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LIEBHERR

OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL

Area
BDT EQUIPMENT
Machine Id
LIEBHERR R938 52175-1650
Component
Left Final Drive
Fluid
LIEBHERR GEAR BASIC 90 LS (--- GAL)

RECOMMENDATION

We advise that you check all areas where dirt can enter the system. The oil change at the time of sampling has been noted. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

WEAR

Chromium and iron ppm levels are abnormal. Aluminum ppm levels are noted. The low ferrous density (PQ) index indicates the wear metal levels are due to corrosion.

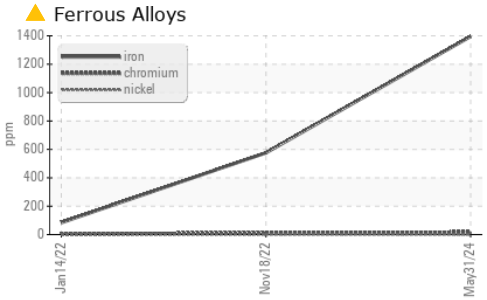
CONTAMINATION

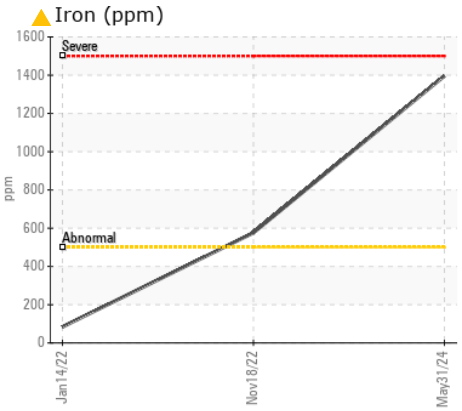
Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. High amount of ingressed dirt has caused abrasive wear to the component.

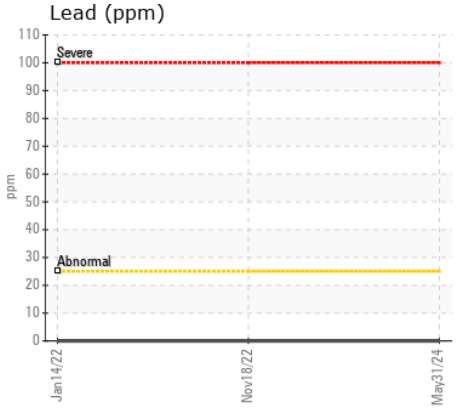
FLUID CONDITION

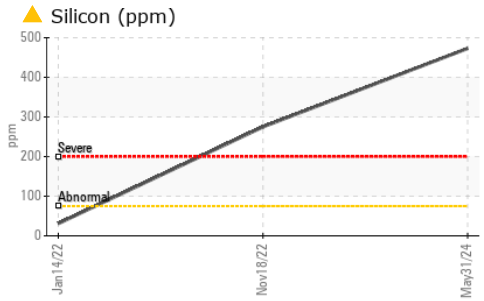
Additive levels indicate the addition of a different brand, or type of oil. Viscosity of sample indicates oil is within SAE 75W90 range, advise investigate. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

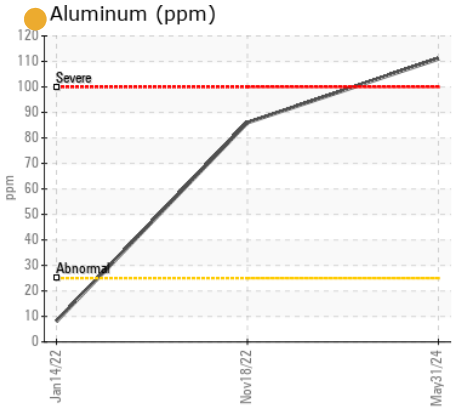
Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		LH0290972	LH0247208	LH
Sample Date		Client Info		31 May 2024	18 Nov 2022	14 Jan 2022
Machine Age	hrs	Client Info		3501	1930	1036
Oil Age	hrs	Client Info		0	0	0
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		N/A	N/A	None
Sample Status				ABNORMAL	NORMAL	NORMAL
PQ		ASTM D8184*		121	51	---
Iron	ppm	ASTM D5185(m)	>500	▲ 1396	576	84
Chromium	ppm	ASTM D5185(m)	>10	▲ 17	12	3
Nickel	ppm	ASTM D5185(m)	>10	<1	<1	<1
Titanium	ppm	ASTM D5185(m)		7	5	<1
Silver	ppm	ASTM D5185(m)		0	0	<1
Aluminum	ppm	ASTM D5185(m)	>25	● 111	86	8
Lead	ppm	ASTM D5185(m)	>25	0	0	0
Copper	ppm	ASTM D5185(m)	>50	<1	<1	<1
Tin	ppm	ASTM D5185(m)	>10	0	0	<1
Vanadium	ppm	ASTM D5185(m)		0	<1	0
White Metal	scalar	Visual*	NONE	VLITE	VLITE	VLITE
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Silicon	ppm	ASTM D5185(m)	>75	▲ 473	275	31
Potassium	ppm	ASTM D5185(m)	>20	41	32	5
Water		WC Method	>0.2	NEG	NEG	NEG
Silt	scalar	Visual*	NONE	VLITE	VLITE	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
Sodium	ppm	ASTM D5185(m)		21	13	2
Boron	ppm	ASTM D5185(m)	0	267	268	272
Barium	ppm	ASTM D5185(m)	0	<1	2	2
Molybdenum	ppm	ASTM D5185(m)	0	<1	<1	<1
Manganese	ppm	ASTM D5185(m)	0	12	8	1
Magnesium	ppm	ASTM D5185(m)	<1	99	76	18
Calcium	ppm	ASTM D5185(m)	<1	282	244	52
Phosphorus	ppm	ASTM D5185(m)	2143	1178	1321	1318
Zinc	ppm	ASTM D5185(m)	<1	12	22	9
Sulfur	ppm	ASTM D5185(m)	23468	20080	21803	21958
Visc @ 40°C	cSt	ASTM D7279(m)	170	100	96.0	103

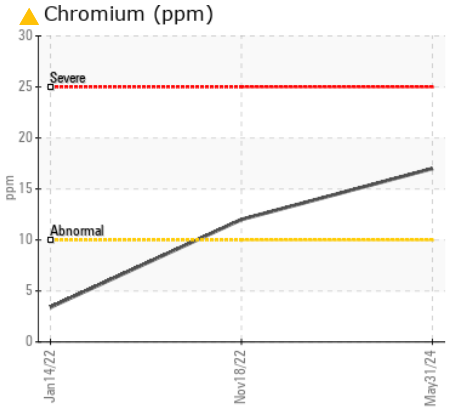


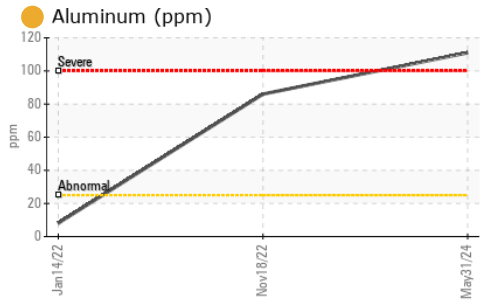


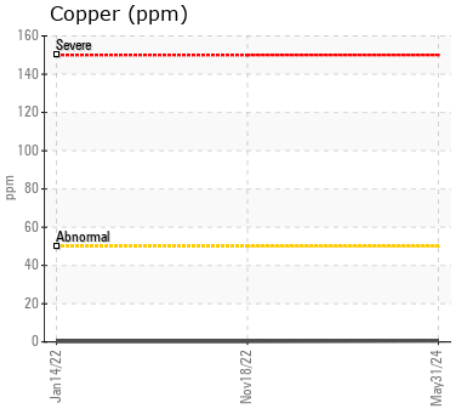


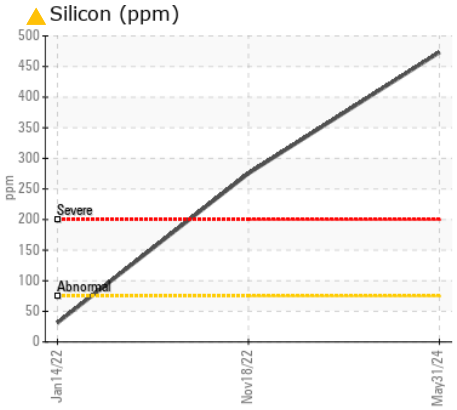


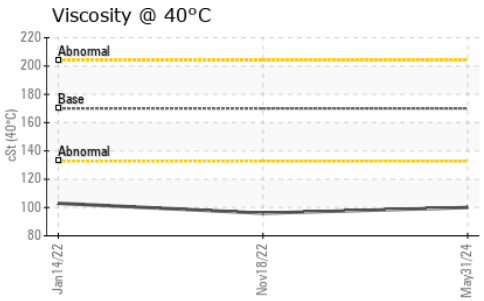


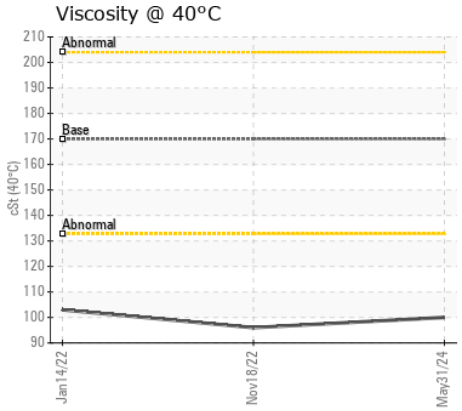


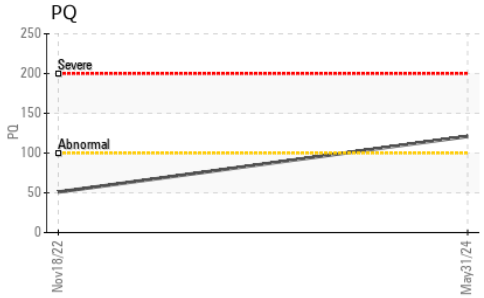


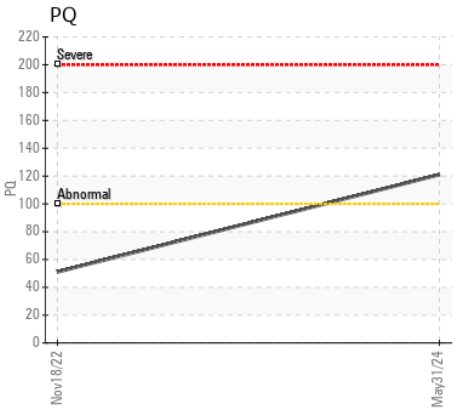












ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : LH0290972
Lab Number : 02639680
Unique Number : 5788842
Test Package : MOB 1 (Additional Tests: PQ)

Received : 04 Jun 2024
Tested : 05 Jun 2024
Diagnosed : 06 Jun 2024 - Kevin Marson

To discuss this sample report, contact Customer Service at 1-800-268-2131.
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
Validity of results and interpretation are based on the sample and information as supplied.

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