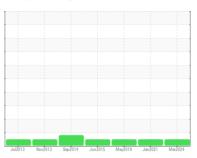


## **OIL ANALYSIS REPORT**

#### **Sample Rating Trend**







# VOLVO A30D 74469

Component

Diesel Engine

Fluid

VOLVO VDS-4.5 Premium Motor Oil 15W40 (--- 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

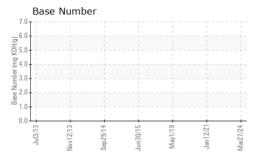
### **Fluid Condition**

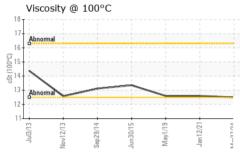
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION   method   limit/base   current   history1   history2		,	Jul2013	Nov2013 Sep2014	Jun 2015 May 2019 Jan 2021	Mar2024		
Sample Date	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2	
Machine Age         hrs         Client Info         7611         6533         6008           Oil Age         hrs         Client Info         1078         0         0           Oil Changed         Client Info         Changed         Changed         Changed         Changed           Sample Status         NORMAL         NORMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         Imitibass         current         history1         history2           Fuel         WC Method         >3.0         <1.0         <1.0         <1.0           Water         WC Method         >0.1         NEG         NEG         NEG           Glycol         WC Method         >0.0         1.0         <1.0         <1.0         <1.0           WEAR METALS         method         limil/bass         current         history1         history2           Iron         ppm         ASTM D5185m         >10         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <	Sample Number		Client Info		ML0000941	VCP296943	VCP226895	
Oil Age         hrs         Client Info         1078         0         0           Oil Changed Sample Status         Client Info         Changed Changed Changed Changed NORMAL N	Sample Date		Client Info		27 Mar 2024	12 Jan 2021	01 May 2019	
Oil Changed Sample Status         Client Info MoRMAL         Changed NORMAL         Changed NEG         Changed NEG         Changed NEG         Changed NEG         Changed NEG         Change NEG         Change NEG         Change NEG         Change NEG         Change NEG	Machine Age	hrs	Client Info		7611	6533	6008	
Sample Status	Oil Age	hrs	Client Info		1078	0	0	
CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >3.0         <1.0         <1.0         <1.0         <1.0           Water         WC Method         >0.1         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         17         10         16           Chromium         ppm         ASTM D5185m         >10         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Oil Changed		Client Info		Changed	Changed	Changed	
Fuel	Sample Status				NORMAL	NORMAL	NORMAL	
Water Glycol         WC Method Glycol         NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         17         10         16           Chromium         ppm         ASTM D5185m         >10         <1         <1         <1           Nickel         ppm         ASTM D5185m         >10         <1         1         4           Silver         ppm         ASTM D5185m         >10         3         3         2           Lead         ppm         ASTM D5185m         >10         1         0         <1           Copper         ppm         ASTM D5185m         >10         1         0         <1           Antimony         ppm         ASTM D5185m         <1         0         <1 </th <th>CONTAMINATION</th> <th>I</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	CONTAMINATION	I	method	limit/base	current	history1	history2	
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0	
WEAR METALS	Water		WC Method	>0.1	NEG	NEG	NEG	
Iron	Glycol		WC Method		NEG	NEG	NEG	
Chromium	WEAR METALS		method	limit/base	current	history1	history2	
Nickel	Iron	ppm	ASTM D5185m	>100	17	10	16	
Titanium	Chromium	ppm	ASTM D5185m	>10	<1	<1	<1	
Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >10         3         3         2           Lead         ppm         ASTM D5185m         >20         2         <1         0           Copper         ppm         ASTM D5185m         >15         3         2         3           Tin         ppm         ASTM D5185m         >10         1         0         <1           Antimony         ppm         ASTM D5185m          3         0           Vanadium         ppm         ASTM D5185m         <1         0         <1           Cadmium         ppm         ASTM D5185m         <1         0         <1           Cadmium         ppm         ASTM D5185m         <1         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         <1         0         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Nickel	ppm	ASTM D5185m	>10	<1	1		
Aluminum         ppm         ASTM D5185m         >10         3         3         2           Lead         ppm         ASTM D5185m         >20         2         <1	Titanium	ppm	ASTM D5185m		<1	<1	<1	
Lead         ppm         ASTM D5185m         >20         2         <1         0           Copper         ppm         ASTM D5185m         >15         3         2         3           Tin         ppm         ASTM D5185m         >10         1         0         <1           Antimony         ppm         ASTM D5185m          3         0           Vanadium         ppm         ASTM D5185m          3         0           Vanadium         ppm         ASTM D5185m          3         0           Cadmium         ppm         ASTM D5185m         -1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         24         33         30         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         24         33         30           Barium         ppm         ASTM D5185m         47         42         44           Magnesium         ppm         ASTM	Silver	ppm	ASTM D5185m	>2	0	0		
Copper         ppm         ASTM D5185m         >15         3         2         3           Tin         ppm         ASTM D5185m         >10         1         0         <1	Aluminum	ppm	ASTM D5185m	>10	3	3	2	
