

6

May12/22

Vov12/23

|--|

Vov12/23

We advise that you check the fuel injection system. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

| PROBLEMATIC TEST RESULTS | | | | | | | |
|--------------------------|-----|------------|------|--------|--------|--------|--|
| Sample Status | | | | SEVERE | NORMAL | NORMAL | |
| Fuel | % | ASTM D3524 | >3.0 | 🛑 16.2 | <1.0 | <1.0 | |
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | 8.6 | 14.1 | 14.2 | |

Vov18/22

Feb7/23

May24/23

Aug6/23 -

Aug22/23

Vov12/23

Customer Id: GFL405 Sample No.: GFL0097716 Lab Number: 06009332 Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data: Wes Davis +1 905-569-8600 x223 wesd@wearcheck.ca

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

| RECOMMENDED ACTIONS | | | | | | |
|-------------------------------|--------|------|---------|---|--|--|
| Action | Status | Date | Done By | Description | | |
| Resample | | | ? | We recommend an early resample to monitor this condition. | | |
| Check Fuel/injector System | | | ? | We advise that you check the fuel injection system. | | |

HISTORICAL DIAGNOSIS



22 Aug 2023 Diag: Wes Davis

Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



view report

06 Aug 2023 Diag: Wes Davis



Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

24 May 2023 Diag: Wes Davis





Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.





