

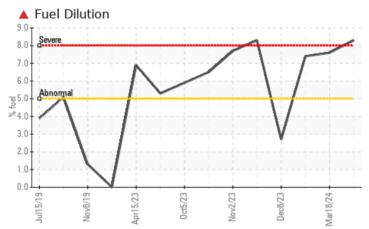
PROBLEM SUMMARY

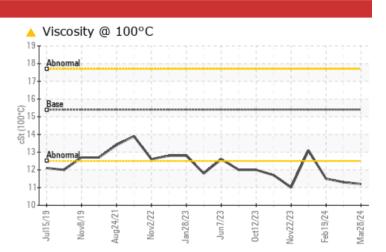
Machine Id

429042-402342

Diesel Engine Fluid PETRO CANADA DURON SHP 15W40 (--- GAL)

COMPONENT CONDITION SUMMARY





FUEL

RECOMMENDATION

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	ABNORMAL	ABNORMAL		
Fuel	%	ASTM D3524	>5	a 8.3	▲ 7.6	▲ 7.4		
Visc @ 100°C	cSt	ASTM D445	15.4	11.2	🔺 11.3	1 1.5		

Sample Rating Trend

Customer Id: GFL822 Sample No.: GFL0109124 Lab Number: 06137050 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 <u>customerservice@wearcheck.com</u>

DECOMMENDE				
RECOMMENDE	D ACTIONS			
Action	Status	Date	Done By	Description
Resample			?	We recommend an early resample
Check Fuel/injector System			?	We advise that you check the fuel i

e to monitor this condition.

injection system.

HISTORICAL DIAGNOSIS



18 Mar 2024 Diag: Wes Davis

We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.All component wear rates are normal. There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil. 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.



19 Feb 2024 Diag: Wes Davis

We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.All component wear rates are normal. There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil. 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.



08 Dec 2023 Diag: Wes Davis

No corrective action is recommended at this time. Resample at the next service interval to monitor.All component wear rates are normal. Light fuel dilution occurring. No other contaminants were detected 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.





OIL ANALYSIS REPORT

Sample Rating Trend

FUEL

Machine Id 429042-402342

Diesel Engine Fluid PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

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.

Wear

All component wear rates are normal.

Contamination

There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

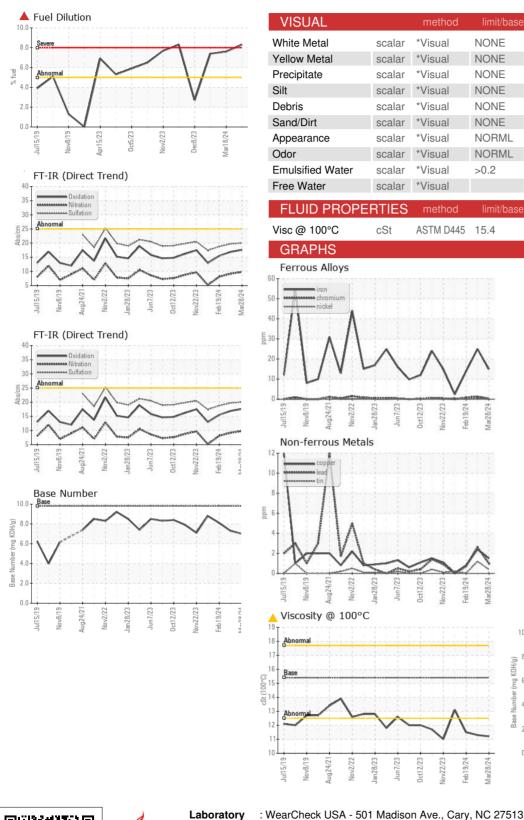
Fluid Condition

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.

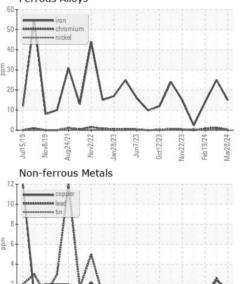
Sample Date Client Info 28 Mar 2024 18 Mar 2024 19 Feb 2024 Machine Age hrs Client Info 16916 16826 16724 Oil Age Client Info 600 150 150 150 Oil Changed Client Info Changed Not Changd ABNORMAL ABNORMAL CONTAMINATION method Imit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG Glycol WC Method >0.2 NEG NEG NEG Chromium ppm ASTM05185m >110 15 25 14 Chromium ppm ASTM05185m >2 0 <1 <1 Nickel ppm ASTM05185m >2 0 <0 <1 Aluminum ppm ASTM05185m >2 0 <1 0 Aluminum ppm ASTM05185m >2 2 <1 0 A	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 16916 16826 16724 Oil Age hrs Client Info 600 150 150 Oil Changed Client Info Changed Not Changd Not Changd Sample Status Imit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM 05185m >44 <1 1 <1 Ohromium ppm ASTM 05185m >2 0 <1 0 Nickel ppm ASTM 05185m >2 0 0 0 0 Aluminum ppm ASTM 05185m >2 1 3 <1 0 Vanadium ppm ASTM 05185m >4 <1 0 0 Adminum ppm ASTM 05185m 0 <1 0 0	Sample Number		Client Info		GFL0109124	GFL0109168	GFL0109236
Oil Age hrs Client Info 600 150 150 Oil Changed Client Info Changed Not Changd ABNORMAL CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG Giycol WC Method >0.2 NEG NEG NEG Water WC Method >110 15 25 14 Chromium ppm ASTM D5185m >110 15 25 14 Chromium ppm ASTM D5185m >110 15 25 14 Chromium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >25 2 3 2 1 Copper ppm ASTM D5185m >4 1 1 0 Adaminum ppm ASTM D5185m >4 1 1 0 Copper	Sample Date		Client Info		28 Mar 2024	18 Mar 2024	19 Feb 2024
Oil Changed Sample Status Client Info Changed SEVERE Not Changed ABNORMAL Not Changed ABNORMAL CONTAMINATION method Imit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG Glycol WC Method >0.2 NEG NEG NEG WEAR METALS method Imit/base current history1 history2 Iron ppm ASTM D5185m >11 1 1 1 Nickel ppm ASTM D5185m >2 0 -1 0 Nickel ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >4 1 1 0 Copper ppm ASTM D5185m >4 1 0 0 Cadmium ppm ASTM D5185m 0 0 -1 0 Admotinum ppm ASTM D5185m 0 0 1 0 </th <th>Machine Age</th> <th>hrs</th> <th>Client Info</th> <th></th> <th>16916</th> <th>16826</th> <th>16724</th>	Machine Age	hrs	Client Info		16916	16826	16724
Sample Status Initial Sevent ABNORMAL ABNORMAL ABNORMAL CONTAMINATION method imit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG Glycol WC Method >0.2 NEG NEG NEG WEAR METALS method imit/base current history1 history2 Iron ppm ASTM D5185m >110 15 25 14 Chromium ppm ASTM D5185m >22 0 -1 0 Nickel ppm ASTM D5185m >25 2 3 -2 Lead ppm ASTM D5185m >45 1 3 -1 Copper ppm ASTM D5185m >45 1 0 -1 Cadmium ppm ASTM D5185m 0 -1 0 -1 Cadmium ppm ASTM D5185m 0 -1 0 -1	Oil Age	hrs	Client Info		600	150	150
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Titanium ppm ASTM D5185m 0 <1	Chromium	ppm	ASTM D5185m	>4	<1		<1
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Aluminum ppm ASTM D5185m >25 2 3 2 Lead ppm ASTM D5185m >45 1 3 <1 Copper ppm ASTM D5185m >45 1 3 <1 Copper ppm ASTM D5185m >45 2 2 <1 Tin ppm ASTM D5185m >4 <1 1 0 Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 2 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 0 0 Molybdenum ppm ASTM D5185m 0 2 0 0 Marganese ppm ASTM D5185m 0 <11 1 <1 Marganesium ppm ASTM D5185m 1010 9111 1309	Titanium	ppm	ASTM D5185m		0	<1	<1
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Copper ppm ASTM D5185m >85 2 2 <1		ppm			_		_
Tin ppm ASTM D5185m >4 <1		ppm		>45			
Vanadium ppm ASTM D5185m 0 <1	••	ppm			_		
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Zinc ppm ASTM D5185m 1270 1213 1749 1209 Sulfur ppm ASTM D5185m 2060 3203 4552 2949 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 4 9 7 Sodium ppm ASTM D5185m >30 4 5 11 Potassium ppm ASTM D5185m >20 0 3 4 Fuel % ASTM D5185m >20 0 3 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.6 0.4 Nitration Abs/cm *ASTM D7624 >20 9.8 9.2 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.0 19.7 18.8 FLUID DEGRADATION method limit/base	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 0 56 <1 911	0 1 85 1 1309	0 0 56 <1 949
SulfurppmASTM D5185m2060320345522949CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>30497SodiumppmASTM D5185m>304511PotassiumppmASTM D5185m>20034Fuel%ASTM D5185m>20034Soot %%ASTM D3524>5A 8.3A 7.67.4INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.70.60.4NitrationAbs/cm*ASTM D7624>209.89.28.1SulfationAbs/1mm*ASTM D7415>3020.019.718.8FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/1mm*ASTM D7414>2517.616.915.5	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	2 0 56 <1 911 999	0 1 85 1 1309 1539	0 0 56 <1 949 1025
