

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine Fluid

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.

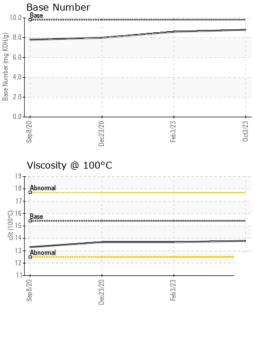
Fluid Condition

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 | | GFL0090096 | GFL0069457 | GFL0014098 |
| Sample Date | | Client Info | | 03 Oct 2023 | 03 Feb 2023 | 23 Dec 2020 |
| Machine Age | hrs | Client Info | | 36900 | 2144 | 0 |
| Oil Age | hrs | Client Info | | 600 | 0 | 0 |
| Oil Changed | | Client Info | | Changed | Changed | N/A |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >3.0 | <1.0 | <1.0 | <1.0 |
| Glycol | | WC Method | | NEG | NEG | NEG |
| WEAR METAL | S | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >120 | 3 | 9 | 9 |
| Chromium | ppm | ASTM D5185m | >20 | 0 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >5 | 0 | <1 | <1 |
| Titanium | ppm | ASTM D5185m | >2 | 0 | 0 | 6 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | <1 | 14 | 2 |
| Lead | ppm | ASTM D5185m | >40 | 0 | <1 | 1 |
| Copper | ppm | ASTM D5185m | >330 | 1 | <1 | <1 |
| Tin | ppm | ASTM D5185m | >15 | 0 | <1 | 0 |
| Antimony | ppm | ASTM D5185m | | | | 0 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| Boron | nnm | | | | | |
| | ppm | ASTM D5185m | 0 | 10 | 0 | 15 |
| Barium | ppm | ASTM D5185m ASTM D5185m | 0 | 10 0 | 0 | 15 0 |
| | | | | - | | |
| Barium | ppm | ASTM D5185m | 0 | 0 | 0 | 0 |
| Barium Molybdenum | ppm ppm | ASTM D5185m ASTM D5185m | 0 60 | 0 56 | 0 62 | 0 50 |
| Barium Molybdenum Manganese | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | 0 60 0 | 0 56 <1 | 0 62 <1 | 0 50 <1 |
| Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 60 0 1010 | 0 56 <1 922 | 0 62 <1 976 | 0 50 <1 843 |
| Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 60 0 1010 1070 | 0 56 <1 922 1098 | 0 62 <1 976 1081 | 0 50 <1 843 1066 |
| 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 60 0 1010 1070 1150 | 0 56 <1 922 1098 1002 | 0 62 <1 976 1081 1029 | 0 50 <1 843 1066 1060 |
| 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 | 0 60 0 1010 1070 1150 1270 | 0 56 <1 922 1098 1002 1237 | 0 62 <1 976 1081 1029 1313 | 0 50 <1 843 1066 1060 1164 |
| 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 60 0 1010 1070 1150 1270 2060 | 0 56 <1 922 1098 1002 1237 3144 | 0 62 <1 976 1081 1029 1313 3749 | 0 50 <1 843 1066 1060 1164 2496 |
| 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 60 0 1010 1070 1150 1270 2060 | 0 56 <1 922 1098 1002 1237 3144 current | 0 62 <1 976 1081 1029 1313 3749 history1 | 0 50 <1 843 1066 1060 1164 2496 history2 |
| 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 | 0 60 0 1010 1070 1150 1270 2060 Imit/base >25 | 0 56 <1 922 1098 1002 1237 3144 current 3 | 0 62 <1 976 1081 1029 1313 3749 history1 2 | 0 50 <1 843 1066 1060 1164 2496 history2 4 |
| 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 | 0 60 0 1010 1070 1150 1270 2060 Imit/base >25 | 0 56 <1 922 1098 1002 1237 3144 current 3 <1 | 0 62 <1 976 1081 1029 1313 3749 history1 2 3 | 0 50 <1 843 1066 1060 1164 2496 history2 4 3 |
| 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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 | 0 56 <1 922 1098 1002 1237 3144 <u>current</u> 3 <1 0 | 0 62 <1 976 1081 1029 1313 3749 history1 2 3 20 | 0 50 <1 843 1066 1060 1164 2496 history2 4 3 13 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED | ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm | ASTM D5185m ASTM D5185m | 0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 | 0 56 <1 922 1098 1002 1237 3144 current 3 <1 0 current | 0 62 <1 976 1081 1029 1313 3749 history1 2 3 20 history1 | 0 50 <1 843 1066 1060 1164 2496 history2 4 3 13 13 history2 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % | ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm | ASTM D5185m ASTM D5185m | 0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> | 0 56 <1 922 1098 1002 1237 3144 current 3 <1 0 current 0.1 | 0 62 <1 976 1081 1029 1313 3749 history1 2 3 20 history1 0.3 | 0 50 <1 843 1066 1060 1164 2496 history2 4 3 13 13 history2 0.9 |
| 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 60 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >20 | 0 56 <1 922 1098 1002 1237 3144 <u>current</u> 3 <1 0 <u>current</u> 0.1 5.3 | 0 62 <1 976 1081 1029 1313 3749 history1 2 3 20 history1 0.3 7.2 | 0 50 <1 843 1066 1060 1164 2496 history2 4 3 13 history2 0.9 8.8 |
| 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 60 0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >20 imit/base >4 >20 >30 | 0 56 <1 922 1098 1002 1237 3144 <u>current</u> 3 <1 0 <u>current</u> 0.1 5.3 17.4 | 0 62 <1 976 1081 1029 1313 3749 history1 2 3 20 history1 0.3 7.2 18.8 | 0 50 <1 843 1066 1060 1164 2496 history2 4 3 13 13 history2 0.9 8.8 20.3 |
| 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 TS ppm ppm ppm ppm | ASTM D5185m ASTM D7844 *ASTM D7624 | 0 60 1010 1070 1150 1270 2060 Imit/base >25 -20 Imit/base >20 >30 | 0 56 <1 922 1098 1002 1237 3144 <i>current</i> 3 <1 0 <i>current</i> 0.1 5.3 17.4 <i>current</i> | 0 62 <1 976 1081 1029 1313 3749 history1 2 3 20 history1 0.3 7.2 18.8 history1 | 0 50 <1 843 1066 1060 1164 2496 history2 4 3 13 history2 0.9 8.8 20.3 history2 |



OIL ANALYSIS REPORT



| | | | VISUAL | | method | limit/base | current | history1 | history2 |
|------------|---|---|--|---|---|---|-------------|---------------------------------------|--|
| | | | Vhite Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| | | | ellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| | | | recipitate | scalar | *Visual | NONE | NONE | NONE | NONE |
| 23 | | ilt | scalar | *Visual | NONE | NONE | NONE | NONE | |
| | | ebris | scalar | *Visual | NONE | NONE | NONE | NONE | |
| | | and/Dirt | scalar | *Visual | NONE | NONE | NONE | NONE | |
| Feb3/23 | | ppearance | scalar | *Visual | NORML | NORML | NORML | NORML | |
| | | |)dor | scalar | *Visual | NORML | NORML | NORML | NORML |
| | | | mulsified Water | scalar | *Visual | >0.2 | NEG | NEG | NEG |
| | | | ree Water | scalar | *Visual | | NEG | NEG | NEG |
| | | | FLUID PROPI | | method | limit/base | current | history1 | history2 |
| | | _ | | cSt | ASTM D445 | 15.4 | 13.8 | 13.7 | 13.7 |
| | | | GRAPHS Ferrous Alloys | | | | | | |
| | | ¹⁸ T | × | | | | | | |
| Feb 3/23 • | | 16 | iron chromium | | | | | | |
| Fer | | 14 12 | nickel | | | | | | |
| | | e ¹⁰ | | | | | | | |
| | | | | | | | | | |
| | | 6 4 | | | | | | | |
| | | 2 | | | | | | | |
| | | 0 | | CONTRACTOR OF STREET | | | | | |
| | | | Sep8/20 Jec23/20 | | Feb3/23 | 0ct3/23 | | | |
| | | | | | ш. | 0 | | | |
| | | ¹⁰ т | Non-ferrous Meta | ais | | | | | |
| | | | copper | | | | | | |
| | | 8- | tin | | | | | | |
| | | _ 6- | | | | | | | |
| | | bbm | | | | | | | |
| | | 1 | | | | | | | |
| | | 2- | State State State State State State State | | | | | | |
| | | 0 | 0 | and a ball a ball a ball a ball | S. | 200 C | | | |
| | | | Sep8/20 Jec23/20 | | Feb3/23 | 0ct3/23 | | | |
| | | | Viscosity @ 100° | С | | | Base Number | | |
| | | 19 18 | Abnormal | | | 10.0 | | | |
| | | 17- | | | | | | | |
| | | 16 | | | | KOH | | | |
| | | - 10 T | Base | | | B 6.0 | | | |
| | | 0.0015 | | | | | | | |
| | | (100°C) (100°C | | | | - 2 | | | |
| | | (2-001) 15- 14- 13- | Abnormal | | | 0.6 Base Number (mg KOH/d) | | | |
| | | | Abnormal | | | 2.0 | | | |
| | | 13 - 12 - 11 - | | | 5 | 2.0 | | 00 | 2 |
| | | 13 - 12 - 11 - | | | eb.3/23 | 2.0 | | sc23/20 | |
| | | 13 - 12 - 11 - | Sep 8.20 | | Feb3/23 | 2.0 | | Dec23/20 Ee413/23 | |
| d | Laboratory | 13 12 11 | VearCheck USA - | | son Ave., Ca | ry, NC 27513 | Sep 8/20 | ronmental - 030 - Co | nway Myrtle Bea |
| NAB | Sample No. | 13 12 11 : V : C | VearCheck USA - GFL0090096 | Received | son Ave., Ca 1 : 05 (| ry, NC 27513 Doct 2023 | Sep 8/20 | ronmental - 030 - Co | nway Myrtle Bea 3010 HWY 37 |
| | Sample No. Lab Number | 13 12 11 : V : C : O | VearCheck USA - GFL0090096 15970159 | Received Diagnos | son Ave., Ca 1 : 05 (ed : 05 (| ry, NC 27513 Dct 2023 Dct 2023 | Sep 8/20 | ronmental - 030 - Co | nway Myrtle Bea 3010 HWY 37 Conway, S |
| THE LESS T | Sample No. | 13 12 11 : V : C : 0 : 1 | VearCheck USA - GFL0090096 | Received | son Ave., Ca 1 : 05 (ed : 05 (| ry, NC 27513 Doct 2023 | | ronmental - 030 - Co | nway Myrtle Bea 3010 HWY 37 Conway, S US 2952 |
| | Sample No. Lab Number Unique Number Test Package sample report, | 13- 12- 11- : V : O : 0 : 1 : F cont | VearCheck USA - GFL0090096 15970159 0682109 | Received Diagnose Diagnost vice at 1-8 | son Ave., Ca d : 05 (ed : 05 (tician : Wes | ry, NC 27513 Oct 2023 Oct 2023 s Davis | | ronmental - 030 - Co Contact: CHET | nway Myrtle Bea 3010 HWY 3 Conway, S US 295 |

Submitted By: CHET STROSCHINE