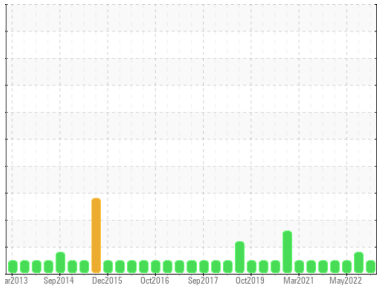
OIL ANALYSIS REPORT

Area
LIEBHERR
Machine Id
LIEBHERR A934CHD 060316-1419
Component
Diesel Engine
Fluid
VALVOLINE 15W40 (29 LTR)

Sample Rating Trend



NORMAL

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
Sample Number		Client Info		**DJJ0011084**	DJJ0010945	DJJ0010966
Sample Date		Client Info		**04 Dec 2023**	19 Dec 2022	16 May 2022
Machine Age	hrs	Client Info		**16052**	15577	14961
Oil Age	hrs	Client Info		**0**	750	1000
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**NORMAL**	ABNORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>5	**<1.0**	<1.0	<1.0
Water		WC Method	>0.2	**NEG**	NEG	NEG
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>66	**7**	16	13
Chromium	ppm	ASTM D5185m	>4	**<1**	<1	<1
Nickel	ppm	ASTM D5185m	>4	**0**	1	0
Titanium	ppm	ASTM D5185m		**<1**	0	<1
Silver	ppm	ASTM D5185m	>3	**0**	0	<1
Aluminum	ppm	ASTM D5185m	>8	**2**	3	3
Lead	ppm	ASTM D5185m	>10	**0**	<1	<1
Copper	ppm	ASTM D5185m	>74	**<1**	3	7
Tin	ppm	ASTM D5185m	>4	**0**	0	<1
Antimony	ppm	ASTM D5185m		**---**	---	---
Vanadium	ppm	ASTM D5185m		**0**	<1	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	39	**50**	22	25
Barium	ppm	ASTM D5185m	1	**3**	0	0
Molybdenum	ppm	ASTM D5185m	49	**89**	101	89
Manganese	ppm	ASTM D5185m	1	**0**	<1	<1
Magnesium	ppm	ASTM D5185m	616	**37**	80	68
Calcium	ppm	ASTM D5185m	1554	**2006**	2211	2406
Phosphorus	ppm	ASTM D5185m	899	**943**	963	1053
Zinc	ppm	ASTM D5185m	1069	**1101**	1209	1235
Sulfur	ppm	ASTM D5185m	2624	**3914**	4409	3415

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>15	**8**	11	10
Sodium	ppm	ASTM D5185m		**0**	3	3
Potassium	ppm	ASTM D5185m	>20	**2**	1	0

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**1.4**	▲ 3.2	2.3
Nitration	Abs/cm	*ASTM D7624	>20	**8.8**	12.0	12.4
Sulfation	Abs/.1mm	*ASTM D7415	>30	**20.1**	29.4	26.1

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**13.5**	19.0	16.8
Base Number (BN)	mg KOH/g	ASTM D2896	6.9	**3.9**	5.7	7.2

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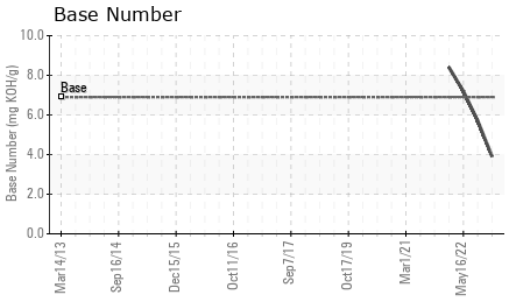
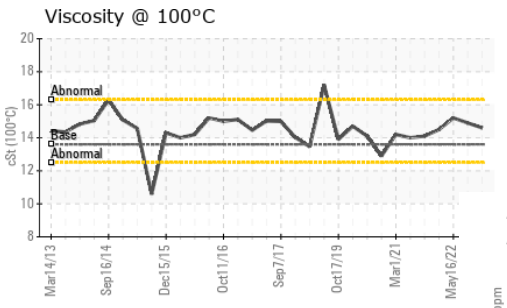
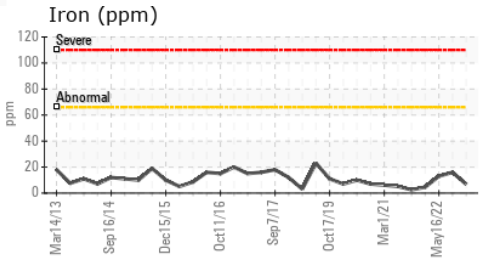


