

# **OIL ANALYSIS REPORT**

Sample Rating Trend



## Machine Id 211025

Component Diesel Engine

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

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: Sample only )

#### Wear

Fluid

Metal levels are typical for a new component breaking in.

#### 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.

AL)		Apr2022 S	ep2022 Dec2022 Mar202	23 May2023 Jul2023 Sep2023	Nov2023	
SAMPLE INFORM	NATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0094844	GFL0088288	GFL0077535
Sample Date		Client Info		01 Nov 2023	25 Sep 2023	26 Jul 2023
Machine Age	mls	Client Info		71906	68457	62441
Oil Age	mls	Client Info		3499	6015	12290
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	13	13	15
Chromium	ppm	ASTM D5185m	>20	<1	1	1
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	1	4	3
Lead	ppm	ASTM D5185m	>40	1	0	0
Copper	ppm	ASTM D5185m	>330	0	0	<1
Tin	ppm	ASTM D5185m	>15	<1	0	0
Vanadium	ppm	ASTM D5185m		<1	0	0
Vanadium Cadmium	ppm ppm	ASTM D5185m ASTM D5185m		<1 0	0	0
			limit/base			
Cadmium ADDITIVES		ASTM D5185m method	limit/base	0	0	0
Cadmium ADDITIVES Boron	ppm	ASTM D5185m method	0	0 current	0 history1	0 history2
Cadmium ADDITIVES Boron Barium	ppm ppm	ASTM D5185m method ASTM D5185m	0	0 current 7	0 history1 4	0 history2 4
Cadmium ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 60	0 current 7 0	0 history1 4 0	0 history2 4 0
Cadmium ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 current 7 0 58	0 history1 4 0 57	0 history2 4 0 59
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 current 7 0 58 <1	0 history1 4 0 57 <1	0 history2 4 0 59 <1
Cadmium ADDITIVES Boron	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 58 <1 899	0 history1 4 0 57 <1 881	0 history2 4 0 59 <1 855
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 58 <1 899 993	0 history1 4 0 57 <1 881 1014	0 history2 4 0 59 <1 855 1033
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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 58 <1 899 993 959	0 history1 4 0 57 <1 881 1014 955	0 history2 4 0 59 <1 855 1033 954
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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 1270	0 current 7 0 58 <1 899 993 959 1232	0 history1 4 0 57 <1 881 1014 955 1167	0 history2 4 0 59 <1 855 1033 954 1148
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 58 <1 899 993 959 1232 3097	0 history1 4 0 57 <1 881 1014 955 1167 2895	0 history2 4 0 59 <1 855 1033 954 1148 2969
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	0 current 7 0 58 <1 899 993 959 1232 3097 current	0 history1 4 0 57 <1 881 1014 955 1167 2895 history1	0 history2 4 0 59 <1 855 1033 954 1148 2969 history2
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 0 1010 1070 1150 1270 2060 <b>limit/base</b>	0 current 7 0 58 <1 899 993 993 959 1232 3097 current 10	0 history1 4 0 57 <1 881 1014 955 1167 2895 history1 11	0 history2 4 0 59 <1 855 1033 954 1148 2969 history2 3
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b>	0 current 7 0 58 <1 899 993 959 1232 3097 current 10 <1	0 history1 4 0 57 <1 881 1014 955 1167 2895 history1 11 2	0 history2 4 0 59 <1 855 1033 954 1148 2969 history2 3 <1
Cadmium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m <b>method</b> 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> >25 >20	0 current 7 0 58 <1 899 993 959 1232 3097 current 10 <1 1	0 history1 4 0 57 <1 881 1014 955 1167 2895 history1 11 2 2 4 1	0 history2 4 0 59 <1 855 1033 954 1148 2969 history2 3 <1 1
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 <b>limit/base</b> >25	0 current 7 0 58 <1 899 993 959 1232 3097 current 10 <1 1 current	0 history1 4 0 57 <1 881 1014 955 1167 2895 history1 11 2 2 <1 +istory1	0 history2 4 0 59 <1 855 1033 954 1148 2969 history2 3 <1 1 1
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN <sup>T</sup> Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m <b>method</b> ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <b>limit/base</b> >20	0 current 7 0 58 <1 899 993 959 1232 3097 current 10 <1 1 1 current 0.2	0 history1 4 0 57 <1 881 1014 955 1167 2895 history1 11 2 2 <1 11 2 -1 0.3	0 history2 4 0 59 <1 855 1033 954 1148 2969 history2 3 <1 1 1 history2 0.3
Cadmium Cadmium ADDITIVES 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 method ASTM D5185m ASTM D5185	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	0 current 7 0 58 <1 899 993 959 1232 3097 current 10 <1 1 0.2 6.2	0 history1 4 0 57 <1 881 1014 955 1167 2895 history1 11 2 2895 history1 11 2 3 4 11 0.3 7.3	0 history2 4 0 59 <1 855 1033 954 1148 2969 history2 3 <1 1 1 history2 0.3 7.3
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 method ASTM D5185m ASTM D5185	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >3 >20	0 current 7 0 58 <1 899 993 959 1232 3097 current 10 <1 1 0.2 6.2 17.9	0 history1 4 0 57 <1 881 1014 955 1167 2895 history1 11 2 2895 history1 0.3 7.3 18.1	0 history2 4 0 59 <1 855 1033 954 1148 2969 history2 3 <1 1 1 history2 0.3 7.3 18.2



12 10 Apr18/22 -

Sen7/22

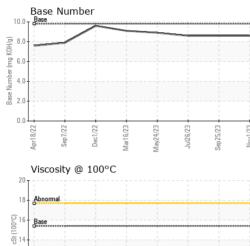
Dec1/22

# **OIL ANALYSIS REPORT**

scalar \*Visual

VISUAL

White Metal



		Apr Se						
		April 8/22 Sep 7/22 Dec1/22	Mar16/23	Jul26/23	Nov1/23		Mar16/23 Mar16/24/23	Jui26/23 Sep 25/23
		17 16 Base 15 14 13 Abnomal			6. Base Number (mg KOH(d) 4.	0-		
		Viscosity @ 100	)°C		10.	Base Number		
		Apr18/2 0 2 4 9 9 8 8 9 7 12 2 9 6 9 9 8 9 7 12 2 9 9 8 9 7 12 2 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Mart6/23	Jurb6r23	Novi/23			
		Non-ferrous Me	Mart 6/23 May 24/23	Jul26/23 Sep25/23	Nov1/23			
		15 10 5 0	123	(23	/23			
Mar16/23 +	Jul26/23 + Sep25/23 + -	45 40 35 30 25 20	$\wedge$					
		GRAPHS Ferrous Alloys						
		FLUID PROP Visc @ 100°C	PERTIES cSt	method ASTM D445	limit/base	current 12.9	history1 12.4	history2 12.5
		Free Water	scalar	*Visual		NEG	NEG	NEG
2 2	- 0	Odor Emulsified Water	scalar scalar	*Visual *Visual	NORML >0.2	NORML NEG	NORML NEG	NORML NEG
Mar16/23 May24/23 Jul26/23 Sep25/23	Appearance Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE	
		Silt	scalar	*Visual	NONE	NONE	NONE	NONE
		Yellow Metal Precipitate	scalar scalar	*Visual *Visual	NONE NONE	NONE	NONE NONE	NONE NONE
				*Visual	NONE	NONE		

NONE

NONE

NONE

NONE