

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	NORMAL	SEVERE		
Fuel	%	ASTM D3524	>3.0	18.6	0.0	1 5.5		
Visc @ 100°C	cSt	ASTM D445	15.4	10.7	13.8	1 0.9		

Customer Id: GFL415 Sample No.: GFL0108777 Lab Number: 06124587 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



09 Jan 2024 Diag: Don Baldridge

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.Valve wear is indicated. All other component wear rates are normal. Tests indicate that there is no fuel present in the oil. 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 acceptable for the time in service.



view report

30 Nov 2023 Diag: Jonathan Hester



We advise that you check the fuel injection system. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.All component wear rates are normal. There is a severe amount of fuel present 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.

27 Mar 2023 Diag: Doug Bogart



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.All component wear rates are normal. There is a high 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.







OIL ANALYSIS REPORT

Sample Rating Trend

FUEL

X



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

		Oct2021 Dec	2021 Mar2022 Aug2022	Dec2022 Mar2023 Nov2023 Jan20	24 Marzuz4	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0108777	GFL0108834	GFL0101500
Sample Date		Client Info		14 Mar 2024	09 Jan 2024	30 Nov 2023
Machine Age	hrs	Client Info		15776	15179	14887
Oil Age	hrs	Client Info		15179	600	12807
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				SEVERE	NORMAL	SEVERE
CONTAMINAT	ION	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	46	21	38
Chromium	ppm	ASTM D5185m	>20	2	<1	2
Nickel	ppm	ASTM D5185m	>2	1	6	1
Titanium	ppm	ASTM D5185m	>2	<1	0	0
Silver	ppm	ASTM D5185m	>2	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	6	1	2
Lead	ppm	ASTM D5185m	>40	1	2	<1
Copper	ppm	ASTM D5185m	>330	3	3	2
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	1	0	<1
Barium		ACTM DE10Em	0	2	0	2
	ppm	ASTM D5185m	0	2	0	2
Molybdenum	ppm ppm	ASTM D5185m	60	2 49	56	47
Molybdenum Manganese			60			
Manganese	ppm	ASTM D5185m	60	49	56	47
Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	60 0	49 <1	56 0	47 0
,	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010	49 <1 693	56 0 936	47 0 695
Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010 1070	49 <1 693 851	56 0 936 1033	47 0 695 838
Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010 1070 1150	49 <1 693 851 775	56 0 936 1033 899	47 0 695 838 751
Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010 1070 1150 1270	49 <1 693 851 775 940	56 0 936 1033 899 1265	47 0 695 838 751 965 3429
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	60 0 1010 1070 1150 1270 2060	49 <1 693 851 775 940 2282	56 0 936 1033 899 1265 2273	47 0 695 838 751 965 3429
Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	60 0 1010 1070 1150 1270 2060 limit/base	49 <1 693 851 775 940 2282 current	56 0 936 1033 899 1265 2273 history1	47 0 695 838 751 965 3429 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	60 0 1010 1070 1150 1270 2060 limit/base	49 <1 693 851 775 940 2282 <u>current</u> 11 3 3	56 0 936 1033 899 1265 2273 history1 2	47 0 695 838 751 965 3429 history2 10 7 2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	60 0 1010 1070 1150 1270 2060 Limit/base >25	49 <1 693 851 775 940 2282 <u>current</u> 11 3	56 0 936 1033 899 1265 2273 history1 2 4	47 0 695 838 751 965 3429 history2 10 7
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010 1070 1150 1270 2060 limit/base >25 >20	49 <1 693 851 775 940 2282 <u>current</u> 11 3 3	56 0 936 1033 899 1265 2273 history1 2 4 4 <1	47 0 695 838 751 965 3429 history2 10 7 2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >20	49 <1 693 851 775 940 2282 <u>current</u> 11 3 3 3 18.6	56 0 936 1033 899 1265 2273 history1 2 4 4 <1 0.0	47 0 695 838 751 965 3429 history2 10 7 2 2 ▲ 15.5
Maganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0	49 <1 693 851 775 940 2282 Current 11 3 3 3 * 18.6 Current	56 0 936 1033 899 1265 2273 history1 2 4 <1 0.0 history1	47 0 695 838 751 965 3429 history2 10 7 2 2 ▲ 15.5 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D3524 method	60 0 1010 1070 1150 1270 2060 limit/base >20 >3.0 limit/base >6	49 <1 693 851 775 940 2282 Current 11 3 3 18.6 Current 0.6	56 0 936 1033 899 1265 2273 history1 2 4 <1 0.0 history1 1.2	47 0 695 838 751 965 3429 history2 10 7 2 10 7 2 10 7 2 10.5
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 D5844 *ASTM D7844 *ASTM D7624	60 0 1010 1070 1150 1270 2060 Imit/base >25 >20 >3.0 Imit/base >6 >20	49 <1 693 851 775 940 2282 Current 11 3 3 ▲ 18.6 Current 0.6 15.3	56 0 936 1033 899 1265 2273 <u>history1</u> 2 4 <1 0.0 <u>history1</u> 1.2 9.5	47 0 695 838 751 965 3429 history2 10 7 2 ▲ 15.5 history2 0.6 12.2 21.7
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 D5844 *ASTM D7844 *ASTM D7624	60 0 1010 1070 1150 1270 2060 imit/base >25 >20 >3.0 imit/base >6 >20 >30	49 <1 693 851 775 940 2282 Current 11 3 3 ▲ 18.6 Current 0.6 15.3 25.3	56 0 936 1033 899 1265 2273 history1 2 4 <1 0.0 history1 1.2 9.5 21.9	47 0 695 838 751 965 3429 history2 10 7 2 ▲ 15.5 history2 0.6 12.2