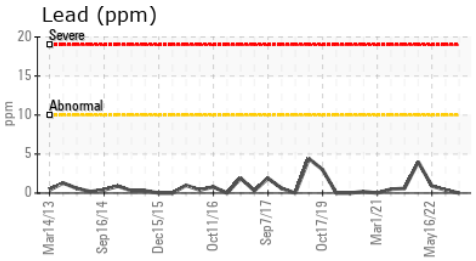


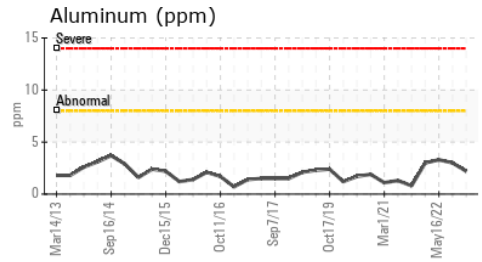
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

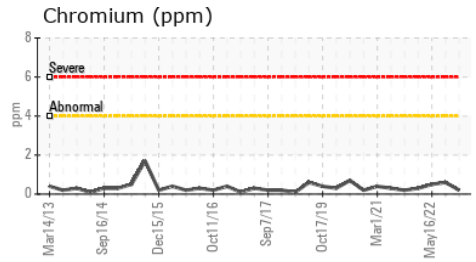
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	13.6	**14.6**	14.9	15.2

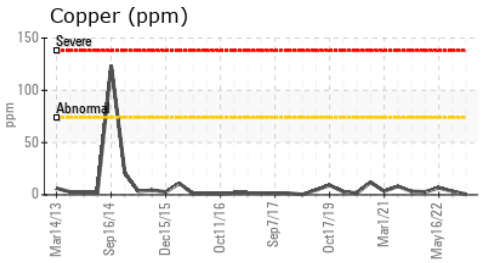
GRAPHS

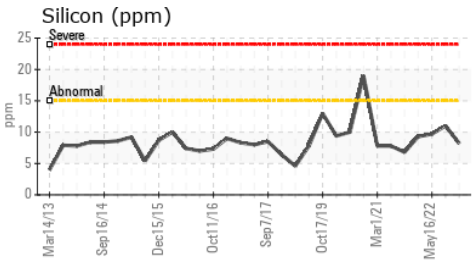


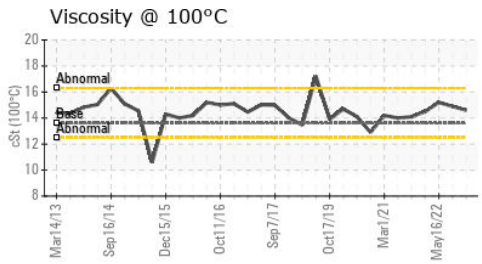


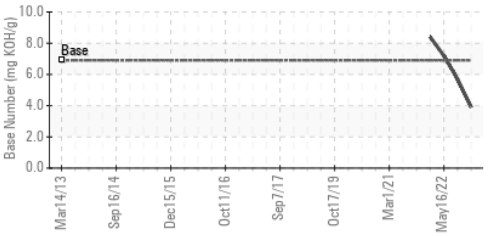












Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : DJJ0011084 **Received** : 08 Dec 2023
Lab Number : 06029088 **Diagnosed** : 09 Dec 2023
Unique Number : 10778879 **Diagnostician** : Wes Davis
Test Package : MOBCE (Additional Tests: TBN)

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)

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