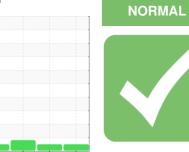


## **OIL ANALYSIS REPORT**

Sample Rating Trend



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

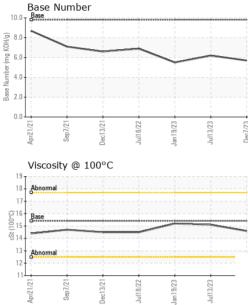
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		method	IIIIII/Dase	current	nistory i	nistoryz	
Sample Number		Client Info		GFL0105663	GFL0086638	GFL0068646	
Sample Date		Client Info		07 Dec 2023	13 Jul 2023	19 Jan 2023	
Machine Age	hrs	Client Info		10055	9520	9246	
Oil Age	hrs	Client Info		9520	9246	9022	
Oil Changed		Client Info		Changed	Changed	Changed	
Sample Status			NORMAL		NORMAL	ATTENTION	
CONTAMINAT	ION	method	limit/base	current	history1	history2	
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0	
Water		WC Method	>0.2	NEG	NEG	NEG	
Glycol		WC Method		NEG	NEG	NEG	
WEAR METAL	9	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>90	40	79	▲ 72	
Chromium	ppm	ASTM D5185m		1	2	2	
Nickel	ppm	ASTM D5185m	>2	0	<1	0	
Titanium	ppm	ASTM D5185m		0	<1	0	
Silver	ppm	ASTM D5185m	>2	0	0	0	
Aluminum	ppm	ASTM D5185m		2	5	3	
Lead	ppm	ASTM D5185m	>40	1	2	2	
Copper	ppm	ASTM D5185m	>330	2	3	3	
Tin	ppm	ASTM D5185m	>15	0	<1	0	
Vanadium	ppm	ASTM D5185m		0	<1	0	
Cadmium	ppm	ASTM D5185m		0	0	0	
ADDITIVES		method	limit/base	current	history1	history2	
ADDITIVES Boron	ppm		limit/base	current 3	history1 1	history2 0	
	ppm ppm	ASTM D5185m					
Boron		ASTM D5185m	0	3	1	0	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	3 0	1 2	0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	3 0 61	1 2 64	0 0 61	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	3 0 61 <1	1 2 64 <1	0 0 61 <1	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	3 0 61 <1 954	1 2 64 <1 924	0 0 61 <1 932	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	3 0 61 <1 954 1075	1 2 64 <1 924 1141	0 0 61 <1 932 1087	
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	3 0 61 <1 954 1075 920	1 2 64 <1 924 1141 1044	0 0 61 <1 932 1087 986	
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	3 0 61 <1 954 1075 920 1257	1 2 64 <1 924 1141 1044 1292	0 0 61 <1 932 1087 986 1213	
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	0 0 60 1010 1070 1150 1270 2060	3 0 61 <1 954 1075 920 1257 2943	1 2 64 <1 924 1141 1044 1292 2888 history1	0 0 61 <1 932 1087 986 1213 2946 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	3 0 61 <1 954 1075 920 1257 2943 current 6	1 2 64 <1 924 1141 1044 1292 2888 history1 12	0 0 61 <1 932 1087 986 1213 2946 history2 6	
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	0 0 60 1010 1070 1150 1270 2060	3 0 61 <1 954 1075 920 1257 2943 current	1 2 64 <1 924 1141 1044 1292 2888 history1	0 0 61 <1 932 1087 986 1213 2946 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS 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 2060 <b>limit/base</b>	3 0 61 <1 954 1075 920 1257 2943 current 6 76	1 2 64 <1 924 1141 1044 1292 2888 history1 12 9	0 0 61 <1 932 1087 986 1213 2946 history2 6 8	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	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 >20 20	3 0 61 <1 954 1075 920 1257 2943 current 6 76 1 1	1 2 64 <1 924 1141 1044 1292 2888 history1 12 9 2 8 history1	0 0 61 <1 932 1087 986 1213 2946 <b>history2</b> 6 8 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 ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20 <b>limit/base</b>	3 0 61 <1 954 1075 920 1257 2943 <i>current</i> 6 76 1 <i>current</i>	1 2 64 <1 924 1141 1044 1292 2888 history1 12 9 2 8 history1 1.8	0 0 61 <1 932 1087 986 1213 2946 history2 6 8 0 0 history2 1.9	
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 TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	3 0 61 <1 954 1075 920 1257 2943 <i>current</i> 6 76 1 <i>current</i> 1.1 1.1	1 2 64 <1 924 1141 1044 1292 2888 history1 12 9 2 8 history1 1.8 1.8 16.1	0 0 61 <1 932 1087 986 1213 2946 history2 6 8 0 0 history2 1.9 1.9 16.4	
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 20 <b>imit/base</b> >20 >20	3 0 61 <1 954 1075 920 1257 2943 <u>current</u> 6 76 1 1 <u>current</u> 1.1 1.1 13.6 26.0	1 2 64 <1 924 1141 1044 1292 2888 history1 12 9 2 history1 1.8 16.1 29.2	0 0 61 <1 932 1087 986 1213 2946 <b>history2</b> 6 8 0 <b>history2</b> 1.9 16.4 29.7	
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 TS ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	3 0 61 <1 954 1075 920 1257 2943 <i>current</i> 6 76 1 <i>current</i> 1.1 1.3.6 26.0 <i>current</i>	1 2 64 <1 924 1141 1044 1292 2888 history1 12 9 2 8 history1 1.8 1.8 16.1	0 0 61 <1 932 1087 986 1213 2946 history2 6 8 0 0 history2 1.9 1.9 16.4	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAM	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm % Abs/cm Abs/1mm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 20 <b>imit/base</b> >20 >20	3 0 61 <1 954 1075 920 1257 2943 <u>current</u> 6 76 1 1 <u>current</u> 1.1 13.6 26.0 <u>current</u> 23.7	1 2 64 <1 924 1141 1044 1292 2888 history1 12 9 2 <b>history1</b> 1.8 16.1 29.2 history1 2.8	0 0 61 <1 932 1087 986 1213 2946 history2 6 8 0 history2 1.9 16.4 29.7 history2 29.0	
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 ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 20 20 20 20 20 20 20 20 2	3 0 61 <1 954 1075 920 1257 2943 <i>current</i> 6 76 1 <i>current</i> 1.1 1.3.6 26.0 <i>current</i>	1 2 64 <1 924 1141 1044 1292 2888 history1 12 9 2 history1 1.8 16.1 29.2 history1	0 0 61 <1 932 1087 986 1213 2946 history2 6 8 0 0 history2 1.9 16.4 29.7 history2	



# **OIL ANALYSIS REPORT**

VISUAL



		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
Jul18/22	Jan 1 9/23 Jul 1 3/23 Dec 7/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
7 1	Ju U U	Ouoi	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROPE			limit/bas		history1	history2
		Visc @ 100°C GRAPHS	cSt	ASTM D445	15.4	14.6	15.1	15.2
		Ferrous Alloys						
2		80 70		$\sim$				
Jul18/22	Jan 1 9/ 23 Jul 1 3/ 23	60 - nickel		/ \				
	-	50 -	/		$\mathbf{\lambda}$			
		E 40	1		· · · · ·			
		30						
		20						
		Apr21/21 Sep7/21 Dec13/21	Jul18/22	Jan 19/23 Jul 13/23	Dec7/23			
		Non-ferrous Meta		۰ °				
		10 copper						
		8 - energy lead						
		6 -						
		шdd						
		4						
		2-		and the second division of the second divisio				
		The state of the s			No. of Concession, Name			
		Apr21/21	Jul18/22 -	9/23	Dec7/23			
		Apr21/21 Sep7/21	Jult	Jan19/23 Jul13/23	Dec			
		Viscosity @ 100°C	2			Base Number		
		18 - Abnormal				10.0 Base		
		17-			(B	8.0		
		ci <sup>16</sup>			KOH		-	
		Contraction 16 Base			Base Number (mg KOH/g)	6.0-		
		<sup>4</sup> 3 <sub>14</sub>			Numb	4.0		
		13 Abnormal			ase Base	2.0		
		12				2.0		
			22	23	23	0.0	22	23 53
		Apr21/21 Sep7/21 Dec13/21	Jul18/22	Jan 19/23 Jul 13/23	Dec7/23	Apr21/21 Sep7/21	Jul18/22	Jul13/23 Dec7/23
CERTEDITED TESTING LADORATORY Certificate L2367	Laboratory Sample No. Lab Number Unique Number Test Package	: WearCheck USA - 501 Madison Ave., Cary, NC 27513   GFL Environmental - 415 - Michig     : GFL0105663   Received   : 11 Dec 2023   6200 E     : 06030265   Diagnosed   : 12 Dec 2023   Sterling Heig						
* - Denotes te	Sample No. Lab Number Unique Number Test Package is sample report, st methods that	: GFL0105663 Received : 11 Dec 2023 6200   : 06030265 Diagnosed : 12 Dec 2023 Sterling H   : 10780056 Diagnostician : Wes Davis Contact: Fr   : FLEET Contact: Fr fwolak@g						6200 Elr ling Heigh US ct: Frank



Submitted By: Frank Wolak