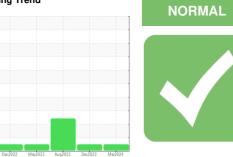


## **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id 720010 Component

Diesel Engine

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

SAMPLE INFORMATION method

Recommendation
Resample at the next service interval to monitor.
Wear

All component wear rates are normal.

#### Contamination

DIAGNOSIS

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 Number		Client Info		GFL0107654	GFL0107069	GFL0091532
Sample Date		Client Info		05 Mar 2024	20 Dec 2023	28 Aug 2023
Machine Age	hrs	Client Info		11420	11370	10821
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	SEVERE
		ام ماغم می			-	bioto m.O
CONTAMINATI	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	0.2	<b>1</b> 0.3
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	3	13	26
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	1	0
Titanium		ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
	ppm			-	2	
Aluminum	ppm		>20	<1		1
Lead	ppm	ASTM D5185m	>40	0	<1	0
Copper	ppm		>330	0	2	<1
Tin	ppm	ASTM D5185m	>15	1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 2	history1 <1	history2 <1
	ppm ppm					
Boron		ASTM D5185m	0	2	<1	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 0	<1 0	<1 0
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 51 0	<1 0 60 0	<1 0 58
Boron Barium Molybdenum	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 0 51	<1 0 60	<1 0 58 <1
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 0 51 0 935 1101	<1 0 60 0 910 1074	<1 0 58 <1 896 1029
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	2 0 51 0 935 1101 1013	<1 0 60 0 910 1074 886	<1 0 58 <1 896 1029 953
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	2 0 51 0 935 1101 1013 1246	<1 0 60 0 910 1074 886 1190	<1 0 58 <1 896 1029 953 1167
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	2 0 51 0 935 1101 1013 1246 3014	<1 0 60 910 1074 886 1190 2606	<1 0 58 <1 896 1029 953 1167 2967
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 51 0 935 1101 1013 1246 3014 current	<1 0 60 0 910 1074 886 1190 2606 history1	<1 0 58 <1 896 1029 953 1167 2967 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	2 0 51 0 935 1101 1013 1246 3014 <i>current</i> 2	<1 0 60 0 910 1074 886 1190 2606 history1 3	<1 0 58 <1 896 1029 953 1167 2967 history2 3
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	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	2 0 51 0 935 1101 1013 1246 3014 <u>current</u> 2 2 <1	<1 0 60 0 910 1074 886 1190 2606 history1 3 2	<1 0 58 <1 896 1029 953 1167 2967 <b>history2</b> 3 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	2 0 51 0 935 1101 1013 1246 3014 <i>current</i> 2 < <1 0	<1 0 60 0 910 1074 886 1190 2606 history1 3 2 2 2	<1 0 58 <1 896 1029 953 1167 2967 history2 3 2 2 0
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 225 >25 >20	2 0 51 0 935 1101 1013 1246 3014 <i>current</i> 2 <1 0	<1 0 60 910 1074 886 1190 2606 history1 3 2 2 2 2	<1 0 58 <1029 953 1029 953 1167 2967 history2 3 2 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	2 0 51 0 935 1101 1013 1246 3014 <i>current</i> 2 <1 0 <i>current</i>	<1 0 60 910 1074 886 1190 2606 history1 3 2 2 2 history1 0.9	<1 0 58 <1 896 1029 953 1167 2967 bistory2 3 2 0 bistory2 0.4
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	2 0 51 0 935 1101 1013 1246 3014 <i>current</i> 2 <1 0 <i>current</i> 0.1 7.4	<1 0 60 0 910 1074 886 1190 2606 history1 3 2 2 2 2 history1 0.9 8.9	<1 0 58 <1 896 1029 953 1167 2967 history2 3 2 0 history2 0.4 11.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	2 0 51 0 935 1101 1013 1246 3014 <i>current</i> 2 <1 0 <i>current</i>	<1 0 60 910 1074 886 1190 2606 history1 3 2 2 2 history1 0.9	<1 0 58 <1 896 1029 953 1167 2967 bistory2 3 2 0 bistory2 0.4
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	2 0 51 0 935 1101 1013 1246 3014 <i>current</i> 2 <1 0 <i>current</i> 0.1 7.4	<1 0 60 0 910 1074 886 1190 2606 history1 3 2 2 2 2 history1 0.9 8.9	<1 0 58 <1 896 1029 953 1167 2967 history2 3 2 0 history2 0.4 11.1
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 2060 225 20 225 20 20 20 20 20 20 20 20 20 20 20 20 20	2 0 51 0 935 1101 1013 1246 3014 current 2 <1 0 current 0.1 7.4 16.9	<1 0 60 0 910 1074 886 1190 2606 history1 3 2 2 2 <u>history1</u> 0.9 8.9 20.5	<1 0 58 <1 896 1029 953 1167 2967 bistory2 3 2 0 bistory2 0.4 11.1 23.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 220 20 20 20 20 20 20 20 20	2 0 51 0 935 1101 1013 1246 3014 <i>current</i> 2 <1 0 <i>current</i> 0.1 7.4 16.9 <i>current</i>	<1 0 60 0 910 1074 886 1190 2606 history1 3 2 2 2 history1 0.9 8.9 20.5 history1	<1 0 58 <1 896 1029 953 1167 2967 history2 3 2 0 history2 0.4 11.1 23.1 history2



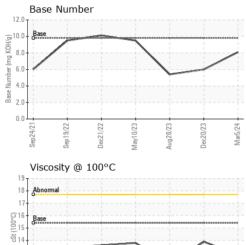
13 Abnormal 12 11 Sep24/21

Sep19/22

Dec21/22

# **OIL ANALYSIS REPORT**

VISUAL



			VISUAL		method	limit/base	current	history1	history	
			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	
May10/23 Aug28/23	Dec20/23	Mar5/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
May	Dec	W	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	history	
			Visc @ 100°C	cSt	ASTM D445	15.4	12.8	13.9	12.0	
			GRAPHS							
			Ferrous Alloys							
/23 +	/23	V C	25 - iron							
May 10/23 Aug 28/23	Dec20/23	M~E	nickel		$\wedge$					
2 4			20							
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			Sep 24/21 Sep 19/22 Dec 21/22	May10/23	Aug28/23 Dec20/23	Mar5/24				
			Non-ferrous Metal		4 1					
			10 T							
			copper							
			8 - management tin							
			6-							
			E dd							
			4-							
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			4/21	)/23	3/23	2/2				
			Sep 24/21 Sep 19/22 Dec 21/22	May10/23	Aug28/23 Dec20/23	Mar5/24				
			Viscosity @ 100°C		4 –					
	19 T			12.	Base Number					
	18 - Abnormal			10.						
			17						******	
			S <sup>16</sup> Base			1.8 Base Number (mg KOH/g)	0			
			016 0015 314			.) per	0	····· \		
			<sup>3</sup> 14	$\neg$		- 4.	0			
			13 Abnormal			2.1				
			12		Y					
			11-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	23	23	.0		23	23	
			Sep 24/21 Sep 19/22 Dec 21/22	May10/23	Aug28/23 Dec20/23	Mar5/24	Sep 24/21 Sep 19/22	Dec21/22 May10/23	Aug28/23 Dec20/23	
			00 00 D	Z	A D		00 I	3 2	A O	
	Labora	atory	: WearCheck USA - 50	1 Madiso			GFL E	nvironmental	i - 465 - Pon	
d		le No.	: GFL0107654	Recei	i <b>ved</b> : 06	6 Mar 2024			888 Bald	
MAB			.00110011	Teste	d : 07	7 Mar 2024			Pontiac	
	Lab N						V D- '	US 4834		
	Lab Ni Unique	Number	: 10914308	Diagn		' Mar 2024 - W	Ves Davis	Contact		
THE LISS THE	Lab Nu Unique Test Pa	Number ackage		Diagn	nosed : 07	' Mar 2024 - W	Ves Davis		US 48 Ricky Matthe ws@gflenv.c	