

## **OIL ANALYSIS REPORT**

Sample Rating Trend



# 829098 PETERBILT 320

Component Diesel Engine

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

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

Fluid

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

## Fluid Condition

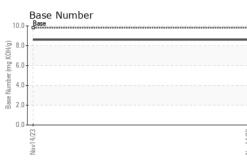
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

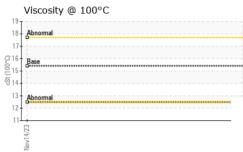
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0061438		
Sample Date		Client Info		14 Nov 2023		
Machine Age	hrs	Client Info		0		
Oil Age	hrs	Client Info		600		
Oil Changed		Client Info		Changed		
Sample Status				NORMAL		
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0		
Glycol		WC Method		NEG		
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	19		
Chromium	ppm	ASTM D5185m	>4	<1		
Nickel	ppm	ASTM D5185m	>2	2		
Titanium	ppm	ASTM D5185m		<1		
Silver	ppm	ASTM D5185m	>2	0		
Aluminum	ppm	ASTM D5185m	>25	2		
Lead	ppm	ASTM D5185m	>45	2		
Copper	ppm	ASTM D5185m	>85	9		
Tin	ppm	ASTM D5185m	>4	<1		
Vanadium	ppm	ASTM D5185m		0		
Cadmium	ppm	ASTM D5185m		0		
ADDITIVES		method				history2
ADDITIVES Boron	ppm	Method ASTM D5185m	limit/base	current 91	history1	history2
	ppm ppm					
Boron		ASTM D5185m	0	91		
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	91 <1		
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	91 <1 73		
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	91 <1 73 <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	91 <1 73 <1 833		
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	91 <1 73 <1 833 1158	  	  
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	91 <1 73 <1 833 1158 908	   	
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	91 <1 73 <1 833 1158 908 1122	    	
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	91 <1 73 <1 833 1158 908 1122 2985		
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	91 <1 73 <1 833 1158 908 1122 2985 current	     history1	
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	91 <1 73 <1 833 1158 908 1152 2985 current 25	     history1	     history2
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	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30	91 <1 73 <1 833 1158 908 1122 2985 <u>current</u> 25 1	      history1 	      history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc 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	91 <1 73 <1 833 1158 908 1122 2985 current 25 1 4	     history1  	     history2  
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 <b>limit/base</b> >30 -20	91 <1 73 <1 833 1158 908 1122 2985 current 25 1 4 current	     history1   history1	     history2   history2
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 limit/base >30 200 limit/base >33	91 <1 73 <1 833 1158 908 1158 908 1122 2985 <b>current</b> 25 1 4 <b>current</b> 0.4	     history1   history1 	     history2  history2  history2
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 imit/base >30 220 imit/base >3 >20	91 <1 73 <1 833 1158 908 1158 908 1122 2985 <i>current</i> 25 1 4 <i>current</i> 0.4 8.4	      history1   history1  	     history2  history2  history2
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 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	91 <1 73 <1 833 1158 908 1122 2985 Current 25 1 4 Current 0.4 8.4 21.9 Current	      history1  history1  history1	     history2  history2  history2
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 D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 2060 2060 200 200 200 200 20	91 <1 73 <1 833 1158 908 1122 2985 <u>current</u> 25 1 4 <u>current</u> 0.4 8.4 21.9	     history1   history1  history1  history1	    history2  history2  history2  history2



# **OIL ANALYSIS REPORT**

VISUAL





	VISUAL		method	iimit/base		nistory i	nistory
	White Metal	scalar	*Visual	NONE	NONE		
	Yellow Metal	scalar	*Visual	NONE	NONE		
	Precipitate	scalar	*Visual	NONE	NONE		
	Silt	scalar	*Visual	NONE	NONE		
	Debris	scalar	*Visual	NONE	NONE		
	Sand/Dirt	scalar	*Visual	NONE	NONE		
	Appearance	scalar	*Visual	NORML	NORML		
	Odor	scalar	*Visual	NORML	NORML		
	Emulsified Water	scalar	*Visual	>0.2	NEG		
	Free Water	scalar	*Visual		NEG		
	FLUID PROF	FRTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445		12.5		
	GRAPHS						
	Ferrous Alloys						
	<sup>20</sup>						
	iron						
	15 - nickel						
	톱 10						
	d 10						
	5						
	0	******					
	Nov14/23			Nov14/23			
	Nov			Nov			
	Non-ferrous Me	tals					
	10 <sub>T</sub>						
	copper						
	8 - essessesses lead						
	6						
	mdd						
	4						
	2						
	-						
				~			
				4/2.			
				Vov14/2			
	Nov14/23	٥٢		Nov14/23			
	<sup>EZ/FLANN</sup> Viscosity @ 100	°C			Base Number		
	<sup>E26</sup> /100 Viscosity @ 100	°C			Base Number		
	Viscosity @ 100	°C		10.0	Base		
	Viscosity @ 100	°C		10.0	Base		
i	Viscosity @ 100	°C		10.0	Base		
10-00	Viscosity @ 100	°C		10.0	Base		
	Viscosity @ 100	°C		10.0	Base		
	Viscosity @ 100 Viscosity @ 100	°C		10.0	Base		
	Viscosity @ 100 Viscosity @ 100 Abnormal Base Base 4bnormal	°C		10.0 8.6 00 KOH(30) 00 Bui 10 Bui	Base.		
	Viscosity @ 100	°C		10.1 (6)(0)(0) (6)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)	Base.		
1	Viscosity @ 100 Viscosity @ 100 Abnomal Base Base Abnomal	°C		10.1 8.4 0.4 0.4 1.9 888 Winner 1.2 88 8.2 1.0 1.0	Base.		
	Viscosity @ 100 Viscosity @ 100 Abnomal Base Base Abnomal	°C		10.1 8.4 0.4 0.4 1.9 888 Winner 1.2 88 8.2 1.0 1.0			
10-100 PM	Viscosity @ 100 Viscosity @ 100 Abnormal Base Base 4bnormal	°C		10.1 (0)HOX B0.1 	Base.		
	Viscosity @ 100 Viscosity @ 100 Abnomal Base Base Abnomal	°C		10.1 8.4 0.4 0.4 1.9 888 Winner 1.2 88 8.2 1.0 1.0			
10-10-00 F	Viscosity @ 100 Viscosity @ 100 Abnormal Abnormal Base Abnormal Control of the second s	- 501 Madia		10.1 (b)HOX bu) Ja (b)HOX bu) Ja (b)HOX bu) Ja (b)HOX bu) Ja (b)HOX bu) Ja (b)HOX bu) Ja (c) (c) (c) (c) (c) (c) (c) (c) (c) (c)	Base.	ronmental - 642- Gr	
	Viscosity @ 100 Viscosity @ 100 Abnormal Base Abnormal Abnormal City Ci	- 501 Madia	d :17	10.1 (6)HOX 60.1 (6)HOX 60.1 (6)HOX 60.1 (6)HOX 60.1 (6)HOX 60.1 (7) (7) (7) (7) (7) (7) (7) (7) (7) (7)	Base.		n Nash Ave
r	Viscosity @ 100 Viscosity @ 100	- 501 Madia Received Diagnosa	d :17 ed :19	10.1 (0)HOU Bull 10.1 (0)HOU	Base.		n Nash Ave Lowell,
er Der	Viscosity @ 100 Viscosity @ 100	- 501 Madia	d :17 ed :19	10.1 (6)HOX 60.1 (6)HOX 60.1 (6)HOX 60.1 (6)HOX 60.1 (6)HOX 60.1 (7) (7) (7) (7) (7) (7) (7) (7) (7) (7)	Base.	5826 Alde	n Nash Ave Lowell, US 493
/ b. er ber age	Viscosity @ 100 Viscosity @ 100	- 501 Madia Received Diagnost	d : 17 ed : 19 tician : We	10.1 10.1	Base.	5826 Alde Cont	and Rapids Haul In Nash Ave 3 Lowell, US 493 act: Josh Arn ett@gflenv.co

To discuss this sample report, contact Customer Service at 1-800-237-1369.

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

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

Certificate L2367

Submitted By: BRITTANY FLINN

T:

F: