



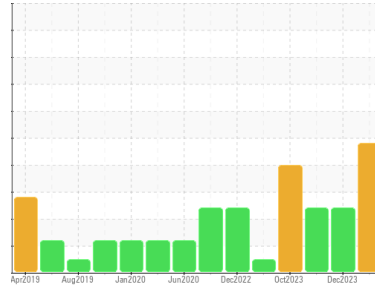
PROBLEM SUMMARY

Sample Rating Trend

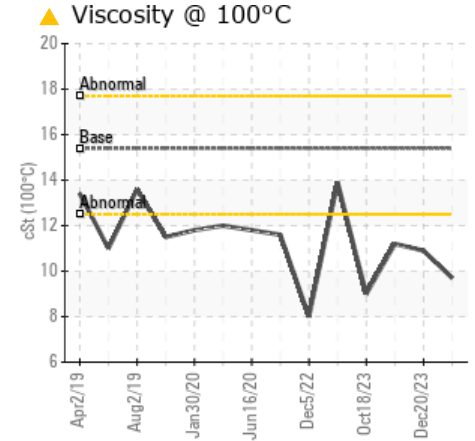
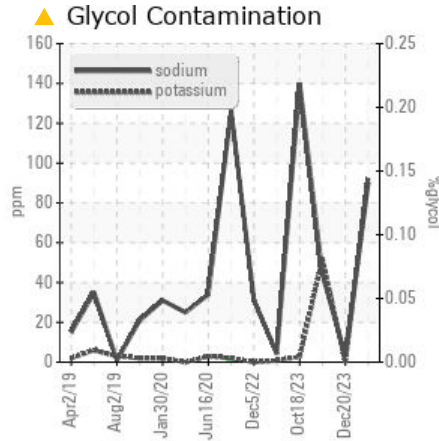
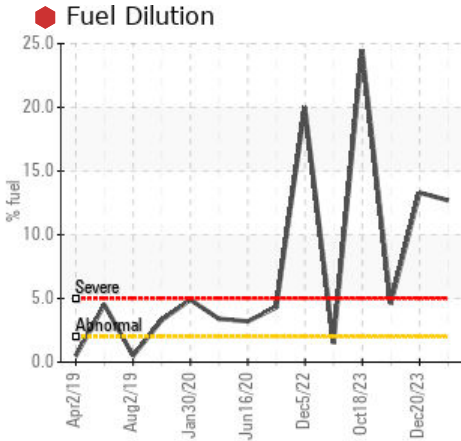
FUEL



Area
(29KK9A)
Machine Id
721020-361648
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)



COMPONENT CONDITION SUMMARY



RECOMMENDATION

We advise that you check for the source of the coolant leak. Check for low coolant level. We advise that you check the fuel injection system. We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS

| Sample Status | | | SEVERE | SEVERE | ABNORMAL |
|---------------|-----|-----------------|--------|--------|----------|
| Sodium | ppm | ASTM D5185m | ▲ 90 | 3 | 44 |
| Potassium | ppm | ASTM D5185m >20 | ▲ 93 | 0 | ▲ 52 |
| Fuel | % | ASTM D3524 >2.0 | ● 12.7 | ● 13.3 | ▲ 4.6 |
| Visc @ 100°C | cSt | ASTM D445 15.4 | ▲ 9.7 | ▲ 10.9 | ▲ 11.2 |

Customer Id: GFL823
Sample No.: GFL0109780
Lab Number: 06089831
Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data:
Jonathan Hester +1 919-379-4092 x4092
jhester@wearcheckusa.com

To change component or sample information:
Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|----------------------------|--------|------|---------|---|
| Change Fluid | --- | --- | ? | We recommend that you drain the oil and perform a filter service on this component if not already done. |
| Change Filter | --- | --- | ? | We recommend that you drain the oil and perform a filter service on this component if not already done. |
| Resample | --- | --- | ? | We recommend an early resample to monitor this condition. |
| Check Fuel/injector System | --- | --- | ? | We advise that you check the fuel injection system. |
| Check Glycol Access | --- | --- | ? | We advise that you check for the source of the coolant leak. |

HISTORICAL DIAGNOSIS

20 Dec 2023 Diag: Jonathan Hester

FUEL



We advise that you check the fuel injection system. We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition. All component wear rates are normal. There is a high amount of fuel present in the oil. Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

view report



15 Nov 2023 Diag: Jonathan Hester

GLYCOL



We advise that you check the fuel injection system. Resample at the next service interval to monitor. All component wear rates are normal. Sodium and/or potassium levels are high. There is a moderate amount of fuel present in the oil. Test for glycol is negative. Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil.

view report



18 Oct 2023 Diag: Jonathan Hester

FUEL



We advise that you check the fuel injection system. We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition. All component wear rates are normal. Sodium and/or potassium levels are high. There is a high amount of fuel present in the oil. Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

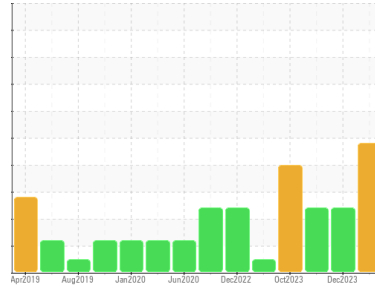
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OIL ANALYSIS REPORT

Sample Rating Trend



FUEL



Area
(29KK9A)
Machine Id
721020-361648
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

We advise that you check for the source of the coolant leak. Check for low coolant level. We advise that you check the fuel injection system. We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels are high. There is a high amount of fuel present in the oil.

Fluid Condition

Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION

| method | limit/base | current | history1 | history2 |
|---------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info | GFL0109780 | GFL0103365 | GFL0099954 |
| Sample Date | Client Info | 12 Feb 2024 | 20 Dec 2023 | 15 Nov 2023 |
| Machine Age | hrs | 28829 | 28523 | 2835 |
| Oil Age | hrs | 0 | 0 | 0 |
| Oil Changed | Client Info | Not Chngd | Not Chngd | Not Chngd |
| Sample Status | | SEVERE | SEVERE | ABNORMAL |

CONTAMINATION

| method | limit/base | current | history1 | history2 |
|--------|----------------|------------|----------|----------|
| Water | WC Method >0.2 | NEG | NEG | NEG |

WEAR METALS

| method | limit/base | current | history1 | history2 |
|----------|----------------------|--------------|----------|----------|
| Iron | ppm ASTM D5185m >100 | 34 | 39 | 21 |
| Chromium | ppm ASTM D5185m >20 | 1 | 2 | <1 |
| Nickel | ppm ASTM D5185m >4 | 0 | 0 | 0 |
| Titanium | ppm ASTM D5185m | 0 | 0 | 0 |
| Silver | ppm ASTM D5185m >3 | <1 | 0 | <1 |
| Aluminum | ppm ASTM D5185m >20 | 5 | 3 | 3 |
| Lead | ppm ASTM D5185m >40 | 7 | 1 | 1 |
| Copper | ppm ASTM D5185m >330 | 2 | 3 | 1 |
| Tin | ppm ASTM D5185m >15 | <1 | <1 | <1 |
| Vanadium | ppm ASTM D5185m | 0 | <1 | 0 |
| Cadmium | ppm ASTM D5185m | 0 | 0 | 0 |

ADDITIVES

| method | limit/base | current | history1 | history2 |
|------------|----------------------|--------------|----------|----------|
| Boron | ppm ASTM D5185m 0 | 3 | <1 | 3 |
| Barium | ppm ASTM D5185m 0 | 0 | 0 | 0 |
| Molybdenum | ppm ASTM D5185m 60 | 54 | 53 | 60 |
| Manganese | ppm ASTM D5185m 0 | <1 | <1 | <1 |
| Magnesium | ppm ASTM D5185m 1010 | 809 | 835 | 929 |
| Calcium | ppm ASTM D5185m 1070 | 918 | 882 | 1045 |
| Phosphorus | ppm ASTM D5185m 1150 | 820 | 890 | 1019 |
| Zinc | ppm ASTM D5185m 1270 | 1051 | 1073 | 1238 |
| Sulfur | ppm ASTM D5185m 2060 | 2604 | 2399 | 2947 |

CONTAMINANTS

| method | limit/base | current | history1 | history2 |
|-----------|---------------------|-------------|----------|----------|
| Silicon | ppm ASTM D5185m >25 | 10 | 8 | 10 |
| Sodium | ppm ASTM D5185m | 90 | 3 | 44 |
| Potassium | ppm ASTM D5185m >20 | 93 | 0 | 52 |
| Fuel | % ASTM D3524 >2.0 | 12.7 | 13.3 | 4.6 |
| Glycol | % *ASTM D2982 | NEG | NEG | NEG |

INFRA-RED

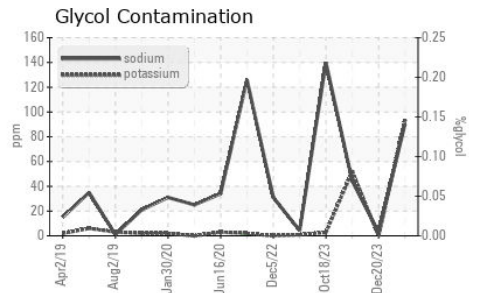
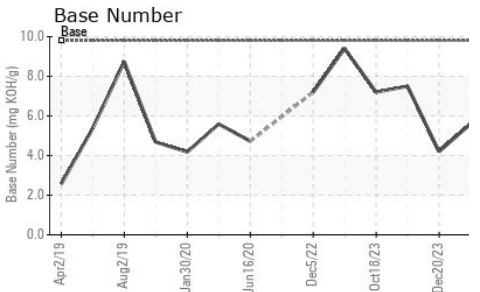
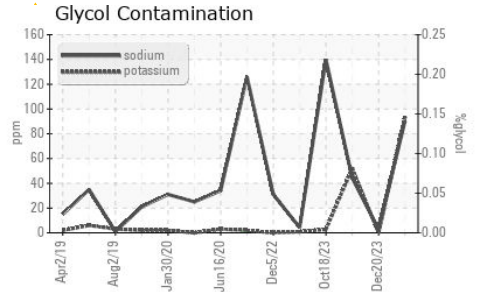
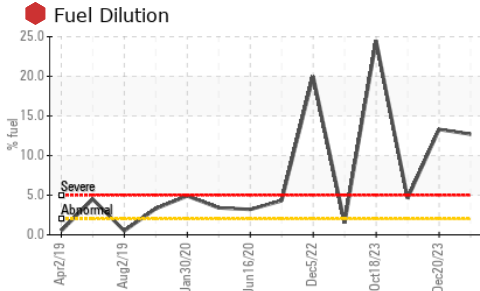
| method | limit/base | current | history1 | history2 |
|-----------|--------------------------|-------------|----------|----------|
| Soot % | % *ASTM D7844 >3 | 0.2 | 1.2 | 0.2 |
| Nitration | Abs/cm *ASTM D7624 >20 | 9.7 | 13.8 | 7.5 |
| Sulfation | Abs/.1mm *ASTM D7415 >30 | 21.2 | 27.9 | 20.1 |

FLUID DEGRADATION

| method | limit/base | current | history1 | history2 |
|------------------|--------------------------|-------------|----------|----------|
| Oxidation | Abs/.1mm *ASTM D7414 >25 | 19.5 | 30.1 | 16.5 |
| Base Number (BN) | mg KOH/g ASTM D2896 9.8 | 5.6 | 4.2 | 7.5 |



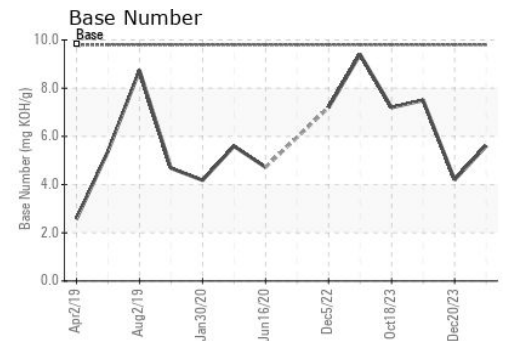
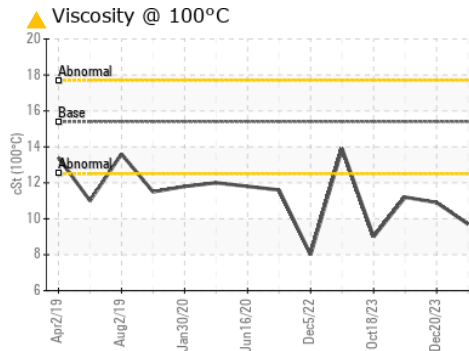
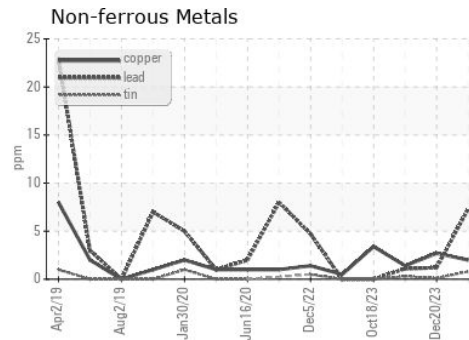
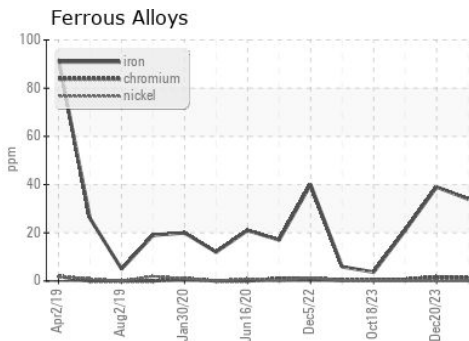
OIL ANALYSIS REPORT



| 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 | ▲ 9.7 | ▲ 10.9 |

GRAPHS



Certificate L2367

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

Sample No. : GFL0109780

Lab Number : 06089831

Unique Number : 10882684

Test Package : FLEET (Additional Tests: Glycol, PercentFuel)

Received : 15 Feb 2024

Tested : 19 Feb 2024

Diagnosed : 19 Feb 2024 - Jonathan Hester

GFL Environmental - 823 - Central Missouri Hauling

24461 Oak Grove Lane

Sedalia, MO

US 65301

Contact: Terry Randolph

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T: (660)631-2116

F:

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)