DIAGN

Machine Id 4552M

OIL ANALYSIS REPORT

Sample Rating Trend



Component **Diesel Engine** Fluid

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

| Pacommendation Sample Number Client Info GFL0097716 GFL0087294 GFL0087494 GFL0087494 GFL00 | EL008732 Aug 202 081 6 anged DRMAL history2 NEG history2 8 <1 0 |
|--|--|
| We advise that you check the fuel injection system. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition. Sample Date fc lient Info 20592 20168 200 Wear All component wear rates are normal. Client Info 424 20081 61 Contamination There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil. CONTAMINATION method Imit/base current history1 Glycol WC Method NEG NEG NEG Serviceable due to the presence of contaminants. for present in the presence of contaminants. Vickel ppm ASTM D5185m >20 <1 | Aug 202 081 6 anged DRMAL history NEG history 8 <1 0 |
| The oil change at the time of sampling has been noted. We recommend an early resample to monifor this condition. Machine Age hrs Client Info 424 20081 61 Wear All component wear rates are normal. Changed Client Info 424 20081 61 Phore is a high amount of fuel present in the oil. Fuel Condition Net and the presence of fuel in the oil. SEVERE NORMAL NC Fuel Condition The oil registration in the oil. Glycol WC Method Imit/base current history1 Glycol WC Method Imit/base current history1 Imit/base NEG NEG All on presult indicates that there is suitable aladinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants. framum ppm ASTM D5185m >90 8 7 Nickel ppm ASTM D5185m >20 0 0 1 | 081 6 anged)RMAL history: NEG history: 8 <1 0 |
| Noted. we recommend an early resample to monitor this condition. Oil Age hrs Client Info 424 20081 61 Wear All component wear rates are normal. Changed | 6 anged DRMAL history NEG history 8 <1 0 |
| War Oil Changed Client Info Changed C | anged DRMAL history NEG history 8 <1 0 |
| Sample Status SEVERE NORMAL NORMAL Subject Contamination There is a high amount of fuel present in the oil. Edited condition NEG NEG NEG Fluid Condition The BN result indicates that there is suitable is lowering the viscosity. The oil is no longer indicates that there is solvering the viscosity. The oil is no longer indicates the the presence of contaminants. NEG NEG NEG NEG Nickel ppm ASTM D5185m >90 8 7 1 < | DRMAL history NEG history 8 <1 0 |
| Contamination There is a high amount of fuel present in the oil. Eests confirm the presence of fuel in the oil. CONTAMINATION method Imit/base current history1 Fluid Condition The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer perviceable due to the presence of contaminants. ppm ASTM D5185m >90 8 7 Nickel ppm ASTM D5185m >20 <1 | history NEG history 8 <1 0 |
| Gived WC Method NEG NEG There is a high amount of fuel present in the oil. Fuid Condition Imit/base current history1 The BN result indicates that there is suitable sitalatinty remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants. Imit ppm ASTM D5185m >20 <1 | NEG history 8 <1 0 |
| Fluid Condition WEAR METALS method limit/base current history1 Iron ppm ASTM D5185m >90 8 7 Chromium ppm ASTM D5185m >20 <1 | history 8 <1 0 |
| The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants. Iron ppm ASTM D5185m >20 <1 | 8 <1 0 |
| Idealinity remaining in the oil. Fuel is present in the iil and is lowering the viscosity. The oil is no longer erviceable due to the presence of contaminants. Chromium ppm ASTM D5185m >20 <1 | <1 0 |
| NickelppmASTM D5185m>2<10TitaniumppmASTM D5185m>2000SilverppmASTM D5185m>2000AluminumppmASTM D5185m>20200LeadppmASTM D5185m>20200CopperppmASTM D5185m>330<1 | 0 |
| erviceable due to the presence of contaminants. Titanium ppm ASTM D5185m >2 0 0 Silver ppm ASTM D5185m >2 0 0 Aluminum ppm ASTM D5185m >20 2 0 Lead ppm ASTM D5185m >40 0 <1 | 4 |
| Silver ppm ASTM D5185m >2 0 0 Aluminum ppm ASTM D5185m >20 2 0 Lead ppm ASTM D5185m >40 0 <1 | <1 |
| Aluminum ppm ASTM D5185m >20 2 0 Lead ppm ASTM D5185m >40 0 <1 | 0 |
| Lead ppm ASTM D5185m >40 0 <1 | 1 |
| Copper ppm ASTM D5185m >330 <1 1 Tin ppm ASTM D5185m >15 <1 | <1 |
| TinppmASTM D5185m>15<1<1VanadiumppmASTM D5185m000CadmiumppmASTM D5185m000ADDITIVESmethodlimit/basecurrenthistory1BoronppmASTM D5185m024BariumppmASTM D5185m000MolybdenumppmASTM D5185m000ManganeseppmASTM D5185m0<1 | <1 |
| Vanadium CadmiumppmASTM D5185m00ADDITIVESmethodlimit/basecurrenthistory1BoronppmASTM D5185m024BariumppmASTM D5185m000MolybdenumppmASTM D5185m000ManganeseppmASTM D5185m0<1 | <1 |
| CadmiumppmNotitie StreamC00ACDDITIVESmethodlimit/basecurrenthistory1BoronppmASTM D5185m024BariumppmASTM D5185m000MolybdenumppmASTM D5185m604359ManganeseppmASTM D5185m0<1 | <1 |
| ADDITIVESmethodlimit/basecurrenthistory1BoronppmASTM D5185m024BariumppmASTM D5185m000MolybdenumppmASTM D5185m604359ManganeseppmASTM D5185m0<1 | <1 |
| Boron ppm ASTM D5185m 0 2 4 Barium ppm ASTM D5185m 0 1 0 1 0 1 1 0 1 0 1 | history |
| Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 60 43 59 Manganese ppm ASTM D5185m 0 <1 | 3 |
| Molybdenum ppm ASTM D5185m 60 43 59 Manganese ppm ASTM D5185m 0 <1 <1 Magnesium ppm ASTM D5185m 1010 714 995 Calcium ppm ASTM D5185m 1070 825 1136 Phosphorus ppm ASTM D5185m 1150 800 1087 | 0 |
| Manganese ppm ASTM D5185m 0 <1 <1 Magnesium ppm ASTM D5185m 1010 714 995 Calcium ppm ASTM D5185m 1070 825 1136 Phosphorus ppm ASTM D5185m 1150 800 1087 | 59 |
| Magnesium ppm ASTM D5185m 1010 714 995 Calcium ppm ASTM D5185m 1070 825 1136 Phosphorus ppm ASTM D5185m 1150 800 1087 Zinc ppm ASTM D5185m 1270 900 1303 | <1 |
| Calcium ppm ASTM D5185m 1070 825 1136 Phosphorus ppm ASTM D5185m 1150 800 1087 Zinc ppm ASTM D5185m 1270 900 1203 | 1000 |
| Phosphorus ppm ASTM D5185m 1150 800 1087 Zinc ppm ASTM D5185m 1270 900 1203 | 1155 |
| | 1051 |
| | 1287 |
| Sulfur ppm ASTM D5185m 2060 2360 3861 | 3733 |
| CONTAMINANTS method limit/base current history1 | history |
| Silicon ppm ASTM D5185m >25 4 4 | 4 |
| Sodium ppm ASTM D5185m 22 17 | 22 |
| Potassium ppm ASTM D5185m >20 <1 2 | 4 |
| Fuel % ASTM D3524 >3.0 16.2 <1.0 | <1.0 |
| INFRA-RED method limit/base current history1 | history |
| Soot % % *ASTM D7844 >6 0.2 0 | |
| Nitration Abs/cm *ASTM D7624 >20 6.7 6.3 | 0.1 |
| Sulfation Abs/.1mm *ASTM D7415 >30 17.8 20.7 | 0.1 5.9 |
| FLUID DEGRADATION method limit/base current history1 | 0.1 5.9 18.0 |
| Oxidation Abs/.1mm *ASTM D7414 >25 13.0 15.3 | 0.1 5.9 18.0 history2 |
| Base Number (BN) mg KOH/g ASTM D2896 9.8 7.3 9.7 | 0.1 5.9 18.0 history2 14.0 |



