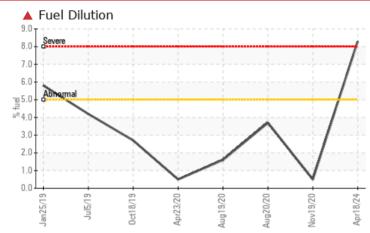
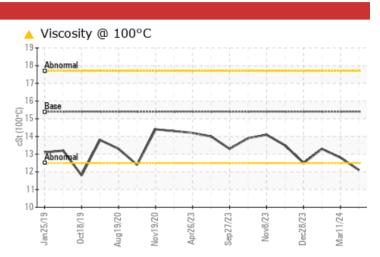


COMPONENT CONDITION SUMMARY





RECOMMENDATION

We advise that you check the fuel injection system. 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.

PROBLEMATIC TEST RESULTS								
Sample Status				SEVERE	NORMAL	NORMAL		
Fuel	%	ASTM D3524	>5	8.3	<1.0	<1.0		
Visc @ 100°C	cSt	ASTM D445	15.4	12.1	12.8	13.3		

Customer Id: GFL837 Sample No.: GFL0118811 Lab Number: 06156746 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		
Change Fluid			?	We recommend that you drain the oil from the component if this has not already been done.		
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



11 Mar 2024 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



01 Feb 2024 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.

NORMAL



28 Dec 2023 Diag: Wes Davis

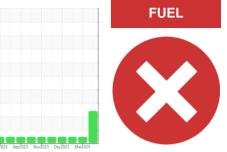
Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.





OIL ANALYSIS REPORT

Sample Rating Trend





721022-361655 Component Diesel Engine

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

Recommendation

We advise that you check the fuel injection system. 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.

Machine Id

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.

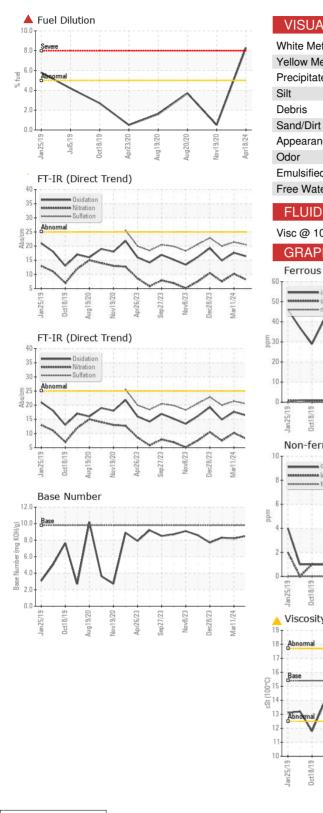
Fluid Condition

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.

