

## **OIL ANALYSIS REPORT**

Sample Rating Trend





### Component

Diesel Engine

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

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: Sample only )  $% \label{eq:comment}$ 

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

#### Fluid Condition

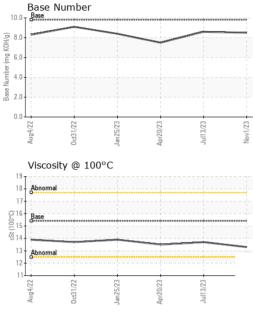
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

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SAMPLE INFORM	<b>/</b> ATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0088310	GFL0077500	GFL0068198
Sample Date		Client Info		01 Nov 2023	13 Jul 2023	20 Apr 2023
Machine Age	hrs	Client Info		3809	3297	2640
Oil Age	hrs	Client Info		512	657	532
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	16	14	16
Chromium	ppm	ASTM D5185m	>20	1	<1	1
Nickel	ppm	ASTM D5185m	>4	<1	0	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	9	6	5
Lead	ppm	ASTM D5185m	>40	1	0	0
Copper	ppm	ASTM D5185m	>330	0	<1	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	0
	ppiii	No III Boroolii	210			
Vanadium	ppm	ASTM D5185m		-1	<1	0
	ppm ppm	ASTM D5185m ASTM D5185m		<1 0	<1 0	0
Cadmium	ppm ppm	ASTM D5185m	limit/base	0	0	0
Vanadium Cadmium ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	0 history2
Cadmium ADDITIVES Boron	ppm ppm	ASTM D5185m method ASTM D5185m	0	0 current 7	0 history1 1	0 history2 4
Cadmium ADDITIVES Boron Barium	ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	0	0 current 7 0	0 history1 1 0	0 history2 4 0
Cadmium ADDITIVES Boron Barium Molybdenum	ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 current 7 0 60	0 history1 1 0 64	0 history2 4 0 60
Cadmium ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 current 7 0 60 <1	0 history1 1 0 64 <1	0 history2 4 0 60 <1
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 current 7 0 60 <1 918	0 history1 1 0 64 <1 1041	0 history2 4 0 60 <1 958
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	0 current 7 0 60 <1 918 1041	0 history1 1 0 64 <1 1041 1180	0 history2 4 0 60 <1 958 1070
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	0 current 7 0 60 <1 918 1041 953	0 history1 1 0 64 <1 1041 1180 1035	0 history2 4 0 60 <1 958 1070 1012
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	0 current 7 0 60 <1 918 1041 953 1263	0 history1 1 0 64 <1 1041 1180 1035 1331	0 history2 4 0 60 <1 958 1070 1012 1233
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	0 current 7 0 60 <1 918 1041 953	0 history1 1 0 64 <1 1041 1180 1035	0 history2 4 0 60 <1 958 1070 1012 1233 3555
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method 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 current 7 0 60 <1 918 1041 953 1263 2985 current	0 history1 1 0 64 <1 1041 1180 1035 1331 3666 history1	0 history2 4 0 60 <1 958 1070 1012 1233 3555 history2
Cadmium ADDITIVES 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 ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	0 current 7 0 60 <1 918 1041 953 1263 2985 current 3	0 history1 1 0 64 <1 1041 1180 1035 1331 3666 history1 2	0 history2 4 0 60 <1 958 1070 1012 1233 3555 history2 2
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 current 7 0 60 <1 918 1041 953 1263 2985 current 3 2	0 history1 1 0 64 <1 1041 1180 1035 1331 3666 history1 2 3	0 history2 4 0 60 <1 958 1070 1012 1233 3555 history2 2 4
Cadmium ADDITIVES 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 limit/base >25	0 current 7 0 60 <1 918 1041 953 1263 2985 current 3	0 history1 1 0 64 <1 1041 1180 1035 1331 3666 history1 2	0 history2 4 0 60 <1 958 1070 1012 1233 3555 history2 2
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 current 7 0 60 <1 918 1041 953 1263 2985 current 3 2	0 history1 1 0 64 <1 1041 1180 1035 1331 3666 history1 2 3	0 history2 4 0 60 <1 958 1070 1012 1233 3555 history2 2 4
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm	ASTM D5185m <b>method</b> ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	0 current 7 0 60 <1 918 1041 953 1263 2985 current 3 2 19	0 history1 1 0 64 <1 1041 1180 1035 1331 3666 history1 2 3 9	0 history2 4 0 60 <1 958 1070 1012 1233 3555 history2 2 4 9
Cadmium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 	0 current 7 0 60 <1 918 1041 953 1263 2985 current 3 2 19 current	0 history1 1 0 64 <1 1041 1180 1035 1331 3666 history1 2 3 9 9	0 history2 4 0 60 <1 958 1070 1012 1233 3555 history2 2 4 9 history2
Cadmium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 20 imit/base >3 >20	0 current 7 0 60 <1 918 1041 953 1263 2985 current 3 2 19 current 0.3	0 history1 1 0 64 <1 1041 1180 1035 1331 3666 history1 2 3 9 9 history1 0.3	0 history2 4 0 60 <1 958 1070 1012 1233 3555 history2 2 4 9 history2 0.3
Cadmium ADDITIVES 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 imit/base >25 20 imit/base >3 >20	0 current 7 0 60 <1 918 1041 953 1263 2985 current 3 2 19 current 0.3 7.8	0 history1 1 0 64 <1 1041 1180 1035 1331 3666 history1 2 3 9 history1 0.3 7.8	0 history2 4 0 60 <1 958 1070 1012 1233 3555 history2 2 4 9 history2 0.3 6.9
Cadmium Cadmium ADDITIVES 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	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >20 imit/base >3 >20	0 current 7 0 60 <1 918 1041 953 1263 2985 current 3 2 19 current 0.3 7.8 18.1	0 history1 1 0 64 <1 1041 1180 1035 1331 3666 history1 2 3 9 history1 0.3 7.8 19.5	0 history2 4 0 60 4 958 1070 1012 1233 3555 history2 2 4 9 history2 0.3 6.9 17.0



