



LIEBHERR

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL



Machine Id
LIEBHERR L556 046708-1332
Component
Hydraulic System
Fluid
CHEVRON RANDO HD 46 (--- GAL)

RECOMMENDATION

The filter change at the time of sampling has been noted. Resample at the next service interval to monitor. We were unable to perform a particle count due to a high concentration of particles present in this sample.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		LH0268187	LH0245006	LH0207737
Sample Date		Client Info		09 Feb 2024	09 Feb 2023	23 Nov 2021
Machine Age	hrs	Client Info		10214	9080	7922
Oil Age	hrs	Client Info		0	0	0
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Not Changed	Not Changed	Not Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	NORMAL	ABNORMAL

WEAR

All component wear rates are normal.

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

CONTAMINATION

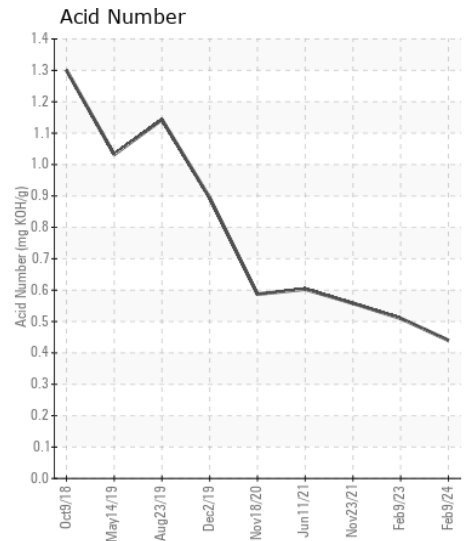
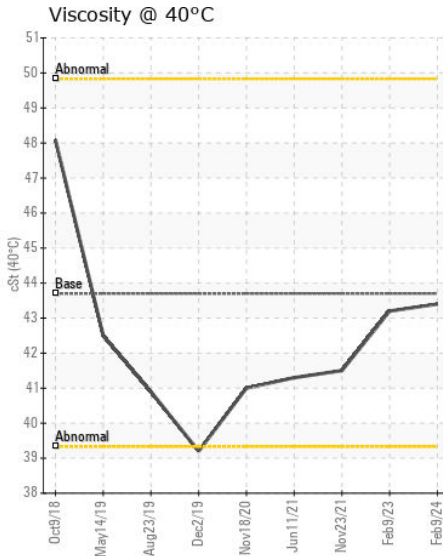
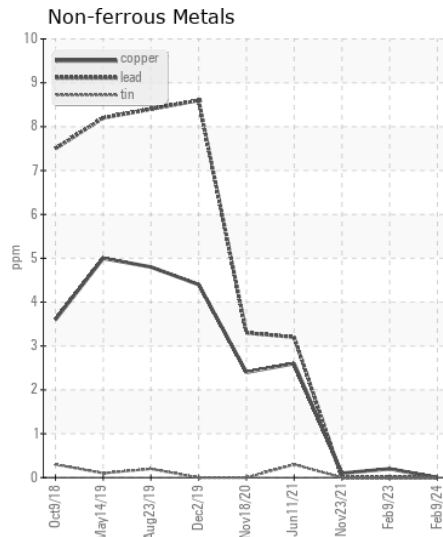