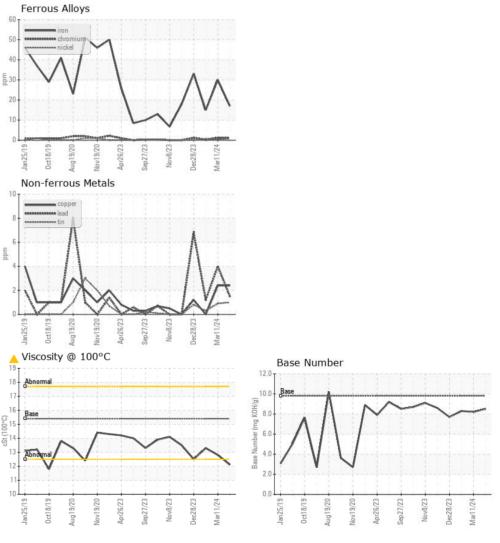
Sample Date Client Info 18 Apr 2024 11 Mar 2024 01 Feb 2024 Machine Age hrs Client Info 27208 27060 26934 Oil Age hrs Client Info 148 0 26770 Oil Changed Client Info Not Changd Not Changd Not Changd Not Changd Sample Status Client Info Not Changd Not Changd Not Changd Not Changd Qil Age WC Method >0.2 NEG NEG NEG Water WC Method >0.2 NEG NEG NEG Chromium ppm ASTM 05185m >5 1 1 <1 Nickel ppm ASTM 05185m >5 1 1 <1 <1 Nickel ppm ASTM 05185m >3 <1 0 0 Aluminum ppm ASTM 05185m >3 <1 <1 <1 Copper ppm ASTM 05185m >5 1 <1 <	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 18 Apr 2024 11 Mar 2024 01 Feb 2024 Machine Age hrs Client Info 27208 27060 26934 Oil Age hrs Client Info 148 0 26770 Oil Changed Client Info Not Changed Not Changed Not Changed Sample Status Client Info Not Changed Not Changed Not Changed QOI Changed WC Method >0.2 NEG NEG NEG Water WC Method >0.2 NEG NEG NEG Chromium ppm ASTM 05185m >5 1 1 <1	Sample Number		Client Info		GFL0118811	GFL0114144	GFL0108097
Oil Age hrs Client Info 148 0 26770 Oil Changed Client Info Not Changed Not Chang	Sample Date		Client Info		18 Apr 2024	11 Mar 2024	01 Feb 2024
Oil Changed Sample Status Client Info Not Changd SEVERE Changed NORMAL Not Changed NORMAL 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 D5185 >80 17 30 15 Chromium ppm ASTM D5185 >5 1 1 <1	Machine Age	hrs	Client Info		27208	27060	26934
Sample Status Normal NORMAL NORMAL CONTAMINATION method Imit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS method Imit/base current history1 history2 Iron ppm ASTM D5185n >80 17 30 15 Chromium ppm ASTM D5185n >2 <1	Oil Age	hrs	Client Info		148	0	26770
CONTAMINATION method Imit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS method Imit/base current history1 history2 Iron ppm ASTM D5185n >80 17 30 15 Chromium ppm ASTM D5185n >55 1 1 <1	Oil Changed		Client Info		Not Changd	Changed	Not Changd
Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imit/base current history1 history2 Iron ppm ASTM D5185m >80 17 30 15 Chromium ppm ASTM D5185m >5 1 1 <1	Sample Status				SEVERE	NORMAL	NORMAL
Glycol WC Method NEG NEG NEG NEG WEAR METALS method limil/base current history1 history2 Iron ppm ASTM D5185m >5 1 1 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >80 17 30 15 Chromium ppm ASTM D5185m >2 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron ppm ASTM D5185m >80 17 30 15 Chromium ppm ASTM D5185m >5 1 1 <1	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >5 1 1 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 <1 <1 <1 Titanium ppm ASTM D5185m >3 <1	Iron	ppm	ASTM D5185m	>80	17	30	15
Titanium ppm ASTM D5185m <1 <1 <1 0 Silver ppm ASTM D5185m >3 <1	Chromium	ppm	ASTM D5185m	>5	1	1	<1
Titanium ppm ASTM D5185m <1 <1 <1 0 Silver ppm ASTM D5185m >3 <1	Nickel		ASTM D5185m	>2	<1	<1	<1
Silver ppm ASTM D5185m >3 <1 0 0 Aluminum ppm ASTM D5185m >30 3 4 3 Lead ppm ASTM D5185m >30 2 4 1 Copper ppm ASTM D5185m >150 2 2 0 Tin ppm ASTM D5185m >5 1 <1 <1 <1 Vanadium ppm ASTM D5185m >5 1 <1 <1 0 Cadmium ppm ASTM D5185m 0 0 0 0 2 Boron ppm ASTM D5185m 0 0 0 <1 <1 Molybdenum ppm ASTM D5185m 0 <1 <1< <1 Maganese ppm ASTM D5185m 0 <10 790 853 883 Calcium ppm ASTM D5185m 1010 790 853 883 833 Ca	Titanium		ASTM D5185m		<1	<1	0
Aluminum ppm ASTM D5185m >30 3 4 3 Lead ppm ASTM D5185m >30 2 4 1 Copper ppm ASTM D5185m >150 2 2 0 Tin ppm ASTM D5185m >5 1 <1	Silver		ASTM D5185m	>3	<1	0	0