# **OIL ANALYSIS REPORT**

VISUAL



Certificate L2367	Laboratory Sample No Lab Numb Unique Num Test Packa	b. : GFL0088310 her : 05998362 hber : 10726722 age : FLEET	: 05998362         Diagnosed         : 06 Nov 2023         Har           : 10726722         Diagnostician         : Don Baldridge         U							
		Aug4/22	Jan 25/23	Jul13/23	Nov1/23	Aug4/22	Jan25/23	Jul13/23 +		
		Base Base Base Base Abnomal			(B)HOX Bull Jack Provide the format of the format oo the format oo the format oo the f	0-				
		18 - <mark>Abnormal</mark> 17 -				0 Base				
		Viscosity @ 10				Base Number				
		Aug4/22	Jan 25/23	Jul13/23	Nov1/23					
		4 2								
		8 - copper lead								
		Non-ferrous M			2					
		Aug 4/22	Jan 25/23	Jul13/23	Nov1/23					
		الم 40								
Jan 25/23	Jul13/23 + -	80 60	]							
		GRAPHS Ferrous Alloys								
		Visc @ 100°C	cSt	ASTM D445		13.3	13.7	13.5		
	1	Free Water	scalar	*Visual method	limit/base	NEG current	NEG history1	NEG history2		
r	~	Odor Emulsified Wate	scalar r scalar	*Visual *Visual	NORML >0.2	NORML NEG	NORML NEG	NORML NEG		
Jan 25/23	Jul13/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML		
	Debris Sand/Dirt	scalar scalar	*Visual *Visual	NONE NONE	NONE NONE	NONE	NONE			
		Silt	scalar	*Visual	NONE	NONE	NONE	NONE		
		Yellow Metal Precipitate	scalar scalar	*Visual *Visual	NONE NONE	NONE NONE	NONE	NONE		

Submitted By: also GFL632 and GFL638 - Glenda Standen