

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id **4711M** Component **Diesel Engine** Fluid

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.

| SAMPLE INFOR | MATION | method | limit/base | current | history1 | history2 |
|---|--|--|---|--|---|--|
| Sample Number | | Client Info | | GFL0105593 | GFL0093142 | GFL0093145 |
| Sample Date | | Client Info | | 11 Dec 2023 | 14 Nov 2023 | 24 Oct 2023 |
| Machine Age | hrs | Client Info | | 12918 | 12762 | 12627 |
| Oil Age | hrs | Client Info | | 12762 | 12627 | 10505 |
| Oil Changed | | Client Info | | Not Changd | Changed | Changed |
| 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 | 20.L | NEG | NEG | NEG |
| - | 0 | | 1' | - | | |
| WEAR METAL | | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >75 | 12 | 10 | 45 |
| Chromium | ppm | ASTM D5185m | | <1 | <1 | 2 |
| Nickel | ppm | ASTM D5185m | >4 | 0 | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | | 3 | 3 | 8 |
| Lead | ppm | ASTM D5185m | >25 | <1 | 0 | 2 |
| Copper | ppm | ASTM D5185m | | 1 | 2 | 3 |
| Tin | ppm | ASTM D5185m | >4 | 0 | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| | | | | | | |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| ADDITIVES Boron | ppm | method ASTM D5185m | limit/base 0 | current <1 | <1 | history2 1 |
| Boron Barium | ppm ppm | | | | | |
| Boron Barium Molybdenum | | ASTM D5185m ASTM D5185m ASTM D5185m | 0 | <1 | <1 0 54 | 1 0 60 |
| Boron Barium | ppm | ASTM D5185m ASTM D5185m | 0 | <1 0 | <1 0 54 <1 | 1 0 60 <1 |
| Boron Barium Molybdenum Manganese Magnesium | ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 | <1 0 52 0 971 | <1 0 54 <1 889 | 1 0 60 <1 951 |
| Boron Barium Molybdenum Manganese | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 | <1 0 52 0 | <1 0 54 <1 889 1040 | 1 0 60 <1 951 1069 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus | ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 1150 | <1 0 52 0 971 1070 1049 | <1 0 54 <1 889 | 1 0 60 <1 951 1069 1039 |
| 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 | 0 0 60 0 1010 1070 1150 1270 | <1 0 52 0 971 1070 | <1 0 54 <1 889 1040 | 1 0 60 <1 951 1069 1039 1306 |
| 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 | <1 0 52 0 971 1070 1049 | <1 0 54 <1 889 1040 983 | 1 0 60 <1 951 1069 1039 |
| 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 | <1 0 52 0 971 1070 1049 1227 | <1 0 54 <1 889 1040 983 1230 | 1 0 60 <1 951 1069 1039 1306 |
| 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 | <1 0 52 0 971 1070 1049 1227 2978 | <1 0 54 <1 889 1040 983 1230 2767 | 1 0 60 <1 951 1069 1039 1306 2627 history2 11 |
| 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 | <1 0 52 0 971 1070 1049 1227 2978 current | <1 0 54 <1 889 1040 983 1230 2767 history1 | 1 0 60 <1 951 1069 1039 1306 2627 history2 |
| 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 ASTM D5185m | 0 0 60 1010 1070 1150 1270 2060 | <1 0 52 0 971 1070 1049 1227 2978 current 4 | <1 0 54 <1 889 1040 983 1230 2767 history1 5 | 1 0 60 <1 951 1069 1039 1306 2627 history2 11 |
| 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 ASTM D5185m | 0 0 60 1010 1070 1150 1270 2060 kimit/base >25 | <1 0 52 0 971 1070 1049 1227 2978 current 4 3 | <1 0 54 <1 889 1040 983 1230 2767 history1 5 4 | 1 0 60 <1 951 1069 1039 1306 2627 history2 11 7 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 limit/base >25 | <1 0 52 0 971 1070 1049 1227 2978 current 4 3 1 | <1 0 54 <1 889 1040 983 1230 2767 history1 5 4 2 | 1 0 60 <1 951 1069 1039 1306 2627 history2 11 7 5 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED | ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 2060 225 >25 | <1 0 52 0 971 1070 1049 1227 2978 current 4 3 1 2 | <1 0 54 <1 889 1040 983 1230 2767 history1 5 4 2 2 history1 | 1 0 60 <1 951 1069 1039 1306 2627 history2 11 7 5 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 limit/base >25 >20 limit/base | <1 0 52 0 971 1070 1049 1227 2978 current 4 3 1 current 0.5 | <1 0 54 <1 889 1040 983 1230 2767 history1 5 4 2 2 history1 0.3 | 1 0 60 <1 951 1069 1039 1306 2627 history2 11 7 5 history2 1.3 |
| 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 0 1010 1070 1150 1270 2060 2060 2060 225 20 20 20 1imit/base >20 | <1 0 52 0 971 1070 1049 1227 2978 <i>current</i> 4 3 1 <i>current</i> 0.5 8.0 | <1 0 54 <1 889 1040 983 1230 2767 history1 5 4 2 history1 0.3 6.5 | 1 0 60 <1 951 1069 1039 1306 2627 history2 11 7 5 history2 1.3 1.3 11.9 |
| 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 0 1010 1070 1150 1270 2060 2060 225 20 225 20 limit/base >20 limit/base >20 30 | <1 0 52 0 971 1070 1049 1227 2978 <i>current</i> 4 3 1 <i>current</i> 0.5 8.0 19.2 | <1 0 54 <1 889 1040 983 1230 2767 history1 5 4 2 2 history1 0.3 6.5 18.9 | 1 0 60 <1 951 1069 1039 1306 2627 history2 11 7 5 history2 1.3 11.9 24.4 |
| 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 D7844 *ASTM D7624 | 0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 20 20 20 20 20 20 20 20 20 20 20 | <1 0 52 0 971 1070 1049 1227 2978 Current 4 3 1 Current 0.5 8.0 19.2 Current | <1 0 54 <1 889 1040 983 1230 2767 history1 5 4 2 2 history1 0.3 6.5 18.9 history1 | 1 0 60 <1 951 1069 1039 1306 2627 history2 11 7 5 history2 1.3 11.9 24.4 history2 |



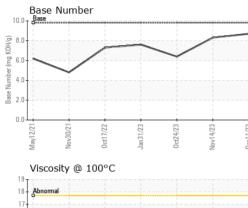
() 16 () 15 15 14 Base

> 13 Abnorma 12 11

May12/21.

OIL ANALYSIS REPORT

VISUAL



Oct17/22 ,

Jan31/23

Nov30/21

0ct24/23

| | 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 |
| 4/23 | Appearance | scalar | *Visual | NORML | NORML | NORML | NORML |
| Nov14/23 Dec11/23 | 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 | | method | limit/base | current | history1 | history2 |
| | Visc @ 100°C | cSt | ASTM D445 | | 13.1 | 13.9 | 13.8 |
| | GRAPHS | 001 | | | | | |
| | Ferrous Alloys | | | | | | |
| | 100 iron | | | | | | |
| Nov14/23 | 80 - | | | | | | |
| Nov | HICKEL | | | | | | |
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| | 40 | | \wedge | | | | |
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| | 20 | \setminus / | \sim | | | | |
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| | | 23 | 23 | 23 | | | |
| | May12/21 Nov30/21 Oct17/22 | Jan 31/23 | 0ct24/23 Nov14/23 | Dec11/23 | | | |
| | Non-ferrous Meta | | 0 2 | | | | |
| | 10 _T | IS | | | | | |
| | copper | | | | | | |
| | 8 - management tin | | | | | | |
| | | | | | | | |
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| | 2 | | \wedge | | | | |
| | 0 | Alternation | | AND DESCRIPTION OF | | | |
| | May12/21 Nov30/21 Oct17/22 | Jan31/23 | 0ct24/23 Nov14/23 | Dec11/23 | | | |
| | May Novi Octi | Jan | Nov1 | Deci | | | |
| | Viscosity @ 100°C | 2 | | | Base Number | | |
| | ¹⁹ | | | 10. | | | |
| | 18 - Abnormal | | | | | | |
| | 17 | | | (₿ ⁸ | .0 + | | |
| | G 16 Base 15 5 14 | | | P 6 | 0 | | |
| | ê_15- | | | Line Line | | | |
| | ³ 14 | 1 | | Base Number (mg KOH/g) | .0+ | | |
| | 13 Abnormal | \checkmark | | Base | | | |
| | 12 | | | ° 2. | .0 | | |
| | 11 | | | | | | |
| | May12/21 Nov30/21 0ct17/22 | Jan 31/23 | 0ct24/23 Nov14/23 | Dec11/23 | May12/21 Nov30/21 | 0ct17/22 Jan31/23 | Nov14/23 |
| | May Nov: Oct1 | Jan | Octi Nov1 | Dec | May Nov: | Jan2 | Nov1 |
| aboratory ample No. ab Number nique Number | : 06033157 | Received Diagnose | l :13 ed :14 | rry, NC 2751 Dec 2023 Dec 2023 s Davis | 3 GFL En | vironmental - 415 Ster | 5 - Michigan Eas 6200 Elmridge ling Heights, M US 48313 |
| Unique Number Test Package | | Diagnost | ician : We | s Davis US 4831 Contact: Frank Wola | | | |



Test Package : FLEET Certificate L2367 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)

