



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	ATTENTION

Machine Id
LIEBHERR 31250
 Component
Diesel Engine
 Fluid
LIEBHERR MOTOROIL 10W-40 LOW ASH (--- GAL)

RECOMMENDATION

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0924394	WC0822604	WC0846322
Sample Date		Client Info		17 May 2024	06 Dec 2023	16 Nov 2023
Machine Age	hrs	Client Info		4738	897	4230
Oil Age	hrs	Client Info		2000	250	250
Filter Age	hrs	Client Info		2000	250	250
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ATTENTION	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	5	4	8
Chromium	ppm	ASTM D5185m	>5	1	0	<1
Nickel	ppm	ASTM D5185m	>5	<1	0	0
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m	>3	1	0	0
Aluminum	ppm	ASTM D5185m	>15	5	1	2
Lead	ppm	ASTM D5185m	>30	1	0	0
Copper	ppm	ASTM D5185m	>125	2	5	2
Tin	ppm	ASTM D5185m	>5	1	0	0
Vanadium	ppm	ASTM D5185m		<1	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

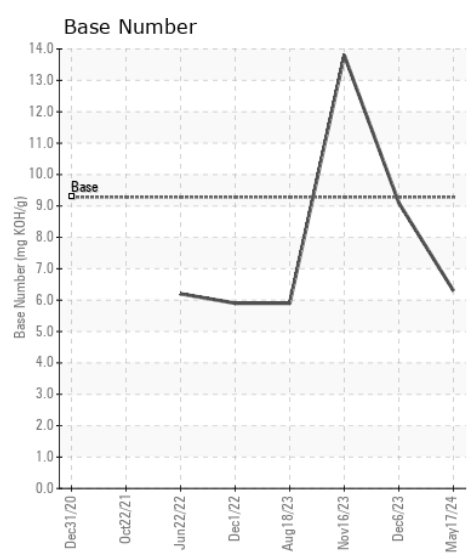
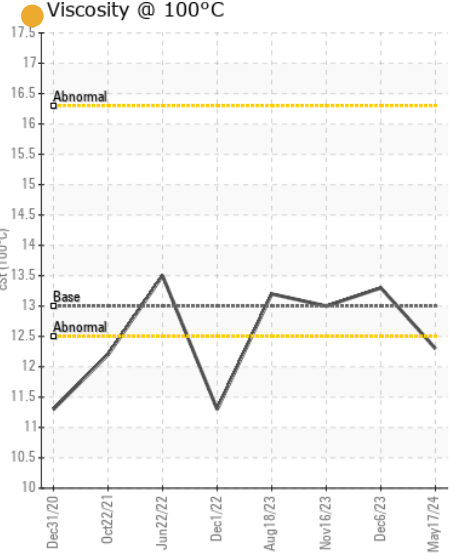
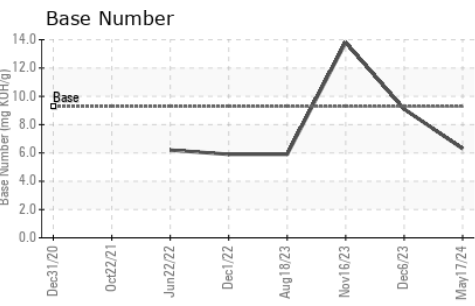
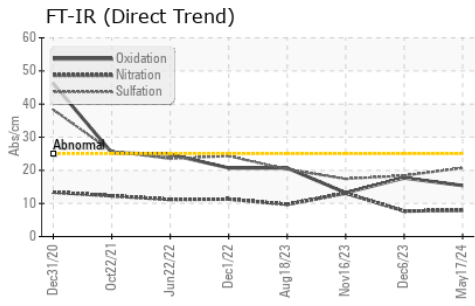
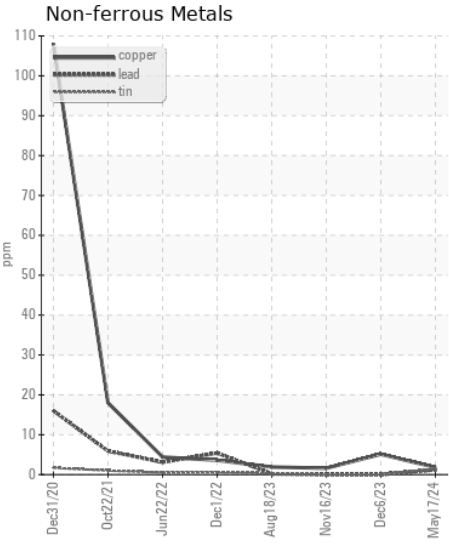
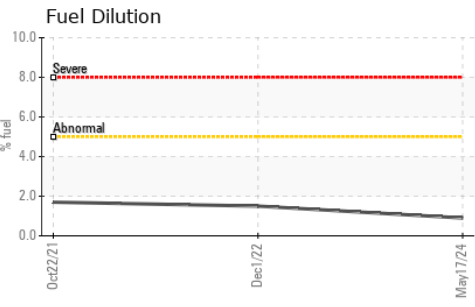
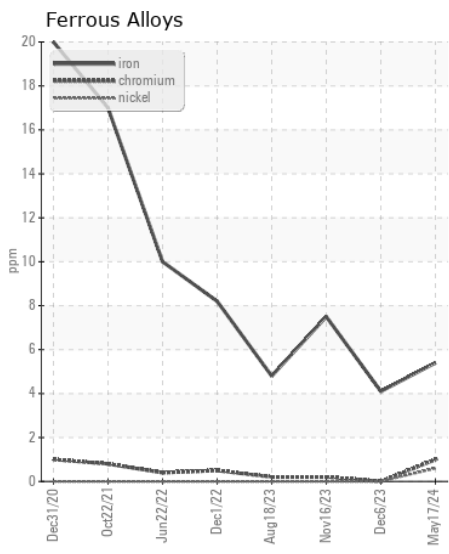
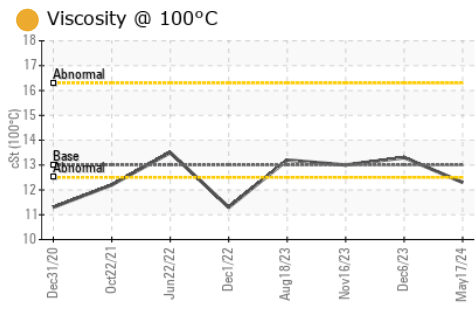
Fuel content negligible. There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>60	10	6	9
Potassium	ppm	ASTM D5185m	>20	3	3	3
Fuel	%	ASTM D3524	>5	0.9	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	0.1	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	7.9	7.7	13.1
Sulfation	Abs/.1mm	*ASTM D7415	>30	20.7	18.4	17.4
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 oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

Sodium	ppm	ASTM D5185m		3	2	0
Boron	ppm	ASTM D5185m	169	405	164	293
Barium	ppm	ASTM D5185m	0	0	0	0
Molybdenum	ppm	ASTM D5185m	2	87	1	2
Manganese	ppm	ASTM D5185m	<1	<1	0	0
Magnesium	ppm	ASTM D5185m	724	421	692	89
Calcium	ppm	ASTM D5185m	1323	1695	1270	4407
Phosphorus	ppm	ASTM D5185m	678	1102	792	1030
Zinc	ppm	ASTM D5185m	776	1309	893	1222
Sulfur	ppm	ASTM D5185m	2859	3787	3823	3378
Oxidation	Abs/.1mm	*ASTM D7414	>25	15.4	17.7	13.2
Base Number (BN)	mg KOH/g	ASTM D2896	9.28	6.3	9.1	13.8
Visc @ 100°C	cSt	ASTM D445	13.0	12.3	13.3	13.0



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0924394
Lab Number : 06185930
Unique Number : 11042682
Test Package : CONST (Additional Tests: FuelDilution, PercentFuel, 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)