



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
LIEBHERR 31222
 Component
Diesel Engine
 Fluid
DIESEL ENGINE OIL SAE 15W40 (20 QTS)

RECOMMENDATION

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0924428	WC0924613	WC0786557
Sample Date		Client Info		13 Jun 2024	30 Apr 2024	05 Apr 2023
Machine Age	hrs	Client Info		17271	17247	16791
Oil Age	hrs	Client Info		0	1000	750
Filter Age	hrs	Client Info		0	1000	750
Oil Changed		Client Info		N/A	Changed	Changed
Filter Changed		Client Info		N/A	Changed	Changed
Sample Status				NORMAL	ABNORMAL	SEVERE

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	22	75	▲ 269
Chromium	ppm	ASTM D5185m	>20	<1	6	15
Nickel	ppm	ASTM D5185m	>4	<1	<1	5
Titanium	ppm	ASTM D5185m		<1	<1	2
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	5	● 26	● 57
Lead	ppm	ASTM D5185m	>40	0	2	2
Copper	ppm	ASTM D5185m	>330	4	30	9
Tin	ppm	ASTM D5185m	>15	<1	1	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

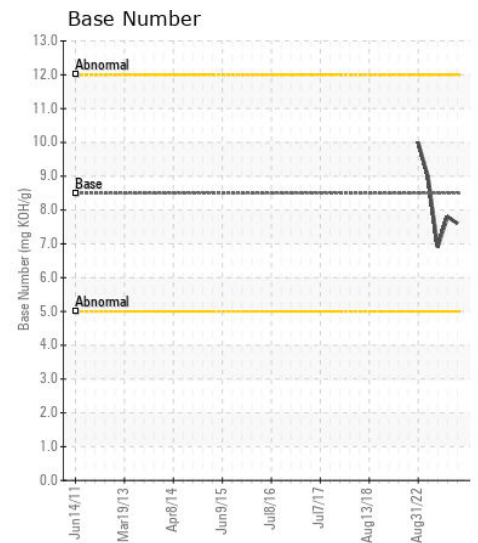
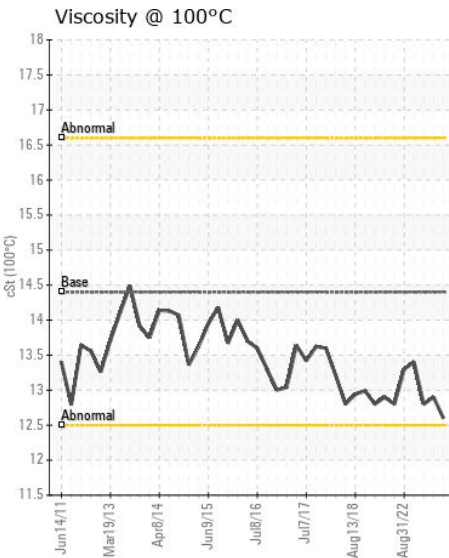
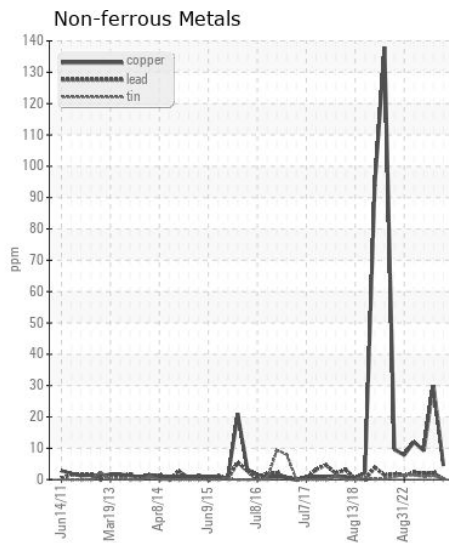
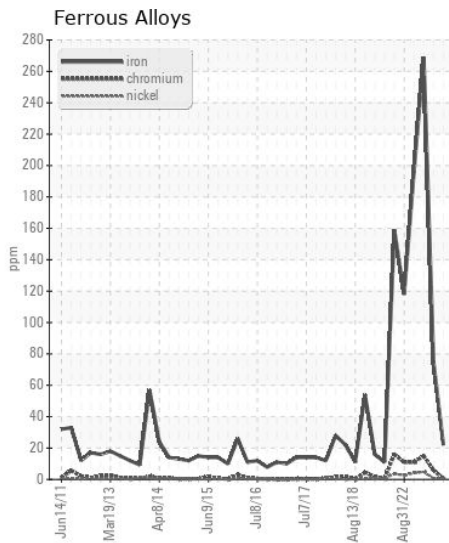
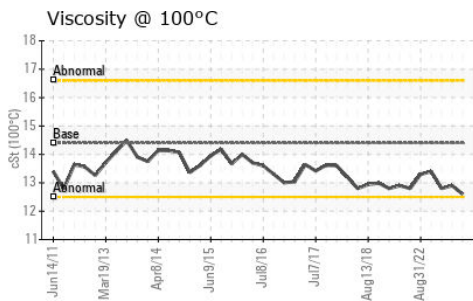
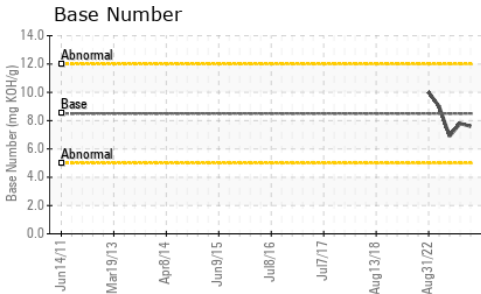
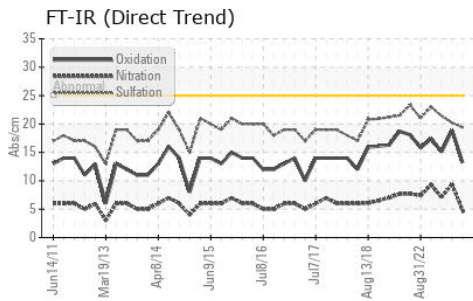
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>25	13	▲ 68	▲ 150
Potassium	ppm	ASTM D5185m	>20	6	31	11
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	0.0
Soot %	%	*ASTM D7844	>3	0.1	0.3	0.5
Nitration	Abs/cm	*ASTM D7624	>20	4.8	9.4	7.1
Sulfation	Abs/.1mm	*ASTM D7415	>30	19.4	20.2	21.4
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

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	>158	4	33	15
Boron	ppm	ASTM D5185m	250	362	161	305
Barium	ppm	ASTM D5185m	10	0	0	0
Molybdenum	ppm	ASTM D5185m	100	72	17	80
Manganese	ppm	ASTM D5185m		<1	2	3
Magnesium	ppm	ASTM D5185m	450	412	800	406
Calcium	ppm	ASTM D5185m	3000	1291	1358	1341
Phosphorus	ppm	ASTM D5185m	1150	995	873	912
Zinc	ppm	ASTM D5185m	1350	1185	1016	1126
Sulfur	ppm	ASTM D5185m	4250	3760	4119	2895
Oxidation	Abs/.1mm	*ASTM D7414	>25	13.2	18.9	15.1
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	7.6	7.8	6.9
Visc @ 100°C	cSt	ASTM D445	14.4	12.6	12.9	12.8



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0924428
Lab Number : 06214489
Unique Number : 11087353
Test Package : CONST (Additional Tests: TBN)

SULLIVAN EASTERN INC-LIEBHERR
 2860 C SLATER RD
 MORRISVILLE, NC
 US 27560
 Contact: CHRIS CALTON

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)

T:
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