**WEAR CONTAMINATION FLUID CONDITION**  **NORMAL NORMAL NORMAL** 

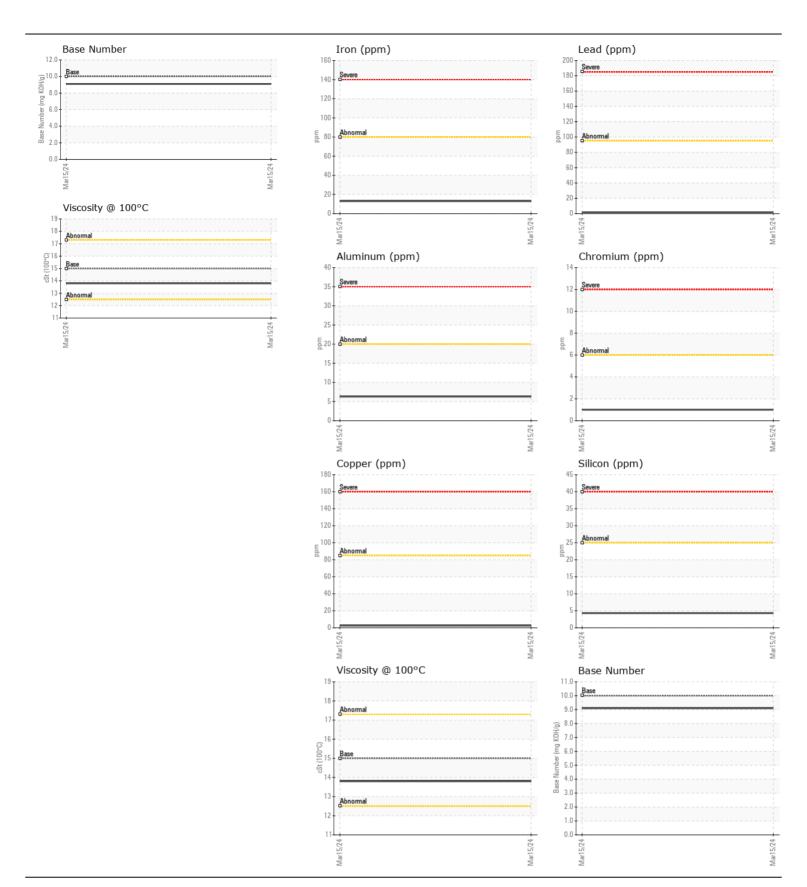
## DAN BUTLER [DANIEL/502850]

## **VOLVO PENTA A296098**

Component Center Diesel Engine

VOLVO III TRA DIESEL ENGINE OIL 15W40 VDS-3 (4 GAL)