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.

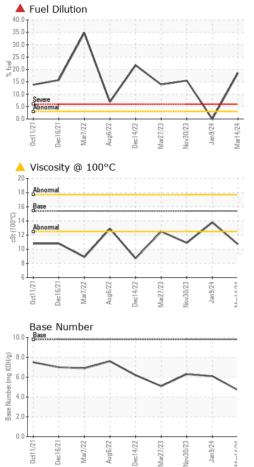
Fluid Condition

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



OIL ANALYSIS REPORT

VISUAL



	VISOAL		method	inini/base	,	inoni	Thistory I	THSTOLYZ
	White Metal	scalar	*Visual	NONE	NO	NE	NONE	NONE
	Yellow Metal		*Visual	NONE	NO		NONE	NONE
•	Precipitate		*Visual	NONE	NO		NONE	NONE
	Silt		*Visual	NONE	NO		NONE	NONE
	Debris		*Visual	NONE	NO		NONE	NONE
·								
22	Sand/Dirt		*Visual	NONE	NO		NONE	NONE
Aug6/22 Dec14/22 Mar27/23 Nov30/23 Jan9/24 Mar14/24	Appearance		*Visual	NORML		RML	NORML	NORML
A Nice A	Odor		*Visual	NORML		RML	NORML	NORML
0°C	Emulsified Water	scalar	*Visual	>0.2	NEC		NEG	NEG
	Free Water	scalar	*Visual		NEC	à	NEG	NEG
<u></u>	FLUID PROPE	ERTIES	method	limit/base	CL	urrent	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	A 10.7	,	13.8	▲ 10.9
$\langle / \rangle \rangle$	GRAPHS							
	Ferrous Alloys							
3/22	50 - iron	1						
Aug6/22 Dec14/22 Mar27/23 Nov30/23 Jan9/24	nickel		\mathbf{N}	1				
	40			1				
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22 - 23 - 23 - 23 - 23 - 23 - 23 - 23 -	Non-ferrous Meta	lls						
Aug6/22 Dec14/22 Mar27/23 Nov30/23 Jan9/24	copper							
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	0ct11/21 Dec16/21 Mar7/22 Aug6/22	Dec14/22 Mar27/23	Nov30/23 Jan9/24	Mar14/24				
	🔥 Viscosity @ 100°C				-			
	20 T				Base	Number		
	18 Abnormal							
	16 Base			(B)	8.0			
	0**************************************			KOH				
	0014 Abnormal Kg 12			er (mg	6.0			
	ස් ¹²	$\backslash \land$	\bigvee	Base Number (mg KOH/g)	4.0			
	10	\backslash		ase				
	8	•		2	2.0			
	6				0.0			
	0ct11/21 Dec16/21 Mar7/22 Aug6/22	Dec14/22 Mar27/23	Nov30/23 Jan9/24	Mar14/24	0ct11/21	Dec16/21 Mar7/22	Aug6/22 Dec14/22 Mar27/23	Nov30/23 Jan 9/24 Mar1 4/24
	0ct Dec Aug	Dec1 Mar2	Noví	Mar	Oct	Ma	Aur Dec1 Mar2	Novć Jar Mar1
Laboratory	: WearCheck USA - 50					GFL Envir	onmental - 41	15 - Michigan East
Sample No.	: GFL0108777 · : 06124587	Receiv		Mar 2024			C+-	6200 Elmridge
150ACC (7025	r : 10938738	Tested Diagno		Mar 2024 Mar 2024 - V	Wes Dav	is	516	erling Heights, MI US 48313
	E : FLEET (Additional Te				ves Dav	13	Cont	act: Frank Wolak
To discuss this sample repor								olak@gflenv.com
* - Denotes test methods that								Г: (586)825-9514
Statements of conformity to s					n rule (J	CGM 106:2		F:

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