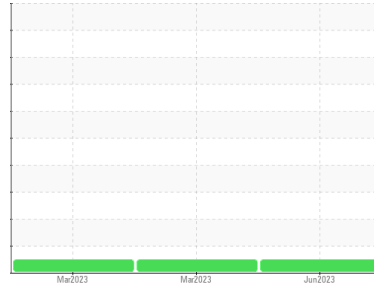




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id
713057

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

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. 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 INFORMATION

| | method | limit/base | current | history1 | history2 |
|---------------|-------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info | | GFL0083419 | GFL0074230 | GFL0074138 |
| Sample Date | Client Info | | 05 Jun 2023 | 22 Mar 2023 | 07 Mar 2023 |
| Machine Age | hrs | Client Info | 1859 | 1287 | 1165 |
| Oil Age | hrs | Client Info | 1859 | 1287 | 1165 |
| Oil Changed | Client Info | | Changed | Changed | N/A |
| Sample Status | | | NORMAL | NORMAL | NORMAL |

CONTAMINATION

| | method | limit/base | current | history1 | history2 |
|--------|-----------|------------|----------------|----------|----------|
| Fuel | WC Method | >5 | <1.0 | <1.0 | 1.7 |
| Glycol | WC Method | | NEG | NEG | NEG |

WEAR METALS

| | method | limit/base | current | history1 | history2 |
|----------|--------|------------------|--------------|----------|----------|
| Iron | ppm | ASTM D5185m >110 | 13 | 14 | 101 |
| Chromium | ppm | ASTM D5185m >4 | <1 | <1 | 3 |
| Nickel | ppm | ASTM D5185m >2 | 0 | 0 | <1 |
| Titanium | ppm | ASTM D5185m | 0 | 0 | <1 |
| Silver | ppm | ASTM D5185m >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m >25 | 22 | 17 | 133 |
| Lead | ppm | ASTM D5185m >45 | <1 | 0 | <1 |
| Copper | ppm | ASTM D5185m >85 | 2 | 2 | 22 |
| Tin | ppm | ASTM D5185m >4 | <1 | <1 | 2 |
| Vanadium | ppm | ASTM D5185m | <1 | <1 | <1 |
| Cadmium | ppm | ASTM D5185m | 0 | 0 | 0 |

ADDITIVES

| | method | limit/base | current | history1 | history2 |
|------------|--------|------------------|--------------|----------|----------|
| Boron | ppm | ASTM D5185m 0 | 0 | 2 | 23 |
| Barium | ppm | ASTM D5185m 0 | 0 | 0 | 8 |
| Molybdenum | ppm | ASTM D5185m 60 | 63 | 53 | 15 |
| Manganese | ppm | ASTM D5185m 0 | <1 | 2 | 12 |
| Magnesium | ppm | ASTM D5185m 1010 | 1057 | 880 | 707 |
| Calcium | ppm | ASTM D5185m 1070 | 1152 | 1114 | 1453 |
| Phosphorus | ppm | ASTM D5185m 1150 | 1045 | 901 | 729 |
| Zinc | ppm | ASTM D5185m 1270 | 1353 | 1110 | 896 |
| Sulfur | ppm | ASTM D5185m 2060 | 3706 | 3066 | 2679 |

CONTAMINANTS

| | method | limit/base | current | history1 | history2 |
|-----------|--------|-----------------|-----------|----------|----------|
| Silicon | ppm | ASTM D5185m >30 | 5 | 6 | 25 |
| Sodium | ppm | ASTM D5185m | 9 | 2 | 6 |
| Potassium | ppm | ASTM D5185m >20 | 66 | 44 | 395 |

INFRA-RED

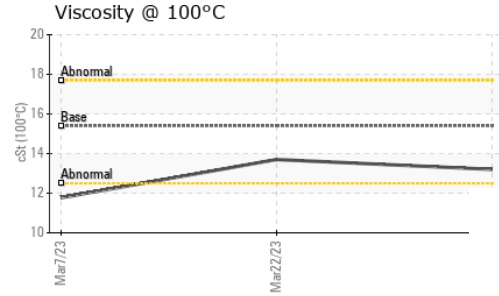
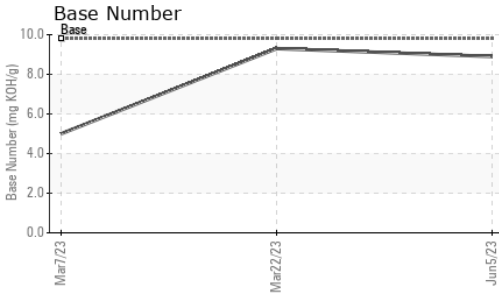
| | method | limit/base | current | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Soot % | % | *ASTM D7844 >3 | 0.3 | 0.1 | 0.5 |
| Nitration | Abs/cm | *ASTM D7624 >20 | 8.0 | 6.0 | 12.7 |
| Sulfation | Abs/.1mm | *ASTM D7415 >30 | 19.5 | 18.5 | 26.6 |

FLUID DEGRADATION

| | method | limit/base | current | history1 | history2 |
|------------------|----------|-----------------|-------------|----------|----------|
| Oxidation | Abs/.1mm | *ASTM D7414 >25 | 15.5 | 13.9 | 24.4 |
| Base Number (BN) | mg KOH/g | ASTM D2896 9.8 | 8.9 | 9.3 | 5.0 |



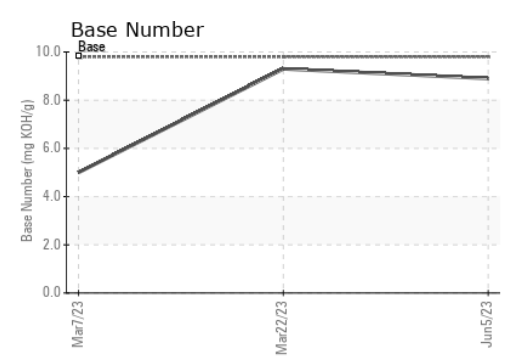
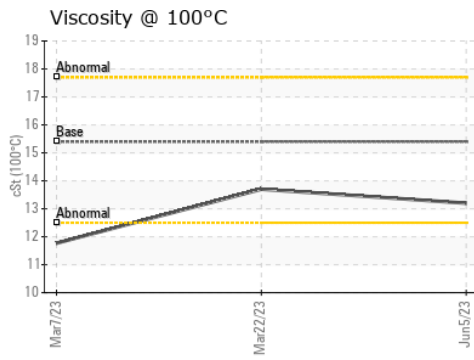
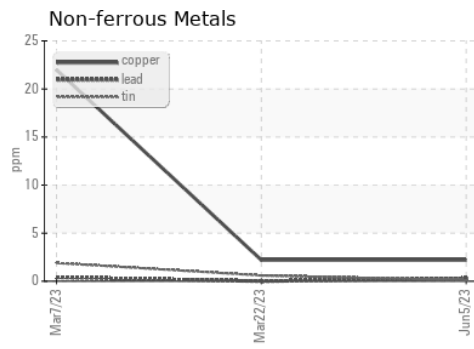
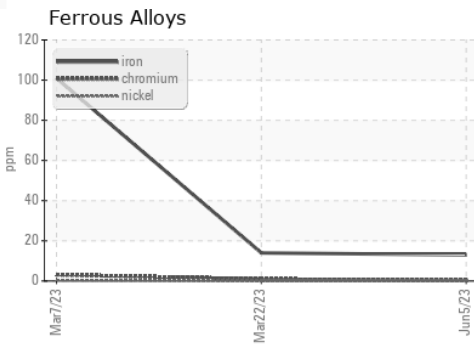
OIL ANALYSIS REPORT



| VISUAL | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | NONE | NONE |
| Silt | scalar | *Visual | NONE | NONE | NONE |
| Debris | scalar | *Visual | NONE | NONE | NONE |
| Sand/Dirt | scalar | *Visual | NONE | NONE | NONE |
| Appearance | scalar | *Visual | NORML | NORML | NORML |
| Odor | scalar | *Visual | NORML | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG |
| Free Water | scalar | *Visual | | NEG | NEG |

| FLUID PROPERTIES | method | limit/base | current | history1 | history2 | |
|------------------|--------|------------|---------|-------------|----------|-------|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | 13.2 | 13.7 | 11.77 |

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : GFL0083419 **Received** : 14 Jun 2023
Lab Number : **05872874** **Diagnosed** : 14 Jun 2023
Unique Number : 10512658 **Diagnostician** : Wes Davis
Test Package : FLEET

GFL Environmental - 865 - East Mount Hauling
 7213 East Mount Houston Road
 Houston, TX
 US 77050
 Contact: Saul Castillo
 saul.castillo@gflenv.com
 T:
 F:

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)