



LIEBHERR

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
141701
Component
Hydraulic System
Fluid
LIEBHERR HYDRAULIC 37 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		LM0000290	LM0000283	LM0000444
Sample Date		Client Info		19 Mar 2024	28 Feb 2024	04 Jan 2024
Machine Age	hrs	Client Info		12015	11698	10943
Oil Age	hrs	Client Info		0	4000	0
Filter Age	hrs	Client Info		500	500	0
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Filter Changed		Client Info		Changed	Changed	N/A
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>20	3	1	4
Chromium	ppm	ASTM D5185m	>10	0	<1	0
Nickel	ppm	ASTM D5185m	>10	<1	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>10	<1	2	2
Lead	ppm	ASTM D5185m	>10	0	<1	0
Copper	ppm	ASTM D5185m	>75	10	9	9
Tin	ppm	ASTM D5185m	>10	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

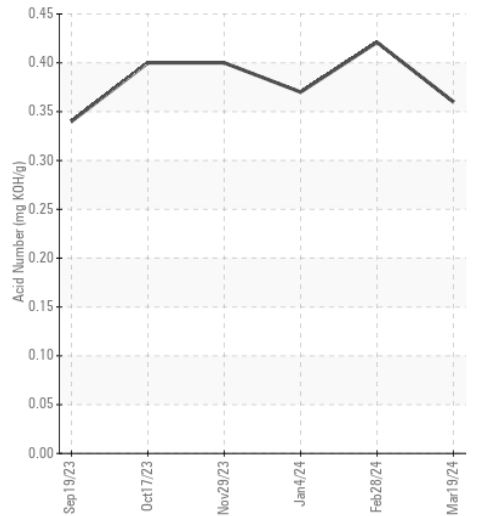
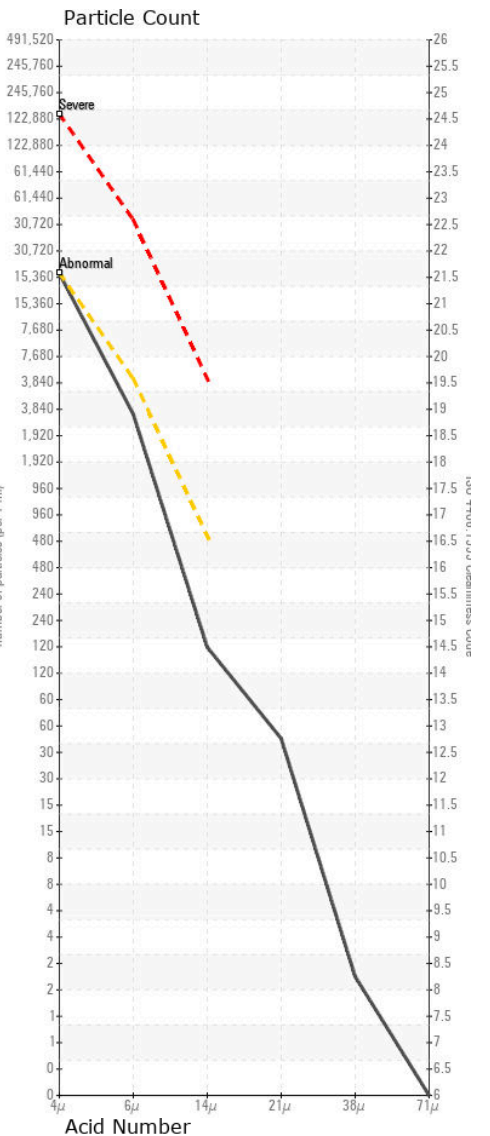
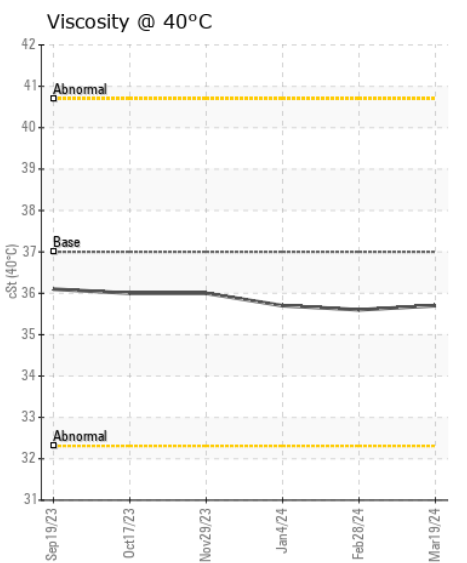
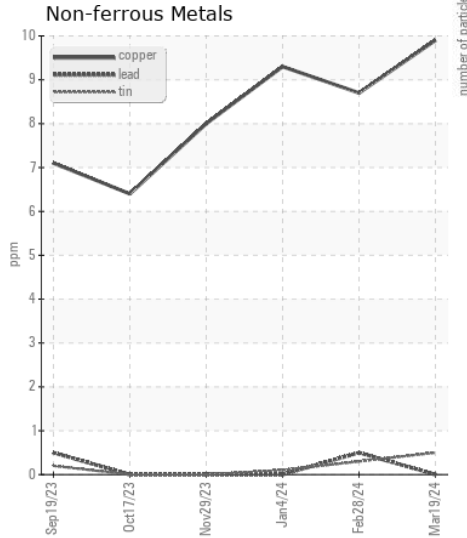
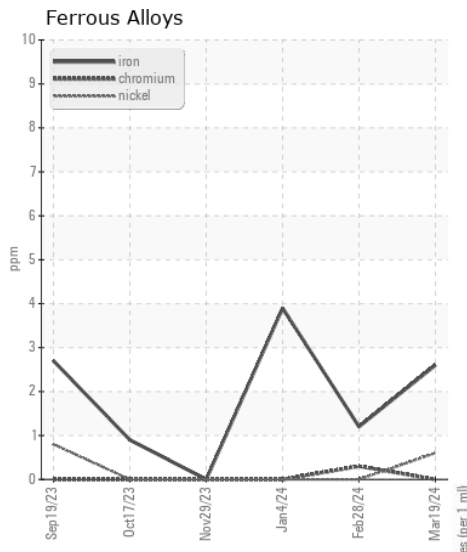
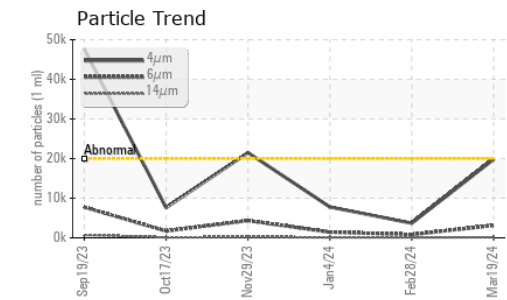
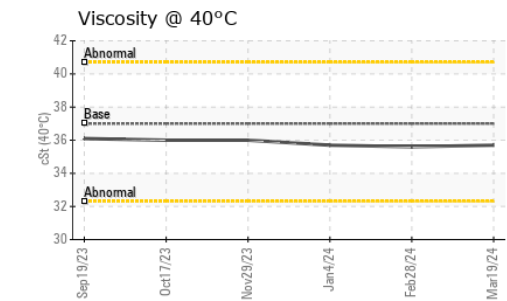
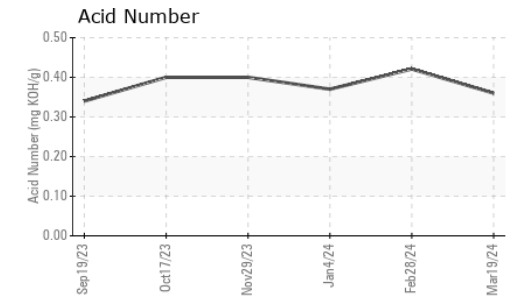
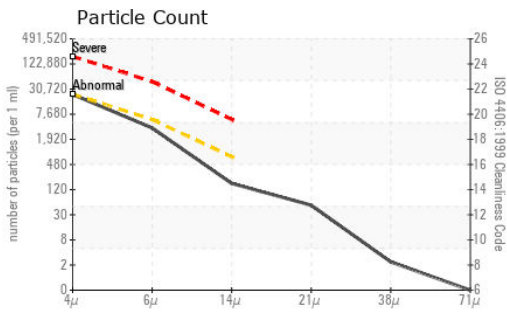
The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

Silicon	ppm	ASTM D5185m	>20	<1	<1	<1
Potassium	ppm	ASTM D5185m	>20	2	2	2
Water		WC Method	>0.1	NEG	NEG	NEG
Particles >4µm		ASTM D7647	>20000	19821	3684	7781
Particles >6µm		ASTM D7647	>5000	3142	829	1426
Particles >14µm		ASTM D7647	>640	149	76	93
Particles >21µm		ASTM D7647	>160	45	27	26
Particles >38µm		ASTM D7647	>40	2	1	1
Particles >71µm		ASTM D7647	>10	0	0	0
Oil Cleanliness		ISO 4406 (c)	>21/19/16	21/19/14	19/17/13	20/18/14
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	>0.1	NEG	NEG	NEG

FLUID CONDITION

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m		3	0	0
Boron	ppm	ASTM D5185m		0	0	0
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		0	0	0
Manganese	ppm	ASTM D5185m		1	0	0
Magnesium	ppm	ASTM D5185m		1	<1	1
Calcium	ppm	ASTM D5185m		56	55	67
Phosphorus	ppm	ASTM D5185m		291	232	358
Zinc	ppm	ASTM D5185m		337	309	359
Sulfur	ppm	ASTM D5185m		1119	837	1265
Acid Number (AN)	mg KOH/g	ASTM D8045		0.36	0.421	0.37
Visc @ 40°C	cSt	ASTM D445	37	35.7	35.6	35.7



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : LM0000290

Lab Number : 06151043

Unique Number : 10981121

Test Package : MOBCE

Received : 16 Apr 2024

Tested : 17 Apr 2024

Diagnosed : 19 Apr 2024 - Don Baldrige

LIEBHERR USA CO - Maritime Cranes

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HIALEAH GARDENS, FL

US 33018

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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)