

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id Component

Fluid

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

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

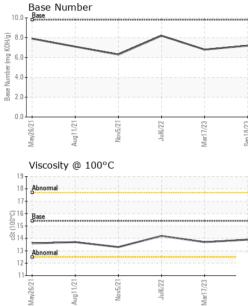
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0093194	GFL0068702	GFL0055174
Sample Date		Client Info		18 Sep 2023	17 Mar 2023	06 Jul 2022
Machine Age	hrs	Client Info		12908	11693	9768
Oil Age	hrs	Client Info		11693	9768	7272
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	12	6	22
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	<1	<1
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	4	3	2
Lead	ppm	ASTM D5185m	>40	1	<1	0
Copper	ppm	ASTM D5185m	>330	1	1	2
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Antimony	ppm	ASTM D5185m				
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 1	history1 1	history2 4
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	1	1 0 56	4 0 57
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 0	1 0 56 <1	4
Boron Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	1 0 62 <1 898	1 0 56 <1 860	4 0 57 <1 909
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	1 0 62 <1 898 1070	1 0 56 <1 860 1034	4 0 57 <1 909 1100
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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	1 0 62 <1 898 1070 978	1 0 56 <1 860 1034 912	4 0 57 <1 909 1100 947
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	1 0 62 <1 898 1070 978 1230	1 0 56 <1 860 1034 912 1156	4 0 57 <1 909 1100 947 1152
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	0 0 60 0 1010 1070 1150	1 0 62 <1 898 1070 978	1 0 56 <1 860 1034 912	4 0 57 <1 909 1100 947
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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 0 1010 1070 1150 1270	1 0 62 <1 898 1070 978 1230	1 0 56 <1 860 1034 912 1156	4 0 57 <1 909 1100 947 1152
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	1 0 62 <1 898 1070 978 1230 2914 current 5	1 0 56 <1 860 1034 912 1156 2871	4 0 57 <1 909 1100 947 1152 3195 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	1 0 62 <1 898 1070 978 1230 2914 current 5 17	1 0 56 <1 860 1034 912 1156 2871 history1 3 2	4 0 57 <1 909 1100 947 1152 3195 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	1 0 62 <1 898 1070 978 1230 2914 current 5	1 0 56 <1 860 1034 912 1156 2871 history1 3	4 0 57 <1 909 1100 947 1152 3195 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	1 0 62 <1 898 1070 978 1230 2914 current 5 17	1 0 56 <1 860 1034 912 1156 2871 history1 3 2	4 0 57 <1 909 1100 947 1152 3195 history2 3 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	1 0 62 <1 898 1070 978 1230 2914 <u>current</u> 5 17 3 <u>current</u> 0.6	1 0 56 <1 860 1034 912 1156 2871 history1 3 2 2 1 history1 0.3	4 0 57 <1 909 1100 947 1152 3195 history2 3 6 0 0 history2 0.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	1 0 62 <1 898 1070 978 1230 2914 <i>current</i> 5 17 3 <i>current</i> 0.6 7.4	1 0 56 <1 860 1034 912 1156 2871 history1 3 2 2 1 history1 0.3 7.9	4 0 57 <1 909 1100 947 1152 3195 history2 3 6 0 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	1 0 62 <1 898 1070 978 1230 2914 <u>current</u> 5 17 3 <u>current</u> 0.6	1 0 56 <1 860 1034 912 1156 2871 history1 3 2 2 1 history1 0.3	4 0 57 <1 909 1100 947 1152 3195 history2 3 6 0 0 history2 0.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 imit/base >20	1 0 62 <1 898 1070 978 1230 2914 <i>current</i> 5 17 3 <i>current</i> 0.6 7.4	1 0 56 <1 860 1034 912 1156 2871 history1 3 2 2 1 history1 0.3 7.9	4 0 57 <1 909 1100 947 1152 3195 history2 3 6 0 0 history2 0.4 9.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 20 20 20 20 20 20 20 20 20 20 20	1 0 62 <1 898 1070 978 1230 2914 Current 5 17 3 Current 0.6 7.4 20.0 Current	1 0 56 <1 860 1034 912 1156 2871 history1 3 2 1 history1 0.3 7.9 19.5 history1	4 0 57 <1 909 1100 947 1152 3195 history2 3 6 0 history2 0.4 9.0 20.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 220 20 20 20 20 20 20 20 20 20 20 20	1 0 62 <1 898 1070 978 1230 2914 <u>current</u> 5 17 3 <u>current</u> 0.6 7.4 20.0	1 0 56 <1 860 1034 912 1156 2871 history1 3 2 2 1 1 history1 0.3 7.9 19.5	4 0 57 <1 909 1100 947 1152 3195 history2 3 6 0 history2 0.4 9.0 20.0 history2



May26/21

OIL ANALYSIS REPORT



~		VISUAL White Metal	scalar	method *Visual	limit/base	current NONE	history1 NONE	history2 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			
Jul6/22	Mar17/23 Sep18/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML			
~	Ma	Odor	scalar	*Visual	NORML	NORML	NORML	NORML			
		Emulsified Wat		*Visual	>0.2	NEG	NEG	NEG			
1 1		Free Water	scalar	*Visual		NEG	NEG	NEG			
			OPERTIES		limit/base	current	history1	history2			
		Visc @ 100°C	cSt	ASTM D445	15.4	13.9	13.7	14.2			
		GRAPHS									
		Ferrous Alloy	/s								
Jul6/22	Mar1 7/23 +	20 -	n /	<u> </u>							
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		5-									
		5-									
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		May26/21 Aug11/21	Nov5/21 Jul6/22	Mar17/23	Sep 18/23						
				W	Se						
		Non-ferrous	Metals								
		copper									
		8 - tin									
		6 -									
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		4									
		2									
			LARGE AND DESCRIPTION OF THE PARTY OF THE PA	And a supervised in the local division of th	AND DOWN						
		May26/21 Aug11/21	Nov5/21 Jul6/22	lar17/23	18/23						
				Mari	Sep 1						
		Viscosity @ 1	100°C		10.0	Base Number					
		18 - Abnormal	i		10.0						
		17-			.0 ₽ ^{8.0}						
		P ¹⁶ Base			۵.1 م 6.1 م 8 Base Number (mg KOH/(d)		\checkmark				
		G 16 Base 15 15 14			ber (m						
					4.()+		1			
		13 Abnormal			2.0						
		12			0.0						
			Nov5/21 - Jul6/22 +	7/23 -			Nov5/21 + Jul6/22 +	7/23 -			
			Nov!	Mar17/23	Sep 18/23	May26/21 Aug11/21	Nov	Mar17/23			
		May26/21 Aug11/2									
	Laboratory				rv NC 27510	GEL Env	vironmental - 415	5 - Michigan F			
	Laboratory Sample No.			son Ave., Ca d : 20 :	Sep 2023	3 GFL Env	vironmental - 415				
	Sample No. Lab Number	: WearCheck U : GFL0093194 : 05956230	SA - 501 Madi Receive Diagnos	son Ave., Ca d : 20 : ed : 21 :	Sep 2023 Sep 2023	3 GFL Env		6200 Elmrid ling Heights,			
	Sample No.	: WearCheck U : GFL0093194	SA - 501 Madi Receive	son Ave., Ca d : 20 : ed : 21 :	Sep 2023	3 GFL Env	Ster	6200 Elmric			

* - 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)

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Submitted By: Frank Wolak

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