

# **OIL ANALYSIS REPORT**

Sample Rating Trend

## NORMAL

# VOLVO VNL 107 (S/N 4V4NC9EH7MN286703)

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

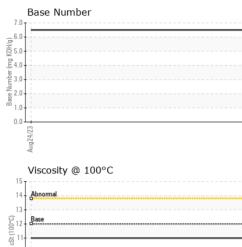
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0097541		
Sample Date		Client Info		24 Aug 2023		
Machine Age	mls	Client Info		344000		
Oil Age	mls	Client Info		0		
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	20.0	NEG		
-				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	0		
Titanium	ppm	ASTM D5185m		0		
Silver	ppm	ASTM D5185m	>2	0		
Aluminum	ppm	ASTM D5185m	>25	6		
Lead	ppm	ASTM D5185m	>40	<1		
Copper	ppm	ASTM D5185m	>330	6		
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	limit/base 2	current 3	history1	history2
	ppm ppm				, in the second s	· · · · · · · · · · · · · · · · · · ·
Boron		ASTM D5185m	2	3		
Boron Barium	ppm	ASTM D5185m ASTM D5185m	2 0	3 0		
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	3 0 63		
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	3 0 63 <1		
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950	3 0 63 <1 920		
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	3 0 63 <1 920 1107	  	  
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 50 950 1050 995	3 0 63 <1 920 1107 1027	   	
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	3 0 63 <1 920 1107 1027 1264	    	    
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	3 0 63 <1 920 1107 1027 1264 3205		
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	3 0 63 <1 920 1107 1027 1264 3205 current		
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	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >25	3 0 63 <1 920 1107 1027 1264 3205 current 5	    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 ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >25	3 0 63 <1 920 1107 1027 1264 3205 <u>current</u> 5 1	    history1	     history2 
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	2 0 50 950 1050 995 1180 2600 <b>imit/base</b> >25 >20	3 0 63 <1 920 1107 1027 1264 3205 <u>current</u> 5 1 3	    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 0 950 1050 995 1180 2600 <b>Imit/base</b> >25 >20 <b>Imit/base</b> >3	3 0 63 <1 920 1107 1027 1264 3205 <i>current</i> 5 1 3 <i>current</i> 0.5	     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	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >25 >20 <b>limit/base</b> >3	3 0 63 <1 920 1107 1027 1264 3205 current 5 1 3 3 current	     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	2 0 50 950 1050 995 1180 2600 imit/base >25 >20 imit/base >3 >20	3 0 63 <1 920 1107 1027 1264 3205 <i>current</i> 5 1 3 <i>current</i> 0.5 9.3	     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 D7624	2 0 50 950 1050 995 1180 2600 <i>imit/base</i> >25 20 <i>imit/base</i> >3 >20 30	3 0 63 <1 920 1107 1027 1264 3205 <i>current</i> 5 1 3 <i>current</i> 0.5 9.3 20.3	     history1  history1  history1  history1	     history2  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 0 950 1050 995 1180 2600 <b>imit/base</b> >25 >20 <b>imit/base</b> >3 >20 >3	3 0 63 <1 920 1107 1027 1264 3205 <u>current</u> 5 1 3 3 <u>current</u> 0.5 9.3 20.3	     history1  history1  history1	     history2  history2  history2



10 Abnormal 9 8 Aug24/23

# **OIL ANALYSIS REPORT**



	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		
Aug24/23	Appearance	scalar	*Visual	NORML	NORML		
Aug	Odor	scalar	*Visual	NORML	NORML		
	Emulsified Water	scalar	*Visual	>0.2	NEG		
	Free Water	scalar	*Visual		NEG		
	FLUID PROPE	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	12.00	11.0		
	GRAPHS						
	Ferrous Alloys						
	18 16 iron						
	14						
	12-						
	E <sup>10</sup>						
	8						
	6						
	4						
	4/23			4/23 -			
	Aug24/23			Aug24/23			
	Non-ferrous Meta	als					
	10 <sub>T</sub>						
	copper						
	8- unsusantin						
	6-						
				-			
	m dd			-			
				-			
	ш ф 4						
	ق 4- 2-						
	<u>ل</u> 4 2						
	<u>ل</u> 4 2						
	4 2 2 4 2 3 0 5 2 4 2 0 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			Aug24/23			
	Viscosity @ 100°			Aug24,23	Base Number		
	Uiscosity @ 100°			Aug24/23	T		
	Viscosity @ 100°			C/b20nW 7.0			
	Viscosity @ 100°			C/b20nW 7.0			
	Viscosity @ 100°			C/b20nW 7.0			
	Viscosity @ 100°			C/b20nW 7.0			
	Uiscosity @ 100%			C/b20nW 7.0			
	Uiscosity @ 100° Viscosity @ 100° Abnomal 3 3 3 3 3 11 4 4 4 4 4 4 4 4 4 4 4 4 4			7.0 6.0 (b)NON Buy Bases Base 2.0			
	Viscosity @ 100° Viscosity @ 100° Abnomal Abnomal			7.0 6.0 (b)HOX Buil Jack Hox Buil Jach Hox Buil Jach Hox Buil Jach Hox Buil Jach Hox B			
	Viscosity @ 100° Viscosity @ 100° Abnomal Abnomal 8			7.0 (0)HO3 W 4.0 888 800 1.0 0 0 0 0 0 0 0 0 0			
	Viscosity @ 100° Viscosity @ 100° Abnomal Abnomal 8			7.0 (0)HO3 W 4.0 888 800 1.0 0 0 0 0 0 0 0 0 0			
	Viscosity @ 100° Viscosity @ 100° Abnomal Abnomal			7.0 6.0 (b)HOX Buil Jack Hox Buil Jach Hox Buil Jach Hox Buil Jach Hox Buil Jach Hox B			
Laboratory	Viscosity @ 100° Viscosity @ 100° Abnomal Abnomal 8	C 501 Madia	son Ave., Ca	- слугарни и порединии и поредини и порединии и поредини и поредини и поредини и поредини и поредини и поредини и	Aug24/23	τν/	
Sample No.	WearCheck USA - : PCA0097541	C 501 Madia Received	son Ave., Ca		Aug24/23	13915	5 W ROUTE
Sample No. Lab Number	Uiscosity @ 100%	501 Madia Received Diagnos	son Ave., Ca d : 06 ( ed : 09 (	ry, NC 27513 Oct 2023 Oct 2023	Aug24/23	13915	5 W ROUTE PLAINFIELD,
Sample No. Lab Number Unique Number	WearCheck USA - PCA0097541 05972005 10683955	C 501 Madia Received	son Ave., Ca d : 06 ( ed : 09 (		Aug24/23	13915 F	5 W ROUTE PLAINFIELD, US 605
Sample No. Lab Number	Uiscosity @ 100%	501 Madia Received Diagnos Diagnost	son Ave., Ca d : 06 0 ed : 09 0 tician : We	ry, NC 27513 Oct 2023 S Davis	Aug24/23	13915 F Contact: JOSH	A REPAIR LI 5 W ROUTE PLAINFIELD, US 605 UA HUBBAF varepairllc.cc