

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id **826023-1024**Component

Diesel Engine

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

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

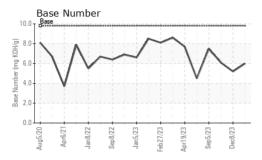
Fluid Condition

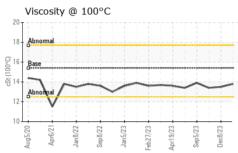
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| Client Info Client Info CREATINGS CREATINGS CREATING C | N SHP 15W40 (- | LIK) | ид2020 Apr20 | 121 Jan2022 Sep2022 Ja | n2023 Feb2023 Apr2023 Sep2023 | Dec2023 | |
|--|------------------|----------|--------------|------------------------|-------------------------------|-------------|-------------|
| Client Info | SAMPLE INFOR | MATION | method | limit/base | current | history1 | history2 |
| Machine Age hrs Client Info 17500 219907 219007 2190 | Sample Number | | Client Info | | GFL0113587 | GFL0103824 | GFL0097351 |
| Oil Age | Sample Date | | Client Info | | 01 Mar 2024 | 08 Dec 2023 | 28 Nov 2023 |
| Colient Info | Machine Age | hrs | Client Info | | 17500 | 219907 | 219907 |
| NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history2 water WC Method >3.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 NEG NEG | Oil Age | hrs | Client Info | | 497 | 592 | 73953 |
| CONTAMINATION | Oil Changed | | Client Info | | Changed | Changed | N/A |
| Water | Sample Status | | | | NORMAL | NORMAL | NORMAL |
| Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imitibase current history1 history2 Iron ppm ASTM D5185m >120 13 18 11 Chromium ppm ASTM D5185m >20 0 <1 | CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| WEAR METALS | Fuel | | WC Method | >3.0 | <1.0 | <1.0 | <1.0 |
| WEAR METALS method limit/base current history1 history2 | Water | | WC Method | >0.2 | NEG | NEG | NEG |
| ASTM D5185m STM D5185m ST | Glycol | | WC Method | | NEG | NEG | NEG |
| Chromium | WEAR METAL | _S | method | limit/base | current | history1 | history2 |
| Nickel | ron | ppm | ASTM D5185m | >120 | 13 | 18 | 11 |
| Description | Chromium | ppm | ASTM D5185m | >20 | 0 | <1 | 0 |
| Silver | Nickel | ppm | ASTM D5185m | >5 | 0 | <1 | <1 |
| Aluminum | Titanium | ppm | ASTM D5185m | >2 | 0 | <1 | 0 |
| Lead | Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Copper | Aluminum | ppm | ASTM D5185m | >20 | <1 | 1 | 2 |
| Tin | Lead | ppm | ASTM D5185m | >40 | <1 | 1 | 0 |
| Tin | Copper | ppm | ASTM D5185m | >330 | <1 | <1 | 0 |
| ADDITIVES | Γin | ppm | ASTM D5185m | >15 | 1 | 1 | 0 |
| ADDITIVES | Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Soron ppm ASTM D5185m 0 0 11 0 | Cadmium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| Barium | ADDITIVES | | method | limit/base | current | history1 | history2 |
| Molybdenum ppm ASTM D5185m 60 59 63 58 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 1081 965 939 Calcium ppm ASTM D5185m 1070 1232 1124 1084 Phosphorus ppm ASTM D5185m 1150 1026 1000 1057 Zinc ppm ASTM D5185m 1270 1356 1263 1287 Sulfur ppm ASTM D5185m 2060 2909 2950 2841 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 6 4 Sodium ppm ASTM D5185m >20 0 2 1 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 >4 | Boron | ppm | ASTM D5185m | 0 | 3 | 6 | 8 |
| Manganese ppm ASTM D5185m 0 <1 <1 Magnesium ppm ASTM D5185m 1010 1081 965 939 Calcium ppm ASTM D5185m 1070 1232 1124 1084 Phosphorus ppm ASTM D5185m 1150 1026 1000 1057 Zinc ppm ASTM D5185m 1270 1356 1263 1287 Sulfur ppm ASTM D5185m 2060 2909 2950 2841 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 6 4 Sodium ppm ASTM D5185m >20 0 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 0.4 Nitration Abs/:mm *ASTM D7815 | Barium | ppm | ASTM D5185m | 0 | 0 | 11 | 0 |
| Magnesium ppm ASTM D5185m 1010 1081 965 939 Calcium ppm ASTM D5185m 1070 1232 1124 1084 Phosphorus ppm ASTM D5185m 1150 1026 1000 1057 Zinc ppm ASTM D5185m 1270 1356 1263 1287 Sulfur ppm ASTM D5185m 2060 2909 2950 2841 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 6 4 Sodium ppm ASTM D5185m >20 0 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 9.7 10.1 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.2 23.5 22.3 FLUID DEGRADATION *ASTM D | Molybdenum | ppm | ASTM D5185m | 60 | 59 | 63 | 58 |
| Calcium ppm ASTM D5185m 1070 1232 1124 1084 Phosphorus ppm ASTM D5185m 1150 1026 1000 1057 Zinc ppm ASTM D5185m 1270 1356 1263 1287 Sulfur ppm ASTM D5185m 2060 2909 2950 2841 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 6 4 Sodium ppm ASTM D5185m >20 0 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 9.7 10.1 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.2 23.5 22.3 FLUID DEGRADATION | Manganese | ppm | ASTM D5185m | 0 | 0 | <1 | <1 |
| Phosphorus ppm ASTM D5185m 1150 1026 1000 1057 Zinc ppm ASTM D5185m 1270 1356 1263 1287 Sulfur ppm ASTM D5185m 2060 2909 2950 2841 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 6 4 Sodium ppm ASTM D5185m >25 3 6 4 Potassium ppm ASTM D5185m >20 0 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 9.7 10.1 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.2 23.5 22.3 FLUID DEGRADATION met | Magnesium | ppm | ASTM D5185m | 1010 | 1081 | 965 | 939 |
| Zinc ppm ASTM D5185m 1270 1356 1263 1287 Sulfur ppm ASTM D5185m 2060 2909 2950 2841 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 6 4 Sodium ppm ASTM D5185m 4 5 6 Potassium ppm ASTM D5185m >20 0 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 9.7 10.1 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.2 23.5 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 | Calcium | ppm | ASTM D5185m | 1070 | 1232 | 1124 | 1084 |
| Sulfur ppm ASTM D5185m 2060 2909 2950 2841 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 6 4 Sodium ppm ASTM D5185m 4 5 6 Potassium ppm ASTM D5185m >20 0 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 9.7 10.1 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.2 23.5 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 21.4 19.7 | Phosphorus | ppm | ASTM D5185m | 1150 | 1026 | 1000 | 1057 |
| CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 6 4 Sodium ppm ASTM D5185m 4 5 6 Potassium ppm ASTM D5185m >20 0 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 9.7 10.1 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.2 23.5 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 21.4 19.7 | Zinc | ppm | ASTM D5185m | 1270 | 1356 | 1263 | 1287 |
| Silicon ppm ASTM D5185m >25 3 6 4 Sodium ppm ASTM D5185m 4 5 6 Potassium ppm ASTM D5185m >20 0 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 9.7 10.1 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.2 23.5 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 21.4 19.7 | Sulfur | ppm | ASTM D5185m | 2060 | 2909 | 2950 | 2841 |
| Sodium ppm ASTM D5185m 4 5 6 Potassium ppm ASTM D5185m >20 0 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 9.7 10.1 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.2 23.5 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 21.4 19.7 | CONTAMINAN | NTS | method | limit/base | current | history1 | history2 |
| Potassium ppm ASTM D5185m >20 0 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 9.7 10.1 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.2 23.5 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 21.4 19.7 | Silicon | ppm | ASTM D5185m | >25 | 3 | 6 | 4 |
| INFRA-RED | Sodium | ppm | ASTM D5185m | | 4 | 5 | 6 |
| Soot % *ASTM D7844 >4 0.3 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 9.7 10.1 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.2 23.5 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 21.4 19.7 | Potassium | ppm | ASTM D5185m | >20 | 0 | 2 | 1 |
| Nitration Abs/cm *ASTM D7624 >20 9.7 10.1 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.2 23.5 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 21.4 19.7 | INFRA-RED | | method | limit/base | current | history1 | history2 |
| Sulfation Abs/.1mm *ASTM D7415 >30 22.2 23.5 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 21.4 19.7 | Soot % | % | *ASTM D7844 | >4 | 0.3 | 0.4 | 0.4 |
| Sulfation Abs/.1mm *ASTM D7415 >30 22.2 23.5 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 21.4 19.7 | Nitration | Abs/cm | *ASTM D7624 | >20 | 9.7 | 10.1 | 9.6 |
| Oxidation Abs/.1mm *ASTM D7414 >25 20.1 21.4 19.7 | | | | >30 | | | |
| | FLUID DEGRA | DATION | method | limit/base | current | history1 | history2 |
| | Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 20.1 | 21.4 | 19.7 |
| | Base Number (BN) | mg KOH/g | ASTM D2896 | | 6.0 | 5.2 | 6.1 |



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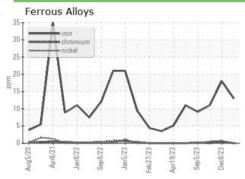


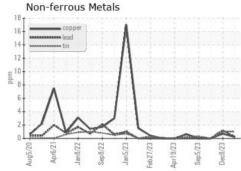


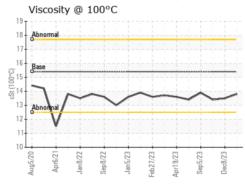
| VISUAL | | method | limit/base | current | history1 | history2 |
|-------------------------|--------|---------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate | 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 |

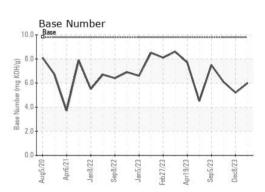
| FLUID PROPE | ERTIES | method | | | | history2 |
|--------------|--------|-----------|------|------|------|----------|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | 13.8 | 13.5 | 13.4 |

GRAPHS













Certificate L2367

Laboratory Sample No.

: GFL0113587 Lab Number : 06110777 Unique Number : 10914274 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 06 Mar 2024

Tested : 07 Mar 2024 Diagnosed : 07 Mar 2024 - Wes Davis

GFL Environmental - 654S - Midlothian

12230 Deergrove Road Midlothian, VA US 23112

Contact: Corbin Umphlet cumphlet@gflenv.com

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)

T:

F: