

# **OIL ANALYSIS REPORT**

Sample Rating Trend

## NORMAL

# VOLVO VNL 760 179 (S/N 4V4NC9EH8PN315467)

Diesel Engine

PETRO CANADA DURON SHP 10W30 (--- 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.

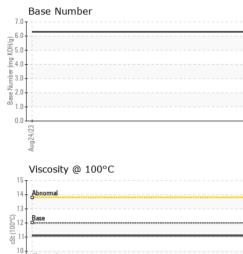
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0097697		
Sample Date		Client Info		24 Aug 2023		
Machine Age	mls	Client Info		153000		
Oil Age	mls	Client Info		27000		
Oil Changed		Client Info		Changed		
Sample Status				NORMAL		
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>6.0	<1.0		
Glycol		WC Method	, 010	NEG		
-						
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	18		
Chromium	ppm	ASTM D5185m	>20	<1		
Nickel	ppm	ASTM D5185m	>2	1		
Titanium	ppm	ASTM D5185m		<1		
Silver	ppm	ASTM D5185m	>2	0		
Aluminum	ppm	ASTM D5185m	>25	3		
Lead	ppm	ASTM D5185m	>40	1		
Copper	ppm		>330	11		
Tin	ppm	ASTM D5185m	>15	<1		
Vanadium	ppm	ASTM D5185m		0		
Cadmium	ppm	ASTM D5185m		0		
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	2	0	history1	history2
	ppm ppm					
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	0		
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	2 0 50	0 0		
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	0 0 61		
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	0 0 61 <1 910 994		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995	0 0 61 <1 910 994 919		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180	0 0 61 <1 910 994 919 1152	  	
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	2 0 50 0 950 1050 995	0 0 61 <1 910 994 919	   	
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	2 0 50 0 950 1050 995 1180	0 0 61 <1 910 994 919 1152	    	
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	2 0 50 950 1050 995 1180 2600	0 0 61 <1 910 994 919 1152 2938		
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	2 0 50 950 1050 995 1180 2600	0 0 61 <1 910 994 919 1152 2938 current		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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	2 0 50 0 950 1050 995 1180 2600 <b>imit/base</b> >25	0 0 61 <1 910 994 919 1152 2938 current 4	     history1	     history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>imit/base</b> >25	0 0 61 <1 910 994 919 1152 2938 <u>current</u> 4 <1	     history1	     history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600 <b>imit/base</b> >25 >20	0 0 61 <1 910 994 919 1152 2938 <u>current</u> 4 <1 9	     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	2 0 50 950 1050 995 1180 2600 <b>imit/base</b> >25 >20 <b>imit/base</b> >3	0 0 61 <1 910 994 919 1152 2938 <u>current</u> 4 <1 9	     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 ppm ppm	ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600 <b>imit/base</b> >25 >20 <b>imit/base</b> >3	0 0 61 <1 910 994 919 1152 2938 current 4 <1 9 current 0.4	     history1   history1 	     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	2 0 50 950 1050 995 1180 2600 imit/base >25 >20 imit/base >20	0 0 61 <1 910 994 919 1152 2938 <u>current</u> 4 <1 9 <u>current</u> 0.4 9.6	      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 D5185m	2 0 50 50 950 1050 995 1180 2600 <b>imit/base</b> >25 20 <b>imit/base</b> >3 >20 >30	0 0 61 <1 910 994 919 1152 2938 <b>current</b> 4 <1 9 <b>current</b> 0.4 9.6 20.2	      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 *ASTM D7844	2 0 0 50 0 950 1050 995 1180 2600 2600 25 20 220 20 20 20 20 20 30 20 20 20	0 0 61 <1 910 994 919 1152 2938 current 4 <1 9 current 0.4 9.6 20.2 current	     history1   history1  history1  history1	     history2  history2  history2  history2



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	VISUAL		method	limit/base	current	history1	history2
	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		
Aud24/23	Appearance	scalar	*Visual	NORML	NORML		
Auto		scalar	*Visual	NORML	NORML		
	Emulsified Water	scalar	*Visual	>0.2	NEG		
	Free Water	scalar	*Visual		NEG		
	FLUID PROP	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	12.00	11.1		
	GRAPHS						
	Ferrous Alloys						
	18 16			-			
	16 - Iron 14 - nickel						
	E <sup>10</sup> 8						
	6						
	4						
	2						
	0						
	Aug24/23			Aug24/23			
	D .			8			
	4			A			
	⊲ Non-ferrous Met	als		A			
		als		A			
	Non-ferrous Met	als		A			
	Non-ferrous Met	als		A			
	Non-ferrous Met	als		A			
	Non-ferrous Met	als		Ā			
	Non-ferrous Met	als		Ϋ́			
	Non-ferrous Met	als		Ϋ́			
	Non-ferrous Met						
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	Non-ferrous Met						
	Non-ferrous Met				Raco Numbor		
	Non-ferrous Met				Base Number	_	
	Non-ferrous Met			40024/23		-	
	Non-ferrous Met			EZ/HZ20mW 7.0 6.0			
	Non-ferrous Met			EZ/HZ20mW 7.0 6.0			
	Non-ferrous Met			EZ/HZ20mW 7.0 6.0		-	
	Non-ferrous Met			EZ/HZ20mW 7.0 6.0		-	
	Non-ferrous Met			EZ/HZ20mW 7.0 6.0		-	
	Non-ferrous Met			7.0 6.0 (b)(HOX) bu) Ja (unit) 4.0 3.0 2.0		-	
	Non-ferrous Met			EZ/HZ20mW 7.0 6.0		-	
	Non-ferrous Met			7.0 6.0 (0)(0)(0)(0) 800 900 900 900 900 900 900 900 900 900		-	
	Non-ferrous Met			7.0 6.0 (0)(0)(0)(0) 800 900 900 900 900 900 900 900 900 900		-	
	Non-ferrous Met			7.0 6.0 (b)HOX Du) +qumy seg 1.0		-	
	Non-ferrous Met	°C		7.0 6.0 (h)(h)(h)(h) 8898 Mumper (h) 800 (h)(h)(h) 800 (h)(h)(h) 800 (h)(h)(h)(h)(h)(h)(h)(h)(h)(h)(h)(h)(h)(	Aug24/23		
Laboratory	Non-ferrous Met	°C 501 Madia	son Ave., Ca	ССИ <sub>7</sub> С <sup>1</sup>	Aug24/23	TV	
Sample No.	Non-ferrous Met	°C 501 Madia Received	son Ave., Ca d : 06 0	7.0 6.0 (0)HOX bul Jaquiniy see 2.0 1.0 6.0 00 0HOX bul Jaquiniy see 2.0 1.0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Aug24/23	<b>TV</b> . 1391	5 W ROUTE
Sample No. Lab Number	Non-ferrous Met	°C 501 Madia Received Diagnos	son Ave., Ca d : 06 0 ed : 09 0	7.0 6.0 (0)HOX bul Jaquiniy see 2.0 1.0 6.0 0 (0)HOX bul Jaquiniy see 2.0 1.0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Aug24/23	<b>TV</b> . 1391	A REPAIR LL 5 W ROUTE S PLAINFIELD,
Sample No. Lab Number Unique Numbe	Non-ferrous Met	°C 501 Madia Received	son Ave., Ca d : 06 0 ed : 09 0	7.0 6.0 (0)HOX bul Jaquiniy see 2.0 1.0 6.0 00 0HOX bul Jaquiniy see 2.0 1.0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Aug24/23	<b>TV</b> 1391	5 W ROUTE : PLAINFIELD, US 605
Sample No. Lab Number Unique Numbe Test Package	Non-ferrous Met	C 501 Madia Received Diagnos	son Ave., Ca d : 06 ( ed : 09 ( tician : We	7.0 6.0 (http://boline EZ/hZDine EZ/hZDine EZ/hZDine 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Aug24/23	TV 1391 F Contact: JOSF	5 W ROUTE : PLAINFIELD, US 605