

OIL ANALYSIS REPORT





Machine Id 920096-260369

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.

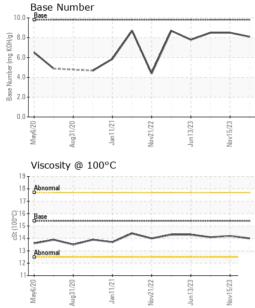
Fluid Condition

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

| May2020 Aug2020 Jan2021 Nov2023 Nov2023 | | | | | | | |
|--|--|--|--|---|---|---|--|
| SAMPLE INFOR | MATION | method | limit/base | current | history1 | history2 | |
| Sample Number | | Client Info | | GFL0102541 | GFL0098624 | GFL0093682 | |
| Sample Date | | Client Info | | 27 Nov 2023 | 15 Nov 2023 | 23 Oct 2023 | |
| Machine Age | hrs | Client Info | | 8807 | 8711 | 8579 | |
| Oil Age | hrs | Client Info | | 0 | 0 | 0 | |
| Oil Changed | | Client Info | | N/A | Not Changd | Not Changd | |
| 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 | | NEG | NEG | NEG | |
| WEAR METAL | S | method | limit/base | current | history1 | history2 | |
| Iron | ppm | ASTM D5185m | >100 | 9 | 7 | 3 | |
| Chromium | ppm | ASTM D5185m | >20 | <1 | <1 | <1 | |
| Nickel | ppm | ASTM D5185m | >4 | 0 | <1 | 0 | |
| Titanium | ppm | ASTM D5185m | | <1 | <1 | 0 | |
| Silver | ppm | ASTM D5185m | >3 | 0 | 0 | 0 | |
| Aluminum | ppm | ASTM D5185m | >20 | 2 | 2 | 1 | |
| Lead | ppm | ASTM D5185m | >40 | 0 | <1 | 0 | |
| Copper | ppm | | >330 | <1 | <1 | <1 | |
| Tin | ppm | ASTM D5185m | >15 | 0 | 0 | 0 | |
| Vanadium | ppm | ASTM D5185m | 10 | 0 | 0 | 0 | |
| Cadmium | ppm | ASTM D5185m | | 0 | <1 | 0 | |
| ADDITIVES | | method | limit/base | current | history1 | history2 | |
| Boron | nom | | 0 | 1 | <1 | 4 | |
| | DDIII | | | - | | | |
| | ppm mag | | | 5 | 9 | 0 | |
| Barium | ppm | ASTM D5185m | 0 | 5 60 | 9 61 | 0 54 | |
| Barium Molybdenum | ppm ppm | ASTM D5185m ASTM D5185m | 0 60 | 60 | 61 | 54 | |
| Barium Molybdenum Manganese | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | 0 60 0 | 60 0 | 61 <1 | 54 <1 | |
| Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 60 0 1010 | 60 0 874 | 61 <1 895 | 54 <1 865 | |
| 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 | 60 0 874 1056 | 61 <1 895 1033 | 54 <1 865 944 | |
| 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 | 60 0 874 1056 969 | 61 <1 895 1033 1019 | 54 <1 865 944 970 | |
| 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 | 60 0 874 1056 | 61 <1 895 1033 | 54 <1 865 944 | |
| 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 | 60 0 874 1056 969 1140 | 61 <1 895 1033 1019 1183 | 54 <1 865 944 970 1148 | |
| 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 | 0 60 0 1010 1070 1150 1270 2060 | 60 0 874 1056 969 1140 2979 current | 61 <1 895 1033 1019 1183 3113 history1 | 54 <1 865 944 970 1148 2879 history2 | |
| 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 | 0 60 0 1010 1070 1150 1270 2060 | 60 0 874 1056 969 1140 2979 current 2 | 61 <1 895 1033 1019 1183 3113 history1 3 | 54 <1 865 944 970 1148 2879 history2 2 | |
| 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 | 0 60 0 1010 1070 1150 1270 2060 kimit/base >25 | 60 0 874 1056 969 1140 2979 current | 61 <1 895 1033 1019 1183 3113 history1 | 54 <1 865 944 970 1148 2879 history2 | |
| 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 method ASTM D5185m ASTM D5185m | 0 60 0 1010 1070 1150 1270 2060 kimit/base >25 | 60 0 874 1056 969 1140 2979 current 2 0 | 61 <1 895 1033 1019 1183 3113 history1 3 3 | 54 <1 865 944 970 1148 2879 history2 2 4 | |
| 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 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 | 60 0 874 1056 969 1140 2979 current 2 0 4 current | 61 <1 895 1033 1019 1183 3113 history1 3 3 3 3 3 history1 | 54 <1 865 944 970 1148 2879 history2 2 4 <1 kistory2 | |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % | ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m | 0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> | 60 0 874 1056 969 1140 2979 current 2 0 4 current 0.5 | 61 <1 895 1033 1019 1183 3113 history1 3 3 3 3 3 history1 0.4 | 54 <1 865 944 970 1148 2879 history2 2 4 <1 history2 0.3 | |
| 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 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 | 60 0 874 1056 969 1140 2979 current 2 0 4 current | 61 <1 895 1033 1019 1183 3113 history1 3 3 3 3 3 history1 | 54 <1 865 944 970 1148 2879 history2 2 4 <1 kistory2 | |
| 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 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20 | 60 0 874 1056 969 1140 2979 <u>current</u> 2 0 4 <u>current</u> 0.5 6.7 | 61 <1 895 1033 1019 1183 3113 history1 3 3 3 3 3 history1 0.4 6.4 | 54 <1 865 944 970 1148 2879 history2 2 4 <1 history2 0.3 5.8 | |
| 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 D7844 *ASTM D7624 *ASTM D7624 | 0 60 1010 1070 1150 1270 2060 Imit/base >25 20 Imit/base >3 >20 >30 30 | 60 0 874 1056 969 1140 2979 current 2 0 4 current 0.5 6.7 19.1 current | 61 <1 895 1033 1019 1183 3113 history1 3 3 3 3 history1 0.4 6.4 19.1 history1 | 54 <1 865 944 970 1148 2879 history2 2 4 <1 history2 0.3 5.8 18.4 history2 | |
| 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 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20 >30 | 60 0 874 1056 969 1140 2979 current 2 0 4 current 0.5 6.7 19.1 | 61 <1 895 1033 1019 1183 3113 history1 3 3 3 3 history1 0.4 6.4 19.1 | 54 <1 865 944 970 1148 2879 history2 2 4 <1 history2 0.3 5.8 18.4 | |