Base | 2.0 0.0

May12/22

Nov18/22 -

Feb7/23 -

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 |
| с | 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 | 8.6 | 14.1 | 14.2 |
| | GRAPHS | | | | | | |
| | Ferrous Alloys | | | | | | |
| | 35 | | | | | | |
| w24/2 | 30 - chromium | | | | | | |
| A Ma | 25 | | | | | | |
| | E ²⁰ | | | | | | |
| | 15 | | | | | | |
| | 10- | - | | | | | |
| | 5 | | | | | | |
| | | - 2 | 2 2 | 23 | | | |
| | 3y12/2 v18/2 | 3y24/2 | ug6/2 | ov12/2 | | | |
| | | ž | Au | Nc | | | |
| /23 - | ¹⁰ T | | | | | | |
| May24 Aug6 | copper | | | | | | |
| | 8 management tin | | | | | | |
| | 6 | | | | | | |
| | udd | | | | | | |
| | | | | | | | |
| | 2 | | | | | | |
| | | 100 | AND INCOMENTATION OF THE OWNER. | and all all all all all all all all all al | | | |
| | 12/22 | 24/23 | g6/23 | 12/23 | | | |
| | Nov | May | Aug | Nov | | | |
| | Viscosity @ 100°C | C | | | Base Number | | |
| | 18. Abnormal | | | 10. | .0 Base | | |
| | | 1 | | | .0- | | |
| | G | | | KOH | | | |
| | Abhomal | | | er (mg | .0- | | |
| | 8 12 - | | | t my 4 | .0 0 - | | |
| | 10 | | | Base 2 | .0 | | |
| | 8 | | | | | | |
| | 22 | 23 | 23 | .0 | 22 + 0. | 23 | 23 |
| | lay12/ lov18/ | lay24/ | Aug6/ ug22/ | Vov12/ | lay12/ lov18/ | 1ay24/ | ug22/ lov12/ |
| | | ~ | | - | | 2 | ~ ~ ~ |
| | ratory : WearCheck USA - : | 501 Madi | son Ave., Ca | ry, NC 2751 | 3 GFL Env | ironmental - 4 | 7400 Napier Bd |
| ANAB Lab N | lumber : 06009332 | Diagnos | ed :201 | Nov 2023 | | N | DRTHVILLE, MI |
| | e Number : 10743094 | Diagnos | tician : We | s Davis | | | US 48168 |
| Certificate L2367 Test I | Package : FLEET (Additional | Tests: Fu | elDilution, P | ercentFuel) | | Cont | act: John Nahal |
| To discuss this sampl | e report, contact Customer Serv | /ICE at 1-8 | 800-237-1369 | l. itation | | jnał | nal@gflenv.com |
| Statements of conform | ity to specifications are based on t | the simple | acceptance a | lecision rule | (JCGM 106:2012) | | F: |