



# OIL ANALYSIS REPORT

WEAR	<b>NORMAL</b>
CONTAMINATION	<b>NORMAL</b>
FLUID CONDITION	<b>NORMAL</b>

Machine Id  
**VOLVO 110087**  
Component  
**Diesel Engine**  
Fluid  
**DIESEL ENGINE OIL SAE 15W40 (--- GAL)**

## RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>KLMFA13446</b>	KLMFA06556	KLMFA04301
Sample Date		Client Info		<b>14 Oct 2013</b>	06 May 2013	11 Dec 2012
Machine Age	mls	Client Info		<b>2342421</b>	2295645	2261348
Oil Age	mls	Client Info		<b>33265</b>	34303	103551
Filter Age	mls	Client Info		<b>33265</b>	34303	103551
Oil Changed		Client Info		<b>Not Changd</b>	Not Changd	Changed
Filter Changed		Client Info		<b>Not Changd</b>	Not Changd	Changed
Sample Status				<b>NORMAL</b>	NORMAL	ABNORMAL

## WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	<b>54</b>	39	127
Chromium	ppm	ASTM D5185m	>20	<b>1</b>	2	2
Nickel	ppm	ASTM D5185m	>2	<b>1</b>	<1	4
Titanium	ppm	ASTM D5185m		<b>0</b>	0	0
Silver	ppm	ASTM D5185m	>2	<b>0</b>	<1	0
Aluminum	ppm	ASTM D5185m	>25	<b>6</b>	6	7
Lead	ppm	ASTM D5185m	>40	<b>6</b>	6	18
Copper	ppm	ASTM D5185m	>330	<b>17</b>	4	14
Tin	ppm	ASTM D5185m	>15	<b>2</b>	<1	2
Vanadium	ppm	ASTM D5185m		<b>0</b>	<1	0
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

## CONTAMINATION

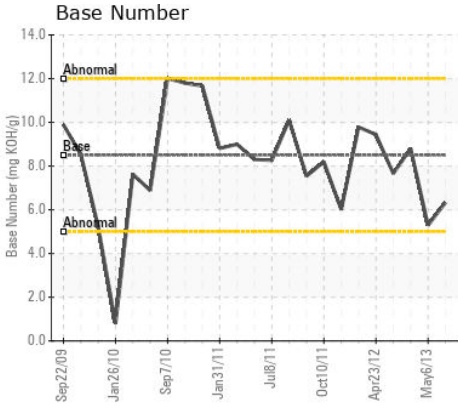
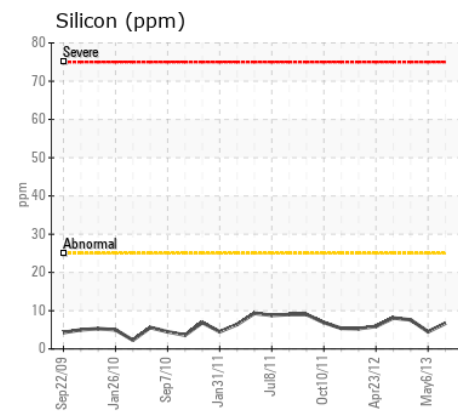
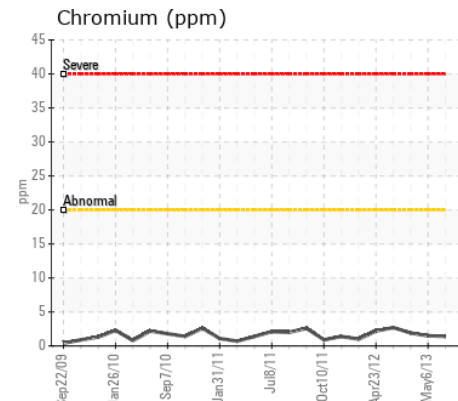
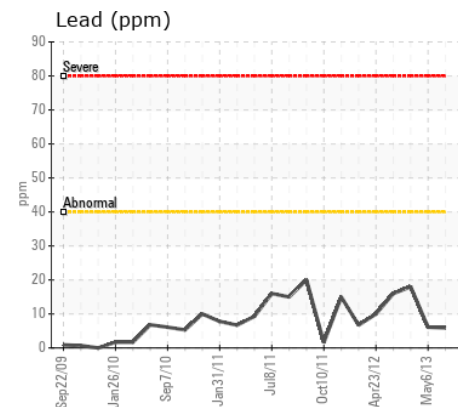
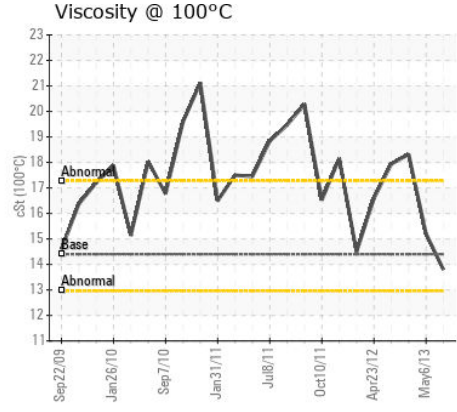
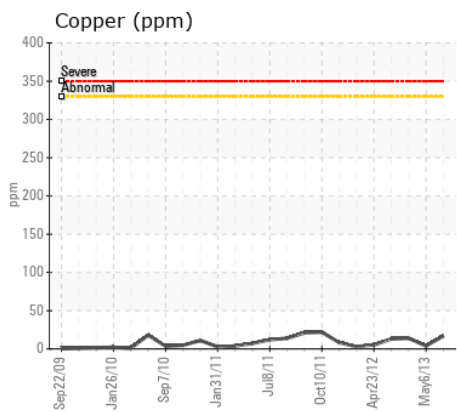
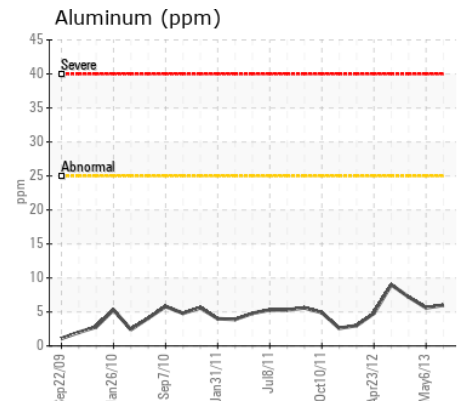
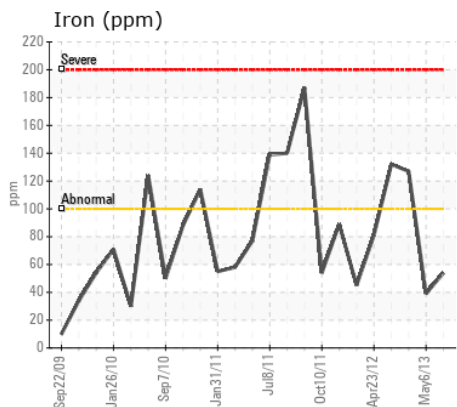
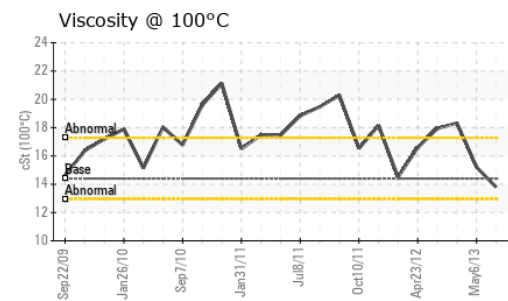
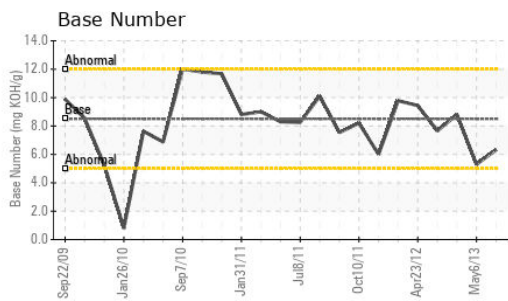
There is no indication of any contamination in the component.

Silicon	ppm	ASTM D5185m	>25	<b>7</b>	4	8
Potassium	ppm	ASTM D5185m	>20	<b>3</b>	2	3
Fuel		WC Method	>6.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.1	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>1.2</b>	1.6	2
Nitration	Abs/cm	*ASTM D7624		<b>8.</b>	12.	9.
Sulfation	Abs/.1mm	*ASTM D7415		<b>22.</b>	29.	26.
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	<b>NEG</b>	NEG	NEG

## 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.

Sodium	ppm	ASTM D5185m		<b>42</b>	32	30
Boron	ppm	ASTM D5185m	250	<b>44</b>	68	50
Barium	ppm	ASTM D5185m	10	<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m	100	<b>99</b>	82	62
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	3
Magnesium	ppm	ASTM D5185m	450	<b>376</b>	343	214
Calcium	ppm	ASTM D5185m	3000	<b>1876</b>	1787	2497
Phosphorus	ppm	ASTM D5185m	1150	<b>1241</b>	1023	1224
Zinc	ppm	ASTM D5185m	1350	<b>1475</b>	1266	1286
Sulfur	ppm	ASTM D5185m	4250	<b>3090</b>	3888	2992
Oxidation	Abs/.1mm	*ASTM D7414		<b>16.</b>	23.	18.
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	<b>6.33</b>	5.29	8.80
Visc @ 100°C	cSt	ASTM D445	14.4	<b>13.8</b>	15.21	▲ 18.32



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : KLMFA13446 **Received** : 21 Oct 2013  
**Lab Number** : 03381656 **Diagnosed** : 23 Oct 2013  
**Unique Number** : 6419423 **Diagnostician** : Wes Davis  
**Test Package** : MOB 2

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Certificate L2367  
 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)