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Silicon ppm ASTM D5185m >30 4 9 7 Sodium ppm ASTM D5185m 4 5 11 Potassium ppm ASTM D5185m >20 0 3 4 Fuel % ASTM D3524 >5 ▲ 8.3 ▲ 7.6 ▲ 7.4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.6 0.4 Nitration Abs/cm *ASTM D7624 >20 9.8 9.2 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.0 19.7 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 16.9 15.5	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	2 0 56 <1 911 999 1001 1213	0 1 85 1 1309 1539 1460 1749	0 0 56 <1 949 1025 1011 1209
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Potassium ppm ASTM D5185m >20 0 3 4 Fuel % ASTM D3524 >5 ▲ 8.3 ▲ 7.6 ▲ 7.4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.6 0.4 Nitration Abs/cm *ASTM D7624 >20 9.8 9.2 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.0 19.7 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 16.9 15.5	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	2 0 56 <1 911 999 1001 1213 3203 current	0 1 85 1 1309 1539 1460 1749 4552 history1	0 0 56 <1 949 1025 1011 1209 2949 history2
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Nitration Abs/cm *ASTM D7624 >20 9.8 9.2 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.0 19.7 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 16.9 15.5	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30	2 0 56 <1 911 999 1001 1213 3203 <u>current</u> 4 4 0	0 1 85 1 1309 1539 1460 1749 4552 history1 9 5 3	0 0 56 <1 949 1025 1011 1209 2949 history2 7 11 4
Nitration Abs/cm *ASTM D7624 >20 9.8 9.2 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.0 19.7 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 16.9 15.5	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 imit/base >30 >20 >5	2 0 56 <1 911 999 1001 1213 3203 Current 4 4 0 0 ▲ 8.3	0 1 85 1 1309 1539 1460 1749 4552 history1 9 5 3 ▲ 7.6	0 0 56 <1 949 1025 1011 1209 2949 history2 7 11 4 4 × 7.4
Sulfation Abs/.1mm *ASTM D7415 >30 20.0 19.7 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 16.9 15.5	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >30 >20 >5	2 0 56 <1 911 999 1001 1213 3203 Current 4 4 4 0 8.3 Current	0 1 85 1 1309 1539 1460 1749 4552 history1 9 5 3 ▲ 7.6 history1	0 0 56 <1 949 1025 1011 1209 2949 bistory2 7 11 4 4 × 7.4
Oxidation Abs/.1mm *ASTM D7414 >25 17.6 16.9 15.5	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >30 >20 >5 Imit/base >3	2 0 56 <1 911 999 1001 1213 3203 current 4 4 0 & 8.3 current 0.7	0 1 85 1 1309 1539 1460 1749 4552 history1 9 5 3 ↓ 7.6 history1 0.6	0 0 56 <1 949 1025 1011 1209 2949 history2 7 11 4 4 ▼ 7.4 history2 0.4
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D3524 method *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 imit/base >30 >5 imit/base >3 >20	2 0 56 <1 911 999 1001 1213 3203 Current 4 4 4 0 & 8.3 Current 0.7 9.8	0 1 85 1 1309 1539 1460 1749 4552 history1 9 5 3 ↓ 7.6 history1 0.6 9.2	0 0 56 <1 949 1025 1011 1209 2949 history2 7 11 4 7 .11 4 7.4
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel 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 >30 >20 >5 Imit/base >3 >20 >3	2 0 56 <1 911 999 1001 1213 3203 current 4 4 4 0 & 8.3 current 0.7 9.8 20.0	0 1 85 1 1309 1539 1460 1749 4552 bistory1 9 5 3 ▲ 7.6 bistory1 0.6 9.2 19.7	0 0 56 <1 949 1025 1011 1209 2949 history2 7 11 4 7 7 11 4 k 7.4 history2 0.4 8.1 18.8
Base Number (BN) mg KOH/g ASTM D2896 9.8 7.0 7.3 8.1	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >30 imit/base >3 >20 >3 30	2 0 56 <1 911 999 1001 1213 3203 Current 4 4 4 0 & 8.3 Current 0.7 9.8 20.0 Current	0 1 85 1 1309 1539 1460 1749 4552 history1 9 5 3 ▲ 7.6 history1 0.6 9.2 19.7	0 0 56 <1 949 1025 1011 1209 2949 history2 7 11 4 ▼ 7.4 ► 7.4 ► 11 4 0.4 8.1 18.8



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
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	11.2	1 1.3	1 1.5
GRAPHS						
Ferrous Allovs						



28/23

Received

Diagnosed

Tested

: GFL0109124

To discuss this sample report, contact Customer Service at 1-800-237-1369.

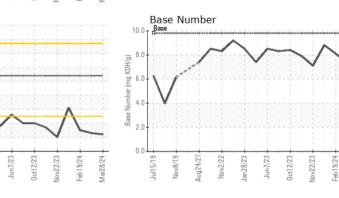
Test Package : FLEET (Additional Tests: PercentFuel)

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Sample No.

Lab Number : 06137050

Unique Number : 10956515



1ar28/7 c/19/14

: 03 Apr 2024

: 05 Apr 2024

GFL Environmental - 822 - Springfield Hauling 2120 West Bennett Street Springfield, MO : 05 Apr 2024 - Wes Davis US 65807 Contact: Dennis Moore dennis.moore@gflenv.com T: (417)403-3641 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) E:

Report Id: GFL822 [WUSCAR] 06137050 (Generated: 04/05/2024 08:12:27) Rev: 1

Certificate 12367

Submitted By: Dennis Moore

Mar28/24