OIL ANALYSIS REPORT



| 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 |
| Appearance | scalar | *Visual | NORML | NORML | NORML | NORML |
| Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG | NEG |
| Free Water | scalar | *Visual | | NEG | NEG | NEG |
| FLUID PROPER | RTIES | method | limit/base | current | history1 | history2 |
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | 14.0 | 14.2 | 14.1 |
| GRAPHS | | | | | | |
| May6/20 1 1/21 | Nov21/22 | Jun1323 | | | | |
| Non-ferrous Metals | ; | | | | | |
| Mary6i20 Bend Field Cobber Mary1/1/21 Land Mary1/1/21 Land Land Land Land Land Land Land Land | Nov21/22 | Juni 3/23 | | | | |
| Viscosity @ 100°C | | | | Base Number | | |
| 9 4 5 4 4 4 4 4 4 4 4 4 4 4 4 4 | | | 10.0 (6,0 (0)HOX (0) (0) (0) (0) (0) (0) (0) (0) (0) (0) | Base | ΛΓ | ~~ |

Number (4 (Base

0.0

Mav6/20

Aug31/20.

Jan11/21.



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)

Jan11/21.

Nov21/22

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Received

Diagnosed

Jun 13/23

Diagnostician : Wes Davis

Nov15/23

: 07 Dec 2023

: 09 Dec 2023

Aug31/20

: GFL0102541

: 06028407

13 Abnormal

12 11-

Laboratory

Sample No.

Lab Number

Unique Number : 10778198

Mav6/20

Nov21/22

Jun 13/23

Vov15/23