

## **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.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

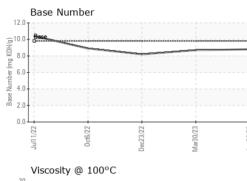
### Fluid Condition

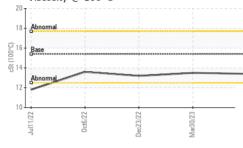
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history 1	history 2
Sample Number		Client Info		GFL0082743	GFL0071234	GFL0063320
Sample Date		Client Info		26 Jun 2023	30 Mar 2023	23 Dec 2022
Machine Age	hrs	Client Info		3185	139301	1411
Oil Age	hrs	Client Info		600	0	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history 1	history 2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history 1	history 2
Iron	ppm	ASTM D5185m	>110	4	0	8
Chromium	ppm	ASTM D5185m	>4	<1	<1	0
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>25	0	<1	2
Lead	ppm	ASTM D5185m	>45	0	0	0
Copper	ppm	ASTM D5185m	>85	<1	1	4
Tin	ppm	ASTM D5185m	>4	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method		current	history 1	history 2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 2	history 1 2	history 2 91
	ppm ppm					
Boron		ASTM D5185m	0	2	2	91
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	2 0	2 0	91 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 69	2 0 61	91 0 57
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 69 <1	2 0 61 0	91 0 57 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 0 69 <1 1041	2 0 61 0 892	91 0 57 <1 869
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 0 69 <1 1041 1201	2 0 61 0 892 1097	91 0 57 <1 869 1097
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 69 <1 1041 1201 1179	2 0 61 0 892 1097 1035	91 0 57 <1 869 1097 994
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	2 0 69 <1 1041 1201 1179 1422	2 0 61 0 892 1097 1035 1215	91 0 57 <1 869 1097 994 1195
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 69 <1 1041 1201 1179 1422 3984	2 0 61 0 892 1097 1035 1215 3129	91 0 57 <1 869 1097 994 1195 3418
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 0 1010 1070 1150 1270 2060	2 0 69 <1 1041 1201 1179 1422 3984 current	2 0 61 0 892 1097 1035 1215 3129 history 1	91 0 57 <1 869 1097 994 1195 3418 history 2
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 0 1010 1070 1150 1270 2060 <b>limit/base</b>	2 0 69 <1 1041 1201 1179 1422 3984 <i>current</i> 3	2 0 61 0 892 1097 1035 1215 3129 history 1 2	91 0 57 <1 869 1097 994 1195 3418 history 2 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	2 0 69 <1 1041 1201 1179 1422 3984 current 3 2	2 0 61 0 892 1097 1035 1215 3129 history 1 2 3	91 0 57 <1 869 1097 994 1195 3418 history 2 2 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30	2 0 69 <1 1041 1201 1179 1422 3984 <u>current</u> 3 2 2 <1	2 0 61 0 892 1097 1035 1215 3129 history 1 2 3 3 <1	91 0 57 <1 869 1097 994 1195 3418 history 2 2 0 2
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >30 >20 <b>Imit/base</b>	2 0 69 <1 1041 1201 1179 1422 3984 current 3 2 <1 current 0.3	2 0 61 0 892 1097 1035 1215 3129 history 1 2 3 <1 2 3 <1 bistory 1 0.3	91 0 57 <1 869 1097 994 1195 3418 <b>history 2</b> 2 0 2 2 0 2 <b>history 2</b> 0.4
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	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30 >20 <b>limit/base</b>	2 0 69 <1 1041 1201 1179 1422 3984 <u>current</u> 3 2 <1 <u>current</u>	2 0 61 0 892 1097 1035 1215 3129 history 1 2 3 <1 history 1	91 0 57 <1 869 1097 994 1195 3418 <b>history 2</b> 2 0 2 2 0 2
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >30 >20 imit/base >3 >20	2 0 69 <1 1041 1201 1179 1422 3984 <i>current</i> 3 2 <1 2 <1 <i>current</i> 0.3 7.0	2 0 61 0 892 1097 1035 1215 3129 history 1 2 3 <1 2 3 <1 history 1 0.3 7.8	91 0 57 <1 869 1097 994 1195 3418 history 2 2 0 2 0 2 history 2 0.4 8.5
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 ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >30 <b>imit/base</b> >3 20	2 0 69 <1 1041 1201 1179 1422 3984 <i>current</i> 3 2 <1 <i>current</i> 0.3 7.0 19.4 <i>current</i>	2 0 61 0 892 1097 1035 1215 3129 history 1 2 3 <1 2 3 <1 0.3 7.8 19.0 history 1	91 0 57 <1 869 1097 994 1195 3418 <b>history 2</b> 2 0 2 0 2 <b>history 2</b> 0.4 8.5 18.9
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	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >30 220 <b>imit/base</b> >30 >20 30	2 0 69 <1 1041 1201 1179 1422 3984 <u>current</u> 3 2 <1 <u>current</u> 0.3 7.0 19.4	2 0 61 0 892 1097 1035 1215 3129 history 1 2 3 <1 2 3 <1 history 1 0.3 7.8 19.0	91 0 57 <1 869 1097 994 1195 3418 <b>history 2</b> 2 0 2 0 2 <b>history 2</b> 0.4 8.5 18.9 <b>history 2</b>