Sample Number   Cilent Info   VPA598275   15   15   16   17   17   18   18   19   18   18   19   18   18	VOLVO ULTRA DIESEL ENGINE OIL 15W40 VE	)5-3 (4 GAL)	<u>)</u>					
Resample at the next service interval to monitor.   Sample Number   Client Info   Surgice Data   Clie	RECOMMENDATION	Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Cate   Clear Info	Resample at the next service interval to monitor.	Sample Number		Client Info		VPA059275		
Oil Age		Sample Date		Client Info		15 Mar 2024		
Filter Age		Machine Age	hrs	Client Info		902		
Oil Changed   Client Info   Not Changed   Sample Status   Client Info   Not Changed   Not Changed		Oil Age	hrs	Client Info		0		
Filter Changed   Sample Status		Filter Age	hrs	Client Info		0		
Normal   N		Oil Changed		Client Info		Not Changd		
Iron		Filter Changed		Client Info		Not Changd		
All component wear rates are normal.    Chromium   ppm   ASTM 05185m   52   2   2         Titanium   ppm   ASTM 05185m   52   2         Silver   ppm   ASTM 05185m   52   0         All unimum   ppm   ASTM 05185m   52   0         ASTM 05185m   52   1         ASTM 051		Sample Status				NORMAL		
All component wear rates are normal.    Chromium   ppm   ASTM 05185m   52   2   2         Titanium   ppm   ASTM 05185m   52   2         Silver   ppm   ASTM 05185m   52   0         All unimum   ppm   ASTM 05185m   52   0         ASTM 05185m   52   1         ASTM 051	WEAR	Iron	nnm	ASTM D5185m	\80	13		
Nickel   ppm   ASTM DSISS   >2   2	WLAII							
Titanium   ppm   ASTM D6185m   >2   < 1	All component wear rates are normal.							
Silver   ppm   ASTM D5185m   >20   6								
Aluminum   ppm   ASTM D5185m   >20   6								
Lead								
Copper								
Tin								
Vanadium   Vanadium								
White Metal   Scalar   Visual   NONE   NON					>9			
Yellow Metal   Scalar   Visual   NONE   NONE           Potassium   ppm   ASTM D5185m   >25   4           Potassium   ppm   ASTM D5185m   >20   2           Fuel   WC Method   >4.0   <1.0           Water   WC Method   >0.1   NEG           Glycol   WC Method   >0.1   NEG           Soot   %   *ASTM D7244   >0.1           Nitration   Abs:/mm   ASTM D7445   >30   17.9           Silt   Scalar   Visual   NONE   NONE   NONE           Silt   Scalar   Visual   NONE   NONE   NONE           Sand/Dirt   Scalar   Visual   NONE   NONE           Sand/Dirt   Scalar   Visual   NORML					NONE			
Silicon   ppm   ASTM D5185m   >25   4								
Potassium   ppm   ASTM D5185m   2-0   2		Yellow Metal	scalar	"VISUAI	NONE	NONE		
Fuel   WC Method   So.1   NEG   So.1   NEG	CONTAMINATION	Silicon	ppm	ASTM D5185m	>25	4		
Water	There is no indication of any contamination in the oil.	Potassium	ppm	ASTM D5185m	>20	2		
Glycol   Soot % % *ASTM D7844   O.1         Nitration   Abs/lmm *ASTM D7824 > 20   6.0         Sulfation   Abs/lmm *ASTM D7845   -30   17.9         Silt   scalar *Visual   NONE   NONE   NONE         Debris   scalar *Visual   NONE   NONE   NONE         Appearance   scalar *Visual   NORML   NORML   NORML         Appearance   scalar *Visual   NORML   NORML   NORML         Emulsified Water   scalar *Visual   NORML   NORML         Boron   ppm   ASTM D5185m   2.5   26         Barium   ppm   ASTM D5185m   0.0   0   0       Molybdenum   ppm   ASTM D5185m   0.0   0   0       Magnesium   ppm   ASTM D5185m   2.5   2.5         Magnesium   ppm   ASTM D5185m   2.5   3.5   3.5         Magnesium   ppm   ASTM D5185m   2.5   3.5   3.5         Magnesium   ppm   ASTM D5185m   2.5   3.5   3.5         Magnesium   ppm   ASTM D5185m   2		Fuel		WC Method	>4.0	<1.0		
Soot %		Water		WC Method	>0.1	NEG		
Nitration   Abs/cm		Glycol		WC Method		NEG		
Sulfation   Abs/.tmm   *ASTM D71415   >30   17.9		Soot %	%	*ASTM D7844		0.1		
Silt   Scalar   *Visual   NONE   NONE   NONE   NONE   Sand/Dirt   Scalar   *Visual   NONE   NORML   NO		Nitration	Abs/cm	*ASTM D7624	>20	6.0		
Debris   Scalar   *Visual   NONE   NONE   NONE   Sand/Dirt   Scalar   *Visual   NONE   NORML   NOR		Sulfation	Abs/.1mm	*ASTM D7415	>30	17.9		
Sand/Dirt   Scalar   *Visual   NONE   NORML   NORML		Silt	scalar	*Visual	NONE	NONE		
Appearance   Scalar   *Visual   NORML   NORML   NORML   Codor   Scalar   *Visual   NORML   N		Debris	scalar	*Visual	NONE	NONE		
Calcium   Calc		Sand/Dirt	scalar	*Visual	NONE	NONE		
Emulsified Water   scalar   *Visual   >0.1   NEG		Appearance	scalar	*Visual	NORML	NORML		
Sodium   ppm   ASTM D5185m   2		Odor	scalar	*Visual	NORML	NORML		
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.    Barium   ppm   ASTM D5185m   0.0   0   0   0   0   0   0   0   0		<b>Emulsified Water</b>	scalar	*Visual	>0.1	NEG		
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.    Barium   ppm   ASTM D5185m   0.0   0   0   0   0   0   0   0   0	EL LUD CONDITION	O - alta ana		AOTM DEADE		•		
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.    Barium   ppm   ASTM D5185m   0.0   0         Molybdenum   ppm   ASTM D5185m   0.0   <1         Magnesium   ppm   ASTM D5185m   256   844         Calcium   ppm   ASTM D5185m   2057   1112         Calcium   ppm   ASTM D5185m   935   916         Zinc   ppm   ASTM D5185m   1223   1075         Sulfur   ppm   ASTM D5185m   4079   3347         Oxidation   Abs/.1mm   *ASTM D7414   >25   13.5         Base Number (BN)   mg KOH/g   ASTM D2896   10   9.1	FLUID CONDITION				0.5			
oil. The condition of the oil is acceptable for the time in service.    Molybdenum   ppm   ASTM D5185m   0.0   45	The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.							
Molyboenum         ppm         ASIM DS185m         0.7         45             Manganese         ppm         ASTM D5185m         0.0         <1								
Magnesium         ppm         ASTM D5185m         256         844             Calcium         ppm         ASTM D5185m         2057         1112             Phosphorus         ppm         ASTM D5185m         935         916             Zinc         ppm         ASTM D5185m         1223         1075             Sulfur         ppm         ASTM D5185m         4079         3347             Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5             Base Number (BN)         mg KOH/g         ASTM D2896         10         9.1		-						
Calcium         ppm         ASTM D5185m         2057         1112             Phosphorus         ppm         ASTM D5185m         935         916             Zinc         ppm         ASTM D5185m         1223         1075             Sulfur         ppm         ASTM D5185m         4079         3347             Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5             Base Number (BN)         mg KOH/g         ASTM D2896         10         9.1								
Phosphorus         ppm         ASTM D5185m         935         916             Zinc         ppm         ASTM D5185m         1223         1075             Sulfur         ppm         ASTM D5185m         4079         3347             Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5             Base Number (BN)         mg KOH/g         ASTM D2896         10         9.1		•						
Zinc         ppm         ASTM D5185m         1223         1075             Sulfur         ppm         ASTM D5185m         4079         3347             Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5             Base Number (BN)         mg KOH/g         ASTM D2896         10         9.1								
Sulfur         ppm         ASTM D5185m         4079         3347             Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5             Base Number (BN)         mg KOH/g         ASTM D2896         10         9.1		·						
Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5             Base Number (BN)         mg KOH/g         ASTM D2896         10         9.1								
Base Number (BN)         mg KOH/g         ASTM D2896         10         9.1								
Visc @ 100°C cSt ASTM D445 15.0 13.8								
		Visc @ 100°C	cSt	ASTM D445	15.0	13.8		





Certificate L2367

Laboratory

Sample No.

Lab Number : 06123447 Unique Number: 10937598

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : VPA059275

Received **Tested** Diagnosed Test Package : MOB 1 ( Additional Tests: TBN )

: 21 Mar 2024 : 22 Mar 2024 - Don Baldridge

: 20 Mar 2024

Endor Marine LLC - Coastal Marine - 152124 4300 11th Ave. NW SEATTLE, WA US 98107

Contact: WILLOW YANARELLA service@coastalmarineengine.com T: (206)784-3703

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)

F: (206)784-8823