Lead ppm ASTM D5185m >30 2 4 1 Copper ppm ASTM D5185m >150 2 2 0 Tin ppm ASTM D5185m >5 1 <1 <1 <1 Vanadium ppm ASTM D5185m >5 1 <1 <1 0 Cadmium ppm ASTM D5185m <1 <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 <1 0 Molybdenum ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 0 <10 790 853 883 Calum ppm ASTM D5185m 1100 790 853 883 Calum ppm ASTM D5185m 1270 1087 1128 1224	Aluminum		ASTM D5185m	>30	3	4	3
Copper ppm ASTM D5185m >150 2 2 0 Tin ppm ASTM D5185m >5 1 <1	Lead			>30	2	4	1
Tin ppm ASTM D5185m >5 1 <1 <1 Vanadium ppm ASTM D5185m <1	Copper		ASTM D5185m	>150	2	2	0
Vanadium ppm ASTM D5185m <1 <1 <1 0 Cadmium ppm ASTM D5185m <1 <1 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 <1 0 Barium ppm ASTM D5185m 0 0 <1 <1 <1 0 Magnesium ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 790 853 883 Calcium ppm ASTM D5185m 1070 934 1029 962 Phosphorus ppm ASTM D5185m 1270 1087 1128 1224 Sulfur ppm ASTM D5185m 2060 2920 2569 2973 <tr< td=""><td>Tin</td><td></td><td>ASTM D5185m</td><td>>5</td><th>1</th><td><1</td><td><1</td></tr<>	Tin		ASTM D5185m	>5	1	<1	<1
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Boron ppm ASTM D5185m 0 0 0 2 Barium ppm ASTM D5185m 0 0 <1	Cadmium	ppm	ASTM D5185m		<1	<1	0
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Phosphorus ppm ASTM D5185m 1150 971 929 1017 Zinc ppm ASTM D5185m 1270 1087 1128 1224 Sulfur ppm ASTM D5185m 2060 2920 2569 2973 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 8 6 Sodium ppm ASTM D5185m >20 5 8 6 Sodium ppm ASTM D5185m >20 2 2 <1	Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 52	0 <1 59	2 0 54
Zinc ppm ASTM D5185m 1270 1087 1128 1224 Sulfur ppm ASTM D5185m 2060 2920 2569 2973 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 8 6 Sodium ppm ASTM D5185m >20 2 2 <1	Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 52 <1	0 <1 59 <1	2 0 54 <1
SulfurppmASTM D5185m2060292025692973CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>20586SodiumppmASTM D5185m>2022<1	Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 0 52 <1 790	0 <1 59 <1 853	2 0 54 <1 883
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 8 6 Sodium ppm ASTM D5185m >20 2 8 6 Potassium ppm ASTM D5185m >20 2 2 <1	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	0 0 52 <1 790 934	0 <1 59 <1 853 1029	2 0 54 <1 883 962
Silicon ppm ASTM D5185m >20 5 8 6 Sodium ppm ASTM D5185m 3 6 4 Potassium ppm ASTM D5185m >20 2 2 <1	Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	0 0 52 <1 790 934 971	0 <1 59 <1 853 1029 929	2 0 54 <1 883 962 1017
Sodium ppm ASTM D5185m 3 6 4 Potassium ppm ASTM D5185m<>20 2 2 <1	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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	0 0 52 <1 790 934 971 1087	0 <1 59 <1 853 1029 929 1128	2 0 54 <1 883 962 1017 1224
Potassium ppm ASTM D5185m >20 2 2 <1 Fuel % ASTM D3524 >5 A 8.3 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1 1.5 0.9 Nitration Abs/cm *ASTM D7624 >20 8.2 10.2 7.5 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 21.4 20.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.4 17.6 14.9	Boron Barium Molybdenum 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	0 0 52 <1 790 934 971 1087 2920	0 <1 59 <1 853 1029 929 1128 2569	2 0 54 <1 883 962 1017 1224 2973