# **OIL ANALYSIS REPORT**





		VISUAL		method	limit/base	current	history 1	history 2
		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
1		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Dec23/22	Mar30/23 Jun26/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Dec	Juni	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PRO	PERTIES	method	limit/base	current	history 1	history 2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.4	13.5	13.2
		GRAPHS						
		Ferrous Alloys						
/22	/23	iron						
Dec23/22	Mar30/23	25 - nickel						
	2	20						
		<u>ة</u> 15						
		10						
		5-						
				$\searrow$				
		53 <sup>1</sup> 0	22	23	23			
		Jul11/22 0ct6/22	Dec23/22	Mar30/23	Jun 26/23			
			×	٦٢				
	Non-ferrous Me	etals						
	copper							
	20 - sessesses lead							
		_ 15		     				
				130/23	126/23			
		Jult 1/22 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Dec23/22.	Mar30/23	Jun 26/23			
		Uiscosity @ 100	Dec23/22.	Ma30/23	200 200 200 200 200 200 200 200 200 200	Base Number		
		und 10 5 0 10 10 10 10 10 10 10 10 10 10 10 10 1	Dec23/22.	Mar30/23	12.0			
		udd 10 5 0 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Dec23/22.	Mai:30/23	12.0			
		Uid 10 5 0 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Dec23/22.	C20023	12.0	Bacc		
		Uid 10 5 0 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Dec23/22.	C20053	12.0	Base		
		ud 10 5 0 10 10 5 0 10 10 10 10 10 10 10 10 10	Dec23/22.	C2005a	12.0	Bree		
		ud 10 5 0 10 10 5 0 10 10 10 10 10 10 10 10 10	Dec23/22.	CZ:005/PPW	12.0	Bree		
		Uiscosity @ 100	Dec23/22.	CZOOGERW	12.0 10.0 (PH 0) (PH 8.0 (PH 8.0 ) (PH 8.0)) (PH 8.0 ) (PH 8.0)) (PH 8.0)) (			
		ud 10 5 0 10 5 0 10 10 10 10 10 10 10 10 10	Dec23/22.	CZOOGERW	12.0 10.0 (CH) 00.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	Bac		
		Uiscosity @ 100	Dec233/22	M	12.0 10.0 (0)HOX BU 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.			23
		Uiscosity @ 100	Dec233/22	M	12.0 10.0 (0)HOX BU 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.			lat30/23
		udd 10 5 0 27/11/10 Viscosity @ 100 Viscosity @ 100 10 5 0 27/11/10 Viscosity @ 100 10 5 0 27/110 Viscosity @ 100 Viscosity @ 100 Viscosity @	Dec23/22	Mar30/23	12.0 (0)HOX Bull Page 2.0 EXU92UNC	Jul11/22	Dec23/2.2	Mar30/23
	Laboratory	ud 10 5 0 10 10 10 10 10 10 10 10 10	2762290 	Son Ave., Ca	12.0 10.0	Jul11/22		- 465 - Ponti
NAB	Sample No.	Uiscosity @ 100 Viscosity @ 100 Viscosity @ 100	22/222200 	Son Ave., Ca	12.0 10.0	Jul11/22	Dec23/2.2	- 465 - Pontia 888 Baldw
	Sample No. Lab Number	Uiscosity @ 100 Viscosity @ 100 Viscosity @ 100	CECCON CECON CE	Son Ave., Ca d : 29 . ed : 02 .	ry, NC 27513 Jun 2023 Jul 2023	Jul11/22	Dec23/2.2	- 465 - Pontia 888 Baldw Pontiac, I
	Sample No.	Uiscosity @ 100 Uiscosity @ 100 Uiscos	22/222200 	Son Ave., Ca d : 29 . ed : 02 .	12.0 10.0	Jul11/22	ZUEZPOO	- 465 - Ponti 888 Baldw

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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