

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 809M Component Gasoline Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)

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.

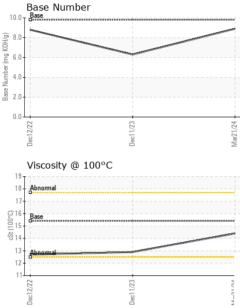
Fluid Condition

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

| · | | | 2022 | Dec2023 Mar20 | | |
|--|--|--|---|--|---|--|
| SAMPLE INFOR | MATION | method | limit/base | current | history1 | history2 |
| Sample Number | | Client Info | | GFL0108737 | GFL0105655 | GFL0064050 |
| Sample Date | | Client Info | | 21 Mar 2024 | 11 Dec 2023 | 12 Dec 2022 |
| Machine Age | hrs | Client Info | | 26835 | 26835 | 24519 |
| Oil Age | hrs | Client Info | | 26835 | 24519 | 0 |
| Oil Changed | | Client Info | | Not Changd | Changed | Changed |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >4.0 | <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 | >150 | 6 | 32 | 27 |
| Chromium | ppm | ASTM D5185m | >20 | 0 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >5 | 0 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 1 |
| Aluminum | ppm | ASTM D5185m | >40 | 2 | <1 | 1 |
| Lead | ppm | ASTM D5185m | >50 | 0 | <1 | 1 |
| Copper | ppm | ASTM D5185m | >155 | 0 | <1 | 1 |
| Tin | ppm | ASTM D5185m | >10 | 0 | 0 | <1 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| | | | | | | |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| ADDITIVES | ppm | method | limit/base | current | 0 history1 | 0 history2 |
| | | | limit/base | | | - |
| ADDITIVES | ppm | method ASTM D5185m | | current | history1 | history2 |
| ADDITIVES Boron Barium | ppm ppm | method ASTM D5185m | 0 | current <1 | history1 1 | history2 3 |
| ADDITIVES Boron Barium Molybdenum | ppm ppm ppm | method ASTM D5185m ASTM D5185m | 0 | current <1 0 | history1 1 0 | history2 3 0 |
| ADDITIVES Boron Barium | ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 | current <1 0 58 | history1 1 0 54 | history2 3 0 63 |
| ADDITIVES Boron Barium Molybdenum Manganese | ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 | current <1 0 58 0 | history1 1 0 54 <1 | history2 3 0 63 <1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 | current <1 0 58 0 1000 | history1 1 0 54 <1 976 | history2 3 0 63 <1 894 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 | <1 0 58 0 1000 1150 | history1 1 0 54 <1 976 1048 | history2 3 0 63 <1 894 1145 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus | ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 1150 | <1 0 58 0 1000 1150 1122 | history1 1 0 54 <1 976 1048 1010 | history2 3 0 63 <1 894 1145 1036 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | 0 0 60 0 1010 1070 1150 1270 | current <1 0 58 0 1000 1150 1122 1297 | history1 1 0 54 <1 976 1048 1010 1214 | history2 3 0 63 <1 894 1145 1036 1253 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur | ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 1010 1070 1150 1270 2060 | <pre>current <1 0 58 0 1000 1150 1122 1297 3933</pre> | history1 1 0 54 <1 976 1048 1010 1214 2784 | history2 3 0 63 <1 894 1145 1036 1253 3078 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN | ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | 0 0 60 1010 1070 1150 1270 2060 limit/base | current <1 0 58 0 1000 1150 1122 1297 3933 current | history1 1 0 54 <1 976 1048 1010 1214 2784 history1 | history2 3 0 63 <1 894 1145 1036 1253 3078 history2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 limit/base >30 >400 | <1 0 58 0 1000 1150 1122 1297 3933 current 2 | history1 1 0 54 <1 976 1048 1010 1214 2784 history1 5 | history2 3 0 63 <1 894 1145 1036 1253 3078 history2 3 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 limit/base >30 >400 | <1 0 58 0 1000 1150 1122 1297 3933 current 2 1 | history1 1 0 54 <1 976 1048 1010 1214 2784 history1 5 2 | history2 3 0 63 <1 894 1145 1036 1253 3078 history2 3 0 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | 0 0 60 0 1010 1070 1150 1270 2060 limit/base >30 >400 >20 | <1 0 58 0 1000 1150 1122 1297 3933 current 2 1 2 1 2 1 2 1 2 1 2 1 1 | history1 1 0 54 <1 976 1048 1010 1214 2784 history1 5 2 0 | history2 3 0 63 <1 894 1145 1036 1253 3078 history2 3 0 1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED | ppm ppm ppm ppm ppm ppm ppm ppm ppm TS | method ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 Imit/base >30 >400 >20 | <1 0 58 0 1000 1150 1122 1297 3933 current 2 1 2 1 <1 current | history1 1 0 54 <1 976 1048 1010 1214 2784 history1 5 2 0 history1 | history2 3 0 63 <1 894 1145 1036 1253 3078 history2 3 0 1 history2 |
| ADDITIVES 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 | method ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 Imit/base >30 >400 >20 | <1 0 58 0 1000 1150 1122 1297 3933 current 2 1 2 1 <1 current 0.2 | history1 1 0 54 <1 976 1048 1010 1214 2784 history1 5 2 0 history1 0.2 | history2 3 0 63 <1 894 1145 1036 1253 3078 history2 3 0 1 history2 3 0 1 history2 3 0 1 history2 0.2 |
| ADDITIVES 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 | method ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >30 >400 >20 | <1 0 58 0 1000 1150 1122 1297 3933 current 2 1 <1 current 0.2 5.7 | history1 1 0 54 <1 976 1048 1010 1214 2784 history1 5 2 0 history1 0.2 11.2 | history2 3 0 63 <1 894 1145 1036 1253 3078 history2 3 0 1 history2 0 1 history2 0.2 10.8 |
| ADDITIVES 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 | method ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 Iinit/base >30 >400 >20 Iinit/base | <1 0 58 0 1000 1150 1122 1297 3933 current 2 1 <1 current 0.2 5.7 18.1 | history1 1 0 54 <1 976 1048 1010 1214 2784 history1 5 2 0 history1 0.2 11.2 22.8 | history2 3 0 63 <1 894 1145 1036 1253 3078 history2 3 0 1 history2 0 1 history2 0.2 10.8 22.8 |
| ADDITIVES 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 | method ASTM D5185m ASTM D7185M ASTM D7624 *ASTM D7624 *ASTM D7415 | 0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200 | <1 0 58 0 1000 1150 1122 1297 3933 current 2 1 <1 current 0.2 5.7 18.1 current | history1 1 0 54 <1 976 1048 1010 1214 2784 history1 5 2 0 history1 0.2 11.2 22.8 history1 | history2 3 0 63 <1 894 1145 1036 1253 3078 history2 3 0 1 history2 3 0 1 history2 0.2 10.8 22.8 history2 |



OIL ANALYSIS REPORT



| | VISUAL | | method | | | | 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 |
| /23 - | Appearance | scalar | *Visual | NORML | NORML | NORML | NORML |
| Dec11/23 Mar21/24 | Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| | Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG | NEG |
| | | | | >0.2 | | | |
| | Free Water | scalar | *Visual | Parel de cara | NEG | NEG | NEG |
| | FLUID PROPI Visc @ 100°C | cSt | method ASTM D445 | limit/base | current 14.4 | history1 12.9 | history2 12.7 |
| | GRAPHS | CSI | A311VI D443 | 13.4 | 14.4 | 12.9 | 12.7 |
| | Ferrous Alloys | | | | | | |
| | ³⁵ | | | | | | |
| Dec11/23 | 30 - chromium | | | | | | |
| Dec | 25 - nickel | | | | | | |
| | E 20 | | | | | | |
| | E 20 E 15 | | · · · · · · · · · · · · · · · · · · · | | | | |
| | 10- | | | | | | |
| | 5- | | | | | | |
| | | 1 | | | | | |
| | | | ***** | 24 | | | |
| | Dec1 2/22 | Dec11/23 | | Mar21/24 | | | |
| | □ Non-ferrous Meta | _ | | 2 | | | |
| | 10 _T | 115 | | | | | |
| | copper | | | | | | |
| | 8 - management in | | | | | | |
| | 6- | | | | | | |
| | шdd | | | | | | |
| | 4 | | | | | | |
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| | Z + | | | | | | |
| | Address in such as the local division of the | | | | | | |
| | | Constanting of Consta | | - | | | |
| | 0 - 2772 | 11/23 | | 21/24 | | | |
| | Dec 1772 | Dec11/23 | | Mar21/24 | | | |
| | َ Viscosity @ 100° | Dec11 | | Mar21/24 | Base Number | | |
| | Viscosity @ 100° | Dec11 | | Mar21/24 | Base Number | | |
| | َ Viscosity @ 100° | Dec11 | | ≥ 10.0 | | | |
| | Viscosity @ 100° | Dec11 | | ≥ 10.0 | | | |
| | Viscosity @ 100° | Dec11 | | ≥ 10.0 | | | |
| | Viscosity @ 100° | Dec11 | | ≥ 10.0 | | | |
| | Viscosity @ 100° | Dec11 | | ≥ 10.0 | Base | | _ |
| | Viscosity @ 100° | Dec11 | | W 10.0 8.0 9.6 6.0 9.6 9.0 9.6 9.0 9.0 9.0 9.6 9.0 9.6 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 | Base | | |
| | Abnormal Base 3 4 4 4 4 4 4 4 4 4 4 4 4 4 | Dec11 | | ≥ 10.0 | Base | | |
| | Abnormal Base Abnormal Abnormal Abnormal Abnormal Abnormal Abnormal | C | | ■ 10.0 (6,0 8.0 (6,0 4.0 (6,0 4.0 (7,0 4.0) (7,0 4.0) (| Base | | |
| | Abnormal Base Abnormal Abnormal Abnormal Abnormal Abnormal Abnormal | C | | ■ 10.0 (6,0 8.0 (6,0 4.0 (6,0 4.0 (7,0 4.0) (7,0 4.0) (| Base | | |
| | Base Base Base Base Base Base Base Base | Dec11 | | ≥ 10.0 (0,140) B.0 10,0 B.0 1 | Base | Dec11/23 | |
| laboratory | Viscosity @ 100° | Deci1/23 | on Ave. Caru | W 10.0 (0,10,10,10,10,10,10,10,10,10,10,10,10,10 | Base | Dec11/23 | |
| Laboratory Sample No. | Abnormal Base Abnormal Abnormal Abnormal Abnormal Abnormal Abnormal | Deci1/23 | | W 10.0 (0,10,10,10,10,10,10,10,10,10,10,10,10,10 | Base | | 5 - Michigan Ea |
| Sample No. Lab Number | Viscosity @ 100° | C EZUIDad | ived : 25 ed : 26 | E 10.0 (0,110,0 | GFL Env | vironmental - 415 | 5 - Michigan Ea 6200 Elmrido ling Heights, N |
| Sample No. Lab Number Unique Number | Viscosity @ 100° Viscosity @ 100° Abnormal Base Base Control of the second | C C EZUIDad D1 Madisco Recei Teste | ived : 25 ed : 26 | E 10.0 (0,410) 10.0 | GFL Env | vironmental - 415 | 6200 Elmridg ling Heights, N US 4831 |
| Sample No. Lab Number | Viscosity @ 100° Viscosity @ 100° Abnormal Base Base Control of the second | C C E C E C C C C C C C C C C C C C C C | ived : 25 ed : 26 nosed : 26 | E 10.0 (0,400) Bul Jaquing B | GFL Env | vironmental - 415 Ster Contac | 5 - Michigan Ea 6200 Elmrido ling Heights, N |



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Submitted By: Frank Wolak