

## **OIL ANALYSIS REPORT**

Sample Rating Trend



727145 Component Diesel Engine PETRO CANADA DURON SHP 15W40 (--- GAL)

SAMPLE INFORMATION method

### DIAGNOSIS Recommendation

Resample at the next service interval to monitor.

Machine Id

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

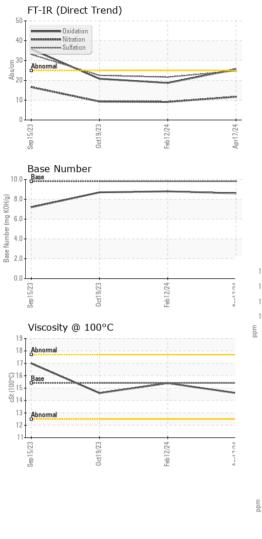
### Fluid Condition

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

SAMPLE INFORM		method	limit/base	current	history1	history2	
Sample Number		Client Info		GFL0097827	GFL0097803	GFL0097831	
Sample Date		Client Info		17 Apr 2024	12 Feb 2024	19 Oct 2023	
Machine Age	hrs	Client Info		0	0	0	
Oil Age	hrs	Client Info		550	500	200	
Oil Changed		Client Info		N/A	Changed	N/A	
Sample Status				NORMAL	NORMAL	NORMAL	
CONTAMINATI	ON	method	limit/base	current	history1	history2	
Fuel		WC Method	>5	<1.0	<1.0	<1.0	
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	>80	29	22	22	
Chromium	ppm	ASTM D5185m	>5	2	2	<1	
Nickel	ppm	ASTM D5185m	>2	-	<1	<1	
Titanium	ppm	ASTM D5185m		<1	<1	<1	
Silver	ppm	ASTM D5185m	>3	<1	<1	<1	
Aluminum	ppm	ASTM D5185m	>30	4	2	3	
Lead	ppm	ASTM D5185m	>30	2	1	0	
Copper	ppm	ASTM D5185m	>150	2	1	<1	
Tin	ppm	ASTM D5185m	>5	1	<1	0	
Vanadium	ppm	ASTM D5185m	20	<1	<1	0	
Cadmium	ppm	ASTM D5185m		<1	<1	0	
	ppin	Ao fili Do fosili				-	
ADDITIVES		method	limit/base	current	history1	history2	
ADDITIVES Boron	ppm	method ASTM D5185m	0	1	8	<1	
Boron Barium	ppm ppm		0	1 0	8	<1 0	
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	1 0 72	8	<1 0 58	
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 0	8 0 67 <1	<1 0 58 <1	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	1 0 72 <1 1098	8 0 67	<1 0 58 <1 976	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 0 72 <1	8 0 67 <1	<1 0 58 <1	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	1 0 72 <1 1098	8 0 67 <1 1060 1157 1151	<1 0 58 <1 976 1063 1069	
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	0 0 60 0 1010 1070	1 0 72 <1 1098 1219	8 0 67 <1 1060 1157	<1 0 58 <1 976 1063	
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	0 0 60 0 1010 1070 1150	1 0 72 <1 1098 1219 1241	8 0 67 <1 1060 1157 1151	<1 0 58 <1 976 1063 1069	
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	0 0 60 0 1010 1070 1150 1270	1 0 72 <1 1098 1219 1241 1426	8 0 67 <1 1060 1157 1151 1312	<1 0 58 <1 976 1063 1069 1312	
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	0 0 60 0 1010 1070 1150 1270 2060	1 0 72 <1 1098 1219 1241 1426 3312	8 0 67 <1 1060 1157 1151 1312 3671	<1 0 58 <1 976 1063 1069 1312 3032	
Boron Barium Molybdenum 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	1 0 72 <1 1098 1219 1241 1426 3312 current	8 0 67 <1 1060 1157 1151 1312 3671 history1	<1 0 58 <1 976 1063 1069 1312 3032 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	1 0 72 <1 1098 1219 1241 1426 3312 current 8	8 0 67 <1 1060 1157 1151 1312 3671 history1 6	<1 0 58 <1 976 1063 1069 1312 3032 history2 6	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m 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 2060 <b>limit/base</b>	1 0 72 <1 1098 1219 1241 1426 3312 current 8 2	8 0 67 <1 1060 1157 1151 1312 3671 history1 6 0	<1 0 58 <1 976 1063 1069 1312 3032 history2 6 3	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium 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 220 220	1 0 72 <1 1098 1219 1241 1426 3312 current 8 2 3 3 current	8 0 67 <1 1060 1157 1151 1312 3671 history1 6 0 1 1 history1	<1 0 58 <1 976 1063 1069 1312 3032 history2 6 3 2 2 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium 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 2060 2060 220 20 20 20 20 20 20 20 20	1 0 72 <1 1098 1219 1241 1426 3312 current 8 2 3 3 current 0.5	8 0 67 <1 1060 1157 1151 1312 3671 history1 6 0 1 history1 0.4	<1 0 58 <1 976 1063 1069 1312 3032 history2 6 3 2 history2 0.8	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus 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 2060 220 20 20 20 20 20 20 20 20 20 20 20 2	1 0 72 <1 1098 1219 1241 1426 3312 <i>current</i> 8 2 3 <i>current</i> 0.5 11.7	8 0 67 <1 1060 1157 1151 1312 3671 history1 6 0 1 history1 0.4 9.1	<1 0 58 <1 976 1063 1069 1312 3032 history2 6 3 2 history2 0.8 9.3	
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 D5185m	0 0 0 1010 1070 1150 1270 2060 2060 2060 220 20 20 20 20 20 20 20 20	1 0 72 <1 1098 1219 1241 1426 3312 current 8 2 3 3 current 0.5	8 0 67 <1 1060 1157 1151 1312 3671 history1 6 0 1 history1 0.4 9.1 21.6	<1 0 58 <1 976 1063 1069 1312 3032 history2 6 3 2 history2 0.8	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus 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 2060 220 20 20 20 20 20 20 20 20 20 20 20 2	1 0 72 <1 1098 1219 1241 1426 3312 <i>current</i> 8 2 3 <i>current</i> 0.5 11.7	8 0 67 <1 1060 1157 1151 1312 3671 history1 6 0 1 history1 0.4 9.1	<1 0 58 <1 976 1063 1069 1312 3032 history2 6 3 2 history2 0.8 9.3	
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 D5185m	0 0 0 1010 1070 1150 1270 2060 2060 220 200 220 320 320 33 220 330	1 0 72 <1 1098 1219 1241 1426 3312 <b>current</b> 8 2 3 3 <b>current</b> 0.5 11.7 24.8	8 0 67 <1 1060 1157 1151 1312 3671 history1 6 0 1 history1 0.4 9.1 21.6	<1 0 58 <1 976 1063 1069 1312 3032 history2 6 3 2 history2 0.8 9.3 22.5	
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 TS ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 200 220 220 220 220 33 220 330	1 0 72 <1 1098 1219 1241 1426 3312 <i>current</i> 8 2 3 <i>current</i> 0.5 11.7 24.8 <i>current</i>	8 0 67 <1 1060 1157 1151 1312 3671 history1 6 0 1 history1 0.4 9.1 21.6 history1	<1 0 58 <1 976 1063 1069 1312 3032 history2 6 3 2 history2 0.8 9.3 22.5 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	
Feb12/24	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	14.6	15.4	14.6	
		GRAPHS							
		Ferrous Alloys							
24 -	V.C.	140 iron							
Feb12/24	L been	120 - nickel							
Lab.		100							
		<u>ة</u> 80							
1		60							
		40		1					
		20							
				24	24				
1	Sep 15/23 0ct 19/23		Feb12/24	Apr17/24					
		Non-ferrous Meta	lc.	ш.	4				
- 124 -	VCL	10 T							
Feb12/24	Parent .	copper							
		8 tin							
		6							
		udd							
		2							
			The second second						
		ep15/23		eb 1 2/24 -	. pr17/24				
		Sep1		Feb 1	Apr1				
		Viscosity @ 100°C	2			Base Number			
		19			10.0				
		18 - Abnormal							
		17			6.0 Bub KOH(d) Base Nrumper 4.0 2.0		1		
		(1)16 Base 115 13 14			9 E 6.0				
		215 to							
		13 Abnormal			2.0	) -			
		12			0.0				
		5/23		2/24			9/23	2/24	
		Sep15/23 0ct19/23		Feb 12/24	Apr17/24	Sep 15/23	0ct19/23	Feb 12/24	
٩	Laboratory								
NAB	Sample No.	: GFL0097827	Recei		1090 W. Jefferson S				
	Lab Number Unique Number		Teste Diagr		: 23 Apr 2024 d : 24 Apr 2024 - Sean Felton			Morton,	
				US 615 Contact: Bryan Li					
			5		F		Co	ntact: Brvan Li	
ificate L2367 discuss this	Test Package		-					ntact: Bryan Li link@gflenv.co	

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Submitted By: Also GFL958,958A, 958B - Bryan Link