

OIL ANALYSIS REPORT

NORMAL

Machine Id 10482

Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (13 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.

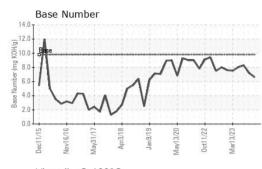
Fluid Condition

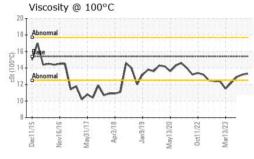
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| SAMPLE INFORI | MATION | method | limit/base | current | history1 | history2 |
|---|--|---|---|--|---|---|
| Sample Number | | Client Info | | GFL0091398 | GFL0088793 | GFL0086083 |
| Sample Date | | Client Info | | 01 Sep 2023 | 03 Aug 2023 | 28 Jun 2023 |
| Machine Age | hrs | Client Info | | 1280 | 13787 | 13553 |
| Oil Age | hrs | Client Info | | 325 | 687 | 478 |
| Oil Changed | | Client Info | | Not Changd | 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 |
| Glycol | | WC Method | | NEG | NEG | NEG |
| WEAR METAL | S | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >100 | 60 | 49 | 36 |
| Chromium | ppm | ASTM D5185m | >20 | 1 | 1 | 1 |
| Nickel | ppm | ASTM D5185m | >4 | 0 | <1 | <1 |
| Titanium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | 8 | 7 | 7 |
| Lead | ppm | ASTM D5185m | >40 | 0 | <1 | <1 |
| Copper | ppm | ASTM D5185m | >330 | 4 | 4 | 2 |
| Tin | ppm | ASTM D5185m | >15 | 0 | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| | | | Prest la reserve | | | histow.0 |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| Boron | ppm | ASTM D5185m | limit/base | current 5 | history1 9 | 12 |
| | ppm ppm | | | | | |
| Boron | | ASTM D5185m | 0 | 5 | 9 | 12 |
| Boron Barium | ppm | ASTM D5185m ASTM D5185m | 0 0 60 | 5 0 | 9 0 | 12 0 |
| Boron Barium Molybdenum | ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 | 5 0 61 | 9 0 63 | 12 0 62 |
| Boron Barium Molybdenum Manganese | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 | 5 0 61 <1 | 9 0 63 1 | 12 0 62 <1 |
| Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 | 5 0 61 <1 803 | 9 0 63 1 819 | 12 0 62 <1 811 |
| Boron Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 | 5 0 61 <1 803 1164 | 9 0 63 1 819 1095 | 12 0 62 <1 811 1081 |
| 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 | 5 0 61 <1 803 1164 902 | 9 0 63 1 819 1095 942 | 12 0 62 <1 811 1081 936 |
| 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 | 5 0 61 <1 803 1164 902 1162 | 9 0 63 1 819 1095 942 1188 | 12 0 62 <1 811 1081 936 1171 |
| 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 0 1010 1070 1150 1270 2060 | 5 0 61 <1 803 1164 902 1162 3003 | 9 0 63 1 819 1095 942 1188 3295 | 12 0 62 <1 811 1081 936 1171 3367 |
| 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 | 5 0 61 <1 803 1164 902 1162 3003 current | 9 0 63 1 819 1095 942 1188 3295 history1 | 12 0 62 <1 811 1081 936 1171 3367 history2 |
| Boron 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 method | 0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25 | 5 0 61 <1 803 1164 902 1162 3003 current 9 | 9 0 63 1 819 1095 942 1188 3295 history1 10 | 12 0 62 <1 811 1081 936 1171 3367 history2 6 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium | ppm 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 method ASTM D5185m | 0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25 | 5 0 61 <1 803 1164 902 1162 3003 current 9 26 | 9 0 63 1 819 1095 942 1188 3295 history1 10 20 | 12 0 62 <1 811 1081 936 1171 3367 history2 6 13 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m | 0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 | 5 0 61 <1 803 1164 902 1162 3003 current 9 26 1 | 9 0 63 1 819 1095 942 1188 3295 history1 10 20 2 | 12 0 62 <1 811 1081 936 1171 3367 history2 6 13 2 |
| 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 limit/base >25 | 5 0 61 <1 803 1164 902 1162 3003 current 9 26 1 1 current | 9 0 63 1 819 1095 942 1188 3295 history1 10 20 2 2 history1 | 12 0 62 <1 811 1081 936 1171 3367 history2 6 13 2 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 TS ppm ppm | ASTM D5185m ASTM D5185m | 0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20 | 5 0 61 <1 803 1164 902 1162 3003 <u>current</u> 9 26 1 1 <u>current</u> 2.3 | 9 0 63 1 819 1095 942 1188 3295 history1 10 20 2 2 history1 2 | 12 0 62 <1 811 1081 936 1171 3367 history2 6 13 2 history2 1.4 |
| 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 limit/base >25 >20 limit/base >3 >20 | 5 0 61 <1 803 1164 902 1162 3003 <i>current</i> 9 26 1 26 1 <i>current</i> 2.3 10.1 | 9 0 63 1 819 1095 942 1188 3295 history1 10 20 2 2 history1 2 8.9 | 12 0 62 <1 811 1081 936 1171 3367 history2 6 13 2 history2 1.4 9.1 |
| 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 imit/base >25 imit/base >3 >20 | 5 0 61 <1 803 1164 902 1162 3003 <u>current</u> 9 26 1 1 <u>current</u> 2.3 10.1 22.0 | 9 0 63 1 819 1095 942 1188 3295 history1 10 20 2 2 history1 2 8.9 20.5 | 12 0 62 <1 811 1081 936 1171 3367 history2 6 13 2 history2 1.4 9.1 19.4 |
| 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 TS ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D7844 *ASTM D7844 | 0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 220 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20 | 5 0 61 <1 803 1164 902 1162 3003 <i>current</i> 9 26 1 26 1 <i>current</i> 2.3 10.1 22.0 <i>current</i> | 9 0 63 1 819 1095 942 1188 3295 history1 10 20 2 2 history1 2 8.9 20.5 history1 | 12 0 62 <1 811 1081 936 1171 3367 history2 6 13 2 history2 1.4 9.1 19.4 history2 |

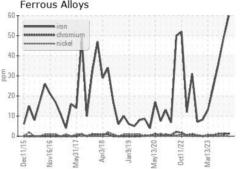


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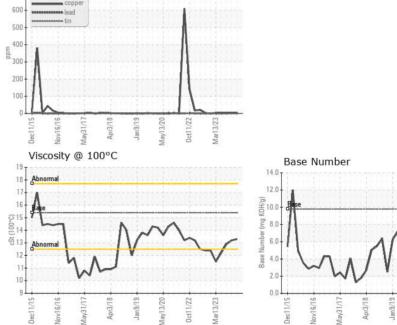


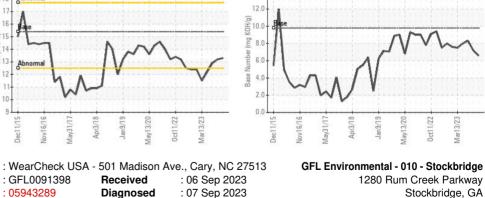
| VISUAL | | method | limit/base | current | history1 | history2 |
|------------------|--------|-----------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate | scalar | *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 PROPE | RTIES | method | limit/base | current | history1 | history2 |
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | 13.3 | 13.2 | 12.9 |
| GRAPHS | | | | | | |
| Ferrous Alloys | | | | | | |



Non-ferrous Metals

700





Stockbridge, GA US 30281 Contact: JOSHUA TINKER joshuatinker@gflenv.com T: F:



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)

Received

Diagnosed

Diagnostician : Wes Davis

: GFL0091398

: 05943289

Laboratory Sample No.

Lab Number

Unique Number : 10633901

Submitted By: JOSHUA TINKER