

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 914052 Component

Fluid

Diesel Engine

PETRO CANADA DURON SHP 15W40 (36 LTR)

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 INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0104399	GFL0059320	GFL0084954
Sample Date		Client Info		27 Dec 2023	16 Nov 2023	17 Oct 2023
Machine Age	hrs	Client Info		1182	877	586
Oil Age	hrs	Client Info		1182	291	586
Oil Changed		Client Info		N/A	N/A	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	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	0	4	30
Chromium	ppm	ASTM D5185m	>20	0	0	<1
Nickel	ppm	ASTM D5185m	>5	0	0	1
Titanium	ppm	ASTM D5185m	>2	0	0	<1
Silver	ppm	ASTM D5185m	>2	<1	0	<1
Aluminum	ppm	ASTM D5185m	>20	1	1	4
Lead	ppm	ASTM D5185m	>40	0	<1	0
Copper	ppm	ASTM D5185m	>330	0	<1	153
Tin	ppm	ASTM D5185m	>15	0	<1	1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	3	0	<b>1</b> 13
	ppm ppm					
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	3	0 0 56	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> </ul>
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	3 0	0 0 56 <1	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> </ul>
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	3 0 54 <1 902	0 0 56 <1 950	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>▲ 526</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	3 0 54 <1 902 904	0 0 56 <1 950 1054	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>▲ 526</li> <li>929</li> </ul>
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 54 <1 902 904 1009	0 0 56 <1 950 1054 1036	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>▲ 526</li> <li>929</li> <li>▲ 605</li> </ul>
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	3 0 54 <1 902 904 1009 1192	0 0 56 <1 950 1054 1036 1226	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>▲ 526</li> <li>929</li> <li>▲ 605</li> <li>▲ 677</li> </ul>
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	0 0 60 0 1010 1070 1150	3 0 54 <1 902 904 1009	0 0 56 <1 950 1054 1036	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>▲ 526</li> <li>929</li> <li>▲ 605</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	3 0 54 <1 902 904 1009 1192 3036 current	0 0 56 <1 950 1054 1036 1226 3190 history1	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>▲ 526</li> <li>929</li> <li>▲ 605</li> <li>▲ 677</li> <li>2050</li> <li>history2</li> </ul>
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 <b>method</b> ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	3 0 54 <1 902 904 1009 1192 3036 current 5	0 0 56 <1 950 1054 1036 1226 3190 history1 4	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>▲ 526</li> <li>929</li> <li>▲ 605</li> <li>▲ 677</li> <li>2050</li> <li>history2</li> <li>37</li> </ul>
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 <b>method</b> ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	3 0 54 <1 902 904 1009 1192 3036 <u>current</u> 5 <	0 0 56 <1 950 1054 1036 1226 3190 history1 4 2	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>▲ 526</li> <li>929</li> <li>▲ 605</li> <li>▲ 677</li> <li>2050</li> <li>▶istory2</li> <li>37</li> <li>3</li> </ul>
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 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	3 0 54 <1 902 904 1009 1192 3036 current 5	0 0 56 <1 950 1054 1036 1226 3190 history1 4 2 1	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>▲ 526</li> <li>929</li> <li>▲ 605</li> <li>▲ 677</li> <li>2050</li> <li>▶istory2</li> <li>37</li> <li>3</li> <li>4</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	3 0 54 <1 902 904 1009 1192 3036 current 5 <1 <1 <1	0 0 56 <1 950 1054 1036 1226 3190 history1 4 2 1 1 history1	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>4 526</li> <li>929</li> <li>▲ 605</li> <li>▲ 677</li> <li>2050</li> <li>▶istory2</li> <li>37</li> <li>3</li> <li>4</li> <li>bistory2</li> </ul>
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 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <u>limit/base</u> >20	3 0 54 <1 902 904 1009 1192 3036 current 5 <1 <1 <1 current 0	0 0 56 <1 950 1054 1036 1226 3190 history1 4 2 1 1 history1 0.1	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>▲ 526</li> <li>929</li> <li>▲ 605</li> <li>▲ 677</li> <li>2050</li> <li>▶istory2</li> <li>37</li> <li>3</li> <li>4</li> <li>▶istory2</li> <li>0.2</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 1imit/base >22 20	3 0 54 <1 902 904 1009 1192 3036 <i>current</i> 5 <1 <1 <1 <1 <i>current</i> 0 4.1	0 0 56 <1 950 1054 1036 1226 3190 history1 4 2 1 4 2 1 history1 0.1 5.1	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>▲ 526</li> <li>929</li> <li>▲ 605</li> <li>▲ 677</li> <li>2050</li> <li>▶istory2</li> <li>37</li> <li>3</li> <li>4</li> <li>▶istory2</li> <li>0.2</li> <li>8.1</li> </ul>
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 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <u>limit/base</u> >20	3 0 54 <1 902 904 1009 1192 3036 current 5 <1 <1 <1 current 0	0 0 56 <1 950 1054 1036 1226 3190 history1 4 2 1 1 history1 0.1	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>▲ 526</li> <li>929</li> <li>▲ 605</li> <li>▲ 677</li> <li>2050</li> <li>▶istory2</li> <li>37</li> <li>3</li> <li>4</li> <li>▶istory2</li> <li>0.2</li> </ul>
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 ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 1imit/base >22 20	3 0 54 <1 902 904 1009 1192 3036 <i>current</i> 5 <1 <1 <1 <1 <i>current</i> 0 4.1	0 0 56 <1 950 1054 1036 1226 3190 history1 4 2 1 4 2 1 history1 0.1 5.1	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>▲ 526</li> <li>929</li> <li>▲ 605</li> <li>▲ 677</li> <li>2050</li> <li>▶istory2</li> <li>37</li> <li>3</li> <li>4</li> <li>▶istory2</li> <li>0.2</li> <li>8.1</li> </ul>
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 D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 <u>imit/base</u> >20 20	3 0 54 <1 902 904 1009 1192 3036 <u>current</u> 5 <1 <1 <1 <1 0 4.1 17.4	0 0 56 <1 950 1054 1036 1226 3190 history1 4 2 1 1 <u>history1</u> 0.1 5.1 18.0	<ul> <li>▲ 113</li> <li>0</li> <li>73</li> <li>2</li> <li>4 526</li> <li>929</li> <li>▲ 605</li> <li>▲ 677</li> <li>2050</li> <li>history2</li> <li>37</li> <li>3</li> <li>4</li> <li>history2</li> <li>0.2</li> <li>8.1</li> <li>24.3</li> </ul>

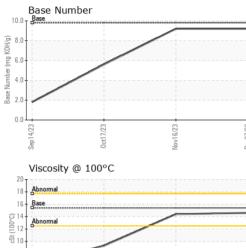


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# **OIL ANALYSIS REPORT**

VISUAL



0ct17/23

/		White Metal						
		write weta	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	LIGHT	NONE	NONE
		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
	7/23 -		scalar	*Visual	NORML	NORML	NORML	NORML
	NOV1 b/ 23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual	20.L	NEG	NEG	NEG
		FLUID PROPE		method	limit/base	current	history1 14.4	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	14.6	14.4	<b>9</b> .3
		GRAPHS						
		Ferrous Alloys						
6	1/23	25 - iron chromium						
	NOV1 b/ 23	nickel						
	_	20						
		툍 15-						
		10	$\langle \rangle$					
		5						
				~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
		Sep14/23 0ct17/23		Nov16/23	Dec27/23			
		Sep		Nov	Dec			
		Non-ferrous Meta	als					
		140 lead						
		120 - tin	/					
		100						
		a 80						
		60						
		60- 40-						
		60		\ \				
		60 40 20 0		2	23			
		60 40 20 0		sv16/23	ec21/23			
		8ap14/20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Nov16/23	Dec27/23			
		60 40 20 0 CZ/H des Viscosity @ 100°	c	Nov16/23		Base Number		
		60 40 20 0 CZ/Lipo Viscosity @ 100° 20	c	Nov16/23	EZUZZan			
		60 40 20 0 EZ/LIPO Viscosity @ 100° 18 Abormal	c	Navi B/23	10.	0 Base		1
		60 40 20 0 EZ/LIPO Viscosity @ 100° 18 Base	c	Novi 6/23	10.	0 Base		
		60 40 20 0 EZ/LIPO Viscosity @ 100° 18 Base	c	Nov16/23	10.	0 Base		
		60 40 20 0 EZ/LIPO Viscosity @ 100° 18 Base	c	Vov16/23	10.	0 Base		
		60 40 20 0 CZ <sup>1</sup> H deg Viscosity @ 100° Abnormal 6 0 16 8 8 8 8 10 10 10 10 10 10 10 10 10 10	c	Nov1623	10.	0 Base		
		60 40 20 0 14 16 16 16 16 16 10 10 10 10 10 10 10 10 10 10	c	Nool		0 Base		
		60 40 20 0 CZ <sup>1</sup> H deg Viscosity @ 100° Abnormal 6 0 16 8 8 8 8 10 10 10 10 10 10 10 10 10 10	c	Nov16/23	10. (0)HOX 00 Jaquing 4. 2002 2.	0 - Base.		
		Cooling Coo	c		10. (6) MO Mag umpu agenum 4. 2. 0.			
		Cooling Coo	c		10. (6) MO Mag umpu agenum 4. 2. 0.			ov16/23
		60 40 20 0 10 10 10 10 10 10 10 10 10	c	Nav16/23 Nav16/23	10. (0)HOX 00 Jaquing 4. 2002 2.			Nov16/23
	Laboratory	CZULIPO Viscosity @ 100° CZULIPO Viscosity @ 100° Abnomal Base Abnomal CZULIPO CZULIP	/	Nov16/23	10. 8. 6. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9.			
	Laboratory	CULIPO Viscosity @ 100° CULIPO Viscosity @ 100° CULIPO CUL	501 Madis	EZgjood son Ave., Ca	10. (0)HOX Bul) Ja HOX BUL JA HOX HOX BUL JA HOX BU		ronmental - 41	0 - Michigan W
	Sample No.	Cooling Coolin	501 Madis Recieved	EZIGINAN Soon Ave., Ca	10. (0HOX Bu) January 4. (0HOX Bu) January 4. (0) (0) (0) (0) (0) (0) (0) (0) (0) (0)		ronmental - 41	<b>0 - Michigan W</b> )00 Van Born
	Sample No. Lab Number	Current of the second s	501 Madis Recieved Diagnose	son Ave., Ca i : 04 . ed : 04 .	10. (b) HO y Bul and (c) HO		ronmental - 41	0 - Michigan W
ticate L2367	Sample No. Lab Number Unique Number Test Package	Current of the second of the s	501 Madia Recieved Diagnose Diagnose	son Ave., Ca ician : Dor	10. (b)(ty) Bu()		ronmental - 41 390	<b>0 - Michigan W</b> 000 Van Born Wayne,