Fuel % ASTM D3524 >5 ▲ 8.3 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1 1.5 0.9 Nitration Abs/cm *ASTM D7624 >20 8.2 10.2 7.5 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 21.4 20.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.4 17.6 14.9	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	0 0 52 <1 790 934 971 1087 2920 current	0 <1 59 <1 853 1029 929 1128 2569 history1	2 0 54 <1 883 962 1017 1224 2973 history2
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1 1.5 0.9 Nitration Abs/cm *ASTM D7624 >20 8.2 10.2 7.5 Sulfation Abs/.tm *ASTM D7415 >30 20.5 21.4 20.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 16.4 17.6 14.9	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 60 1010 1070 1150 1270 2060	0 0 52 <1 790 934 971 1087 2920 current 5	0 <1 59 <1 853 1029 929 1128 2569 history1 8	2 0 54 <1 883 962 1017 1224 2973 history2 6
Soot % % *ASTM D7844 >3 1 1.5 0.9 Nitration Abs/cm *ASTM D7624 >20 8.2 10.2 7.5 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 21.4 20.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.4 17.6 14.9	Boron Barium Molybdenum 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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >20	0 0 52 <1 790 934 971 1087 2920 <u>current</u> 5 3	0 <1 59 <1 853 1029 929 1128 2569 history1 8 6	2 0 54 <1 883 962 1017 1224 2973 history2 6 4
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Oxidation Abs/.1mm *ASTM D7414 >25 16.4 17.6 14.9	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 2060 2060 20 20 20 20 20 20 20 20 20 20 20 20 20	0 0 52 <1 790 934 971 1087 2920 current 5 3 2 2 8.3 current 1	0 <1 59 <1 853 1029 929 1128 2569 history1 8 6 2 <1.0 history1 1.5	2 0 54 <1 883 962 1017 1224 2973 history2 6 4 <1 <1.0 history2 0.9
	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 D3524 ASTM D3524	0 0 0 1010 1070 1150 1270 2060 2060 2060 220 220 220 25 20 1imit/base 23 23 20	0 0 52 <1 790 934 971 1087 2920 Current 5 3 2 8.3 2 8.3 Current 1 8.2	0 <1 59 <1 853 1029 929 1128 2569 history1 8 6 2 <1.0 history1 1.5 10.2	2 0 54 <1 883 962 1017 1224 2973 history2 6 4 <1 <1.0 history2 0.9 7.5
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.5 8.2 8.3	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 >20 >20 >5 imit/base >3 >20 >3	0 0 52 <1 790 934 971 1087 2920 Current 5 3 2 & 8.3 Current 1 8.2 20.5	0 <1 59 <1 853 1029 929 1128 2569 history1 8 6 2 <1.0 history1 1.5 10.2 21.4	2 0 54 <1 883 962 1017 1224 2973 history2 6 4 <1 <10 history2 0.9 7.5 20.0
	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 >20 >20 >5 imit/base >3 >20 >30 30	0 0 52 <1 790 934 971 1087 2920 Current 5 3 2 2 8.3 2 8.3 Current 1 8.2 20.5 Current	0 <1 59 <1 853 1029 929 1128 2569 history1 8 6 2 <1.0 history1 1.5 10.2 21.4 history1	2 0 54 <1 883 962 1017 1224 2973 history2 6 4 <1 <1.0 history2 0.9 7.5 20.0 history2



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	12.1	12.8	13.3
GRAPHS						



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 837 - Harrison TS Sample No. : GFL0118811 Received : 22 Apr 2024 22820 S State Route 291 Lab Number : 06156746 Tested : 25 Apr 2024 Harrisonville, MO Unique Number : 10992169 Diagnosed : 25 Apr 2024 - Wes Davis US 64701 Test Package : FLEET (Additional Tests: FuelDilution, PercentFuel) Contact: SARA PATRICK Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. spatrick@gflenv.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F:

Report Id: GFL837 [WUSCAR] 06156746 (Generated: 04/25/2024 10:09:03) Rev: 1

Submitted By: JEREMY BROWN

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