



LIEBHERR

OIL ANALYSIS REPORT

WEAR	SEVERE
CONTAMINATION	SEVERE
FLUID CONDITION	NORMAL



Machine Id
46356
Component
Hydraulic System
Fluid
TOTAL BIOHYDRAN SE 46 (500 LTR)

RECOMMENDATION

We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. The oil change at the time of sampling has been noted. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Re-sampling is suggested to confirm test results prior to significant maintenance activities being performed. Please indicate that this is a resample on your Sample Information Form (SIF). Resample in 30-45 days to monitor this situation.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		LH0284399	LH	LH0250827
Sample Date		Client Info		31 Jan 2024	03 May 2023	24 Feb 2023
Machine Age	hrs	Client Info		5001	4402	4058
Oil Age	hrs	Client Info		0	0	0
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Not Changd	Not Changd
Filter Changed		Client Info		N/A	Changed	N/A
Sample Status				SEVERE	ABNORMAL	ABNORMAL

WEAR

Iron ppm levels are severe. The low ferrous density (PQ) index indicates the wear metal levels are due to corrosion.

PQ	UOM	Method	Limit/Abn	Current	History1	History2
PQ		ASTM D8184*		0	0	0
Iron	ppm	ASTM D5185(m)	>50	101	66	98
Chromium	ppm	ASTM D5185(m)	>15	3	<1	1
Nickel	ppm	ASTM D5185(m)	>5	<1	<1	<1
Titanium	ppm	ASTM D5185(m)		0	0	<1
Silver	ppm	ASTM D5185(m)		0	0	0
Aluminum	ppm	ASTM D5185(m)	>8	2	1	2
Lead	ppm	ASTM D5185(m)	>5	<1	<1	1
Copper	ppm	ASTM D5185(m)	>15	2	2	2
Tin	ppm	ASTM D5185(m)	>5	<1	<1	1
Vanadium	ppm	ASTM D5185(m)		0	0	0
White Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	NONE

CONTAMINATION

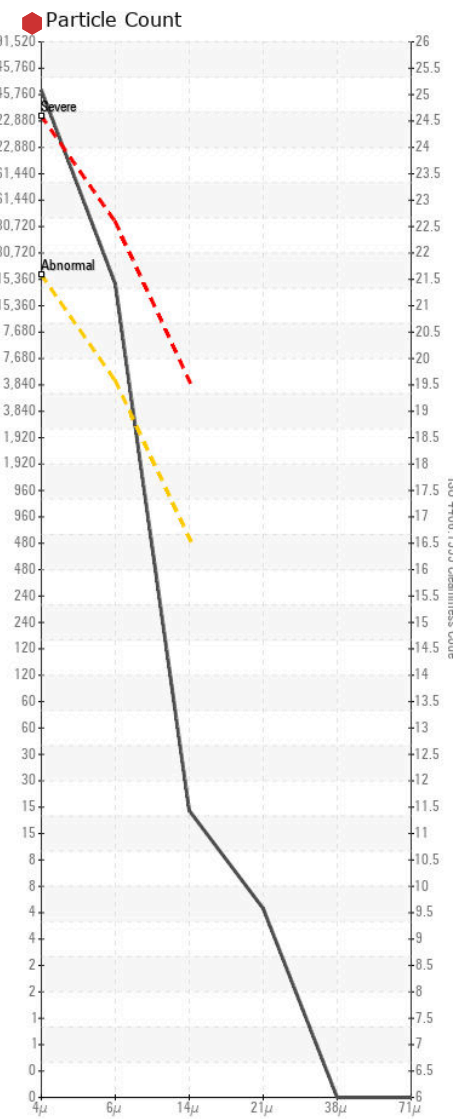
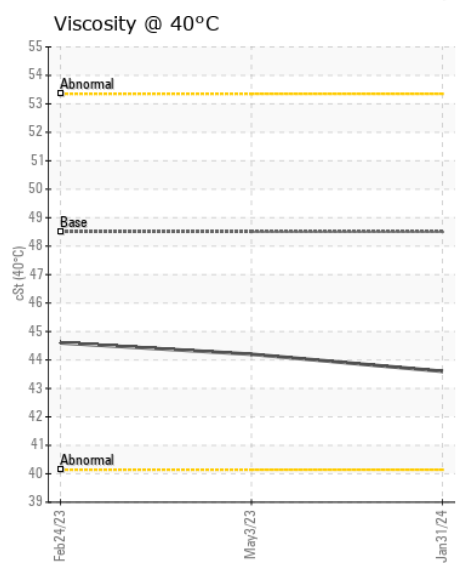
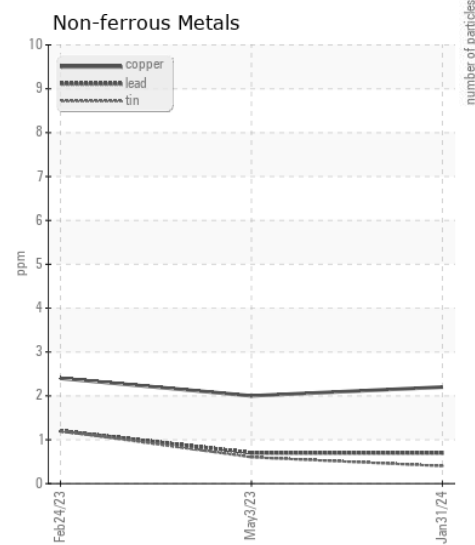
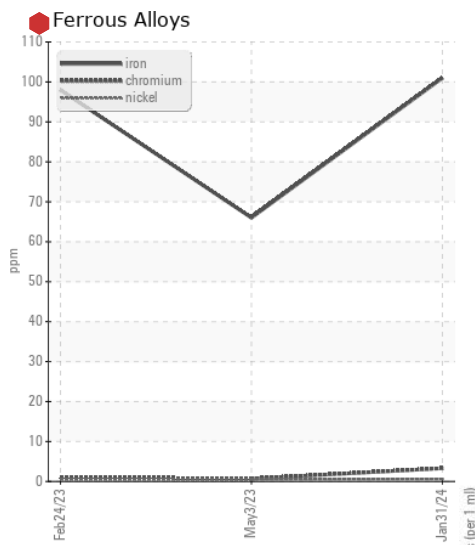
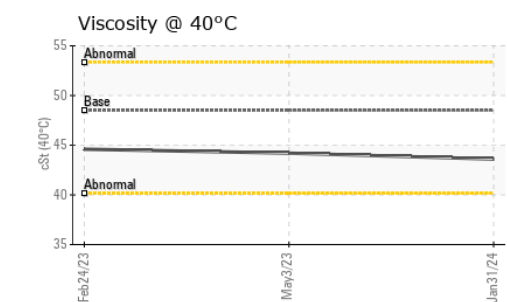
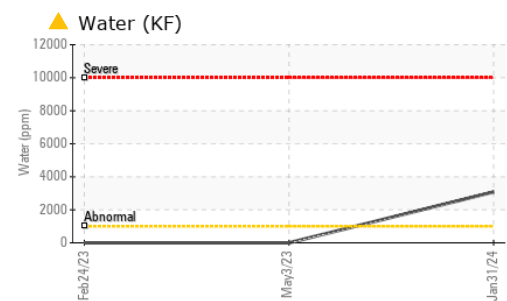
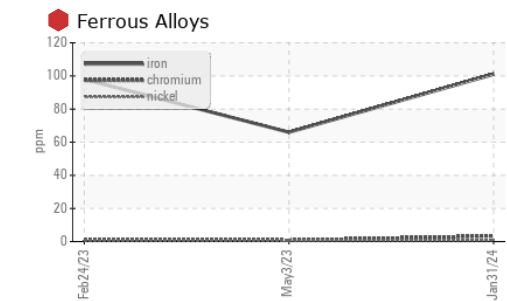
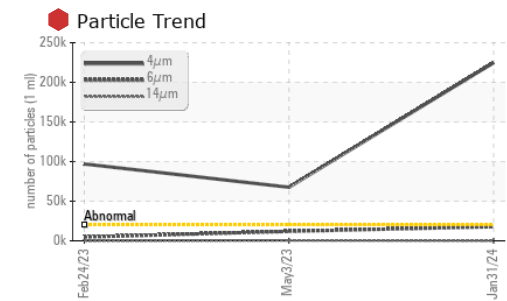
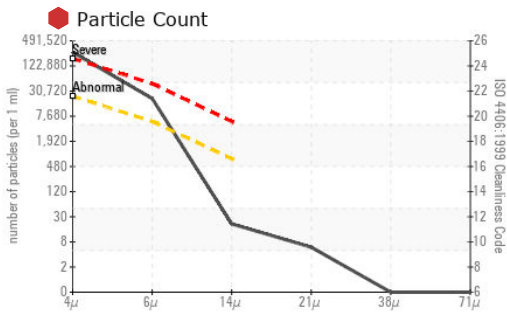
There is a high amount of silt (particulates < 14 microns in size) present in the oil. There is a moderate concentration of water present in the oil.

Silicon	ppm	ASTM D5185(m)	>25	4	4	6
Potassium	ppm	ASTM D5185(m)	>20	0	2	2
Water	%	ASTM D6304*	>0.1	0.308	---	---
ppm Water	ppm	ASTM D6304*	>1000	3084	---	---
Particles >4µm		ASTM D7647	>20000	224763	67621	97012
Particles >6µm		ASTM D7647	>5000	17756	11921	4771
Particles >14µm		ASTM D7647	>640	18	451	15
Particles >21µm		ASTM D7647	>160	5	112	2
Particles >38µm		ASTM D7647	>40	0	2	0
Particles >71µm		ASTM D7647	>10	0	0	0
Oil Cleanliness		ISO 4406 (c)	>21/19/16	25/21/11	23/21/16	24/19/11
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	HAZY	NORML	HAZY
Odor	scalar	Visual*	NORML	NORML	NORML	NORML
Emulsified Water	scalar	Visual*	>0.1	.2%	NEG	NEG

FLUID CONDITION

The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

Sodium	ppm	ASTM D5185(m)		7	6	6
Boron	ppm	ASTM D5185(m)	0	3	1	2
Barium	ppm	ASTM D5185(m)	0	<1	0	<1
Molybdenum	ppm	ASTM D5185(m)	0	0	0	0
Manganese	ppm	ASTM D5185(m)	0	<1	1	2
Magnesium	ppm	ASTM D5185(m)	0	2	2	3
Calcium	ppm	ASTM D5185(m)	0	8	8	22
Phosphorus	ppm	ASTM D5185(m)	0	315	317	267
Zinc	ppm	ASTM D5185(m)	0	64	47	71
Sulfur	ppm	ASTM D5185(m)	1100	1271	1267	1581
Visc @ 40°C	cSt	ASTM D7279(m)	48.5	43.6	44.2	44.6



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : LH0284399 **Received** : 20 Feb 2024
Lab Number : 02616695 **Tested** : 21 Feb 2024
Unique Number : 5733805 **Diagnosed** : 21 Feb 2024 - Kevin Marson
Test Package : MOB 1 (Additional Tests: KF, PQ, PrtCount)

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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