Abnormal Abnormal Base Abnormal Abnormal 21 4 Abnormal 21 4 4 Abnormal | c | | 10.0 | | er | |
| | Viscosity @ 100° ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁰ | c | | | | er | |
| | Viscosity @ 100° | с | | 10.0 (CHO) 20 (CHO) 2 | Base | er | |
| | Viscosity @ 100° | C | | 10.0 (CHO) 20 (CHO) 2 | Base | er | |
| | Viscosity @ 100° | c | | 10.0 (BHO) BU uuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuu | | er | |
| | Viscosity @ 100° | | son Ave Ca | 10.0 (BHO) BO (BHO) B | Base Sup 25/23 | | |
| Laboratory Sample No. | Viscosity @ 100° Abnormal Abnormal Abnormal Abnormal Construction Base Abnormal Construction Base Construction Base Construction Base Construction Base Construction Base Construction Constructi | 501 Madia Received | d :14 N | 10.0 (BHO) BU MU BER 2.0 EZ000 Try, NC 27513 Nov 2023 | Base Sup 25/23 | :nvironmental - 410 | 9 - Michigan We |
| Laboratory Sample No. Lab Number | Viscosity @ 100° | 501 Madia Received Diagnose | d :14 M ed :14 M | 10.0 (PHO) BU 4.0 (PHO) PHO) BU 4.0 (PHO) PHO (PHO) P | Base Sup 25/23 | :nvironmental - 410 | - Michigan We 00 Van Born F Wayne, N |
| Laboratory Sample No. Lab Number Unique Number | Viscosity @ 100° Anomal Anomal Base : WearCheck USA - : GFL0059161 : 06006716 : 10740478 | 501 Madia Received | d :14 M ed :14 M | 10.0 (BHO) BU MU BER 2.0 EZ000 Try, NC 27513 Nov 2023 | Base Sup 25/23 | invironmental - 410 3900 | 9 - Michigan We D0 Van Born F Wayne, N US 4818 |
| Laboratory Sample No. Lab Number | Viscosity @ 100° Abnomal Abnomal Abnomal Control (Control (Contro) (Control (Control (Control (Contro) (Control (Con | 501 Madia Received Diagnost | d : 14 M ed : 14 M tician : Wes | 10.0 (a) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c | Base Sup 25/23 | invironmental - 410 3900 Contac | - Michigan We 00 Van Born F Wayne, I |