Tin         ppm         ASTM D5185m         >10         1         0         <1           Antimony         ppm         ASTM D5185m          3         0           Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         24         33         30           Barium         ppm         ASTM D5185m         <1         0         <1           Molybdenum         ppm         ASTM D5185m         47         42         44           Manganese         ppm         ASTM D5185m         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Lead	ppm	ASTM D5185m	>20	2	<1	0	
Antimony         ppm         ASTM D5185m          3         0           Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         24         33         30           Barium         ppm         ASTM D5185m         <1         0         <1           Molybdenum         ppm         ASTM D5185m         47         42         44           Manganese         ppm         ASTM D5185m         591         594         668           Calcium         ppm         ASTM D5185m         591         594         668           Calcium         ppm         ASTM D5185m         769         943         798           Zinc         ppm         ASTM D5185m         989         1058         921           Sulfur         ppm         ASTM D5185m         2692         2329         2287           CONTAMINANTS         method         limit/base         current         history1         history	Copper	ppm	ASTM D5185m	>15	3	2	3	
Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         24         33         30           Barium         ppm         ASTM D5185m         <1         0         <1           Molybdenum         ppm         ASTM D5185m         47         42         44           Manganese         ppm         ASTM D5185m         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1 </td <td>Tin</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;10</td> <th>1</th> <td>0</td> <td>&lt;1</td>	Tin	ppm	ASTM D5185m	>10	1	0	<1	
Cadmium         ppm         ASTM D5185m         <1         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         24         33         30           Barium         ppm         ASTM D5185m         <1	Antimony	ppm	ASTM D5185m			3	0	
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         24         33         30           Barium         ppm         ASTM D5185m         <1	Vanadium	ppm	ASTM D5185m		<1	0	0	
Boron   ppm   ASTM D5185m   24   33   30	Cadmium	ppm	ASTM D5185m		<1	0	<1	
Barium         ppm         ASTM D5185m         <1	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum         ppm         ASTM D5185m         47         42         44           Manganese         ppm         ASTM D5185m         <1         <1         <1           Magnesium         ppm         ASTM D5185m         591         594         668           Calcium         ppm         ASTM D5185m         591         594         668           Calcium         ppm         ASTM D5185m         1435         1471         1581           Phosphorus         ppm         ASTM D5185m         769         943         798           Zinc         ppm         ASTM D5185m         989         1058         921           Sulfur         ppm         ASTM D5185m         2692         2329         2287           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         6           Sodium         ppm         ASTM D5185m         35         9         8           Potassium         ppm         ASTM D5185m         >20         4         5         2           INFRA-RED         method         limit/base         curren	Boron	ppm	ASTM D5185m		24	33	30	
Manganese         ppm         ASTM D5185m         <1         <1         <1           Magnesium         ppm         ASTM D5185m         591         594         668           Calcium         ppm         ASTM D5185m         1435         1471         1581           Phosphorus         ppm         ASTM D5185m         769         943         798           Zinc         ppm         ASTM D5185m         989         1058         921           Sulfur         ppm         ASTM D5185m         2692         2329         2287           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         6           Sodium         ppm         ASTM D5185m         >20         4         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         10.6         9.5         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.3         21.5         21.2 <td co<="" td=""><td>Barium</td><td>ppm</td><td>ASTM D5185m</td><td></td><th>&lt;1</th><td>0</td><td>&lt;1</td></td>	<td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>&lt;1</th> <td>0</td> <td>&lt;1</td>	Barium	ppm	ASTM D5185m		<1	0	<1
Magnesium         ppm         ASTM D5185m         591         594         668           Calcium         ppm         ASTM D5185m         1435         1471         1581           Phosphorus         ppm         ASTM D5185m         769         943         798           Zinc         ppm         ASTM D5185m         989         1058         921           Sulfur         ppm         ASTM D5185m         2692         2329         2287           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         6           Sodium         ppm         ASTM D5185m         35         9         8           Potassium         ppm         ASTM D5185m         >20         4         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >3         1.5         1         1.1           Nitration         Abs/cm         *ASTM D7415         >30         23.3         21.5         21.2           FLUID DEGRADATION         *ASTM	Molybdenum	ppm	ASTM D5185m		47	42	44	
Calcium         ppm         ASTM D5185m         1435         1471         1581           Phosphorus         ppm         ASTM D5185m         769         943         798           Zinc         ppm         ASTM D5185m         989         1058         921           Sulfur         ppm         ASTM D5185m         2692         2329         2287           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         6           Sodium         ppm         ASTM D5185m         >20         4         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1.5         1         1.1           Nitration         Abs/cm         *ASTM D7624         >20         10.6         9.5         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.3         21.5         21.2           FLUID DEGRADATION         method         limit/base         current         history1	Manganese	ppm	ASTM D5185m		<1	<1	<1	
Phosphorus         ppm         ASTM D5185m         769         943         798           Zinc         ppm         ASTM D5185m         989         1058         921           Sulfur         ppm         ASTM D5185m         2692         2329         2287           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         6           Sodium         ppm         ASTM D5185m         >20         4         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1.5         1         1.1           Nitration         Abs/cm         *ASTM D7624         >20         10.6         9.5         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.3         21.5         21.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25 <td< td=""><td>Magnesium</td><td>ppm</td><td>ASTM D5185m</td><td></td><th>591</th><td>594</td><td>668</td></td<>	Magnesium	ppm	ASTM D5185m		591	594	668	
Zinc         ppm         ASTM D5185m         989         1058         921           Sulfur         ppm         ASTM D5185m         2692         2329         2287           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         6           Sodium         ppm         ASTM D5185m         >20         4         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1.5         1         1.1           Nitration         Abs/cm         *ASTM D7624         >20         10.6         9.5         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.3         21.5         21.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         16.5         17.8		ppm	ASTM D5185m		1435	1471	1581	
Sulfur         ppm         ASTM D5185m         2692         2329         2287           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         6           Sodium         ppm         ASTM D5185m         >20         4         5         2           Potassium         ppm         ASTM D5185m         >20         4         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1.5         1         1.1           Nitration         Abs/cm         *ASTM D7624         >20         10.6         9.5         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.3         21.5         21.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         16.5         17.8	Phosphorus	ppm	ASTM D5185m		769	943	798	
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         6           Sodium         ppm         ASTM D5185m         35         9         8           Potassium         ppm         ASTM D5185m         >20         4         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1.5         1         1.1           Nitration         Abs/cm         *ASTM D7624         >20         10.6         9.5         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.3         21.5         21.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         16.5         17.8	Zinc	ppm	ASTM D5185m		989	1058	921	
Silicon         ppm         ASTM D5185m         >20         4         4         6           Sodium         ppm         ASTM D5185m         35         9         8           Potassium         ppm         ASTM D5185m         >20         4         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1.5         1         1.1           Nitration         Abs/cm         *ASTM D7624         >20         10.6         9.5         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.3         21.5         21.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         16.5         17.8	Sulfur	ppm	ASTM D5185m		2692	2329	2287	
Sodium         ppm         ASTM D5185m         35         9         8           Potassium         ppm         ASTM D5185m         >20         4         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1.5         1         1.1           Nitration         Abs/cm         *ASTM D7624         >20         10.6         9.5         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.3         21.5         21.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         16.5         17.8	CONTAMINANTS		method	limit/base	current	history1	history2	
Potassium         ppm         ASTM D5185m         >20         4         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1.5         1         1.1           Nitration         Abs/cm         *ASTM D7624         >20         10.6         9.5         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.3         21.5         21.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         16.5         17.8	Silicon	ppm	ASTM D5185m	>20	4	4	6	
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1.5         1         1.1           Nitration         Abs/cm         *ASTM D7624         >20         10.6         9.5         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.3         21.5         21.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         16.5         17.8	Sodium	ppm	ASTM D5185m		35	9	8	
Soot %         %         *ASTM D7844         >3         1.5         1         1.1           Nitration         Abs/cm         *ASTM D7624         >20         10.6         9.5         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.3         21.5         21.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         16.5         17.8	Potassium	ppm	ASTM D5185m	>20	4	5	2	
Nitration         Abs/cm         *ASTM D7624         >20         10.6         9.5         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.3         21.5         21.2           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         16.5         17.8	INFRA-RED		method	limit/base	current	history1	history2	
Sulfation         Abs/.1mm         *ASTM D7415         >30         23.3         21.5         21.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         16.5         17.8	Soot %	%	*ASTM D7844	>3	1.5	1	1.1	
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm *ASTM D7414 >25 18.3 16.5 17.8	Nitration	Abs/cm	*ASTM D7624	>20	10.6	9.5	8.4	
Oxidation Abs/.1mm *ASTM D7414 >25 <b>18.3</b> 16.5 17.8	Sulfation	Abs/.1mm	*ASTM D7415	>30	23.3	21.5	21.2	
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2	
	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.3	16.5	17.8	
	Base Number (BN)	mg KOH/g	ASTM D2896					



## **OIL ANALYSIS REPORT**

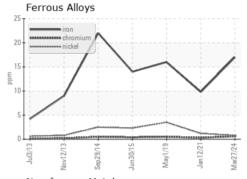


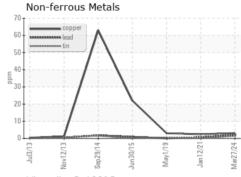


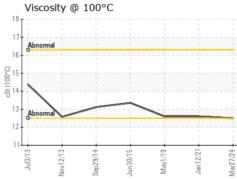
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

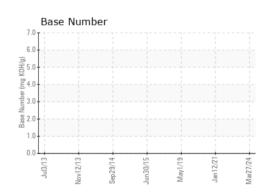
FLUID PROPER	HES	method		history1	history2
Visc @ 100°C	cSt	ASTM D445	12.5	12.6	12.6

#### **GRAPHS**













Laboratory Sample No. Lab Number : 06133801 Unique Number: 10953266

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : ML0000941

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

: 29 Mar 2024 : 01 Apr 2024 : 03 Apr 2024 - Jonathan Hester

MCCLUNG-LOGAN EQUIPMENT CO - RICHMOND 1345 MOUNTAIN ROAD

GLEN ALLEN, VA US 23060

Contact: KYLE RATLIFFE KRATLIFFE@MCCLUNG-LOGAN.COM

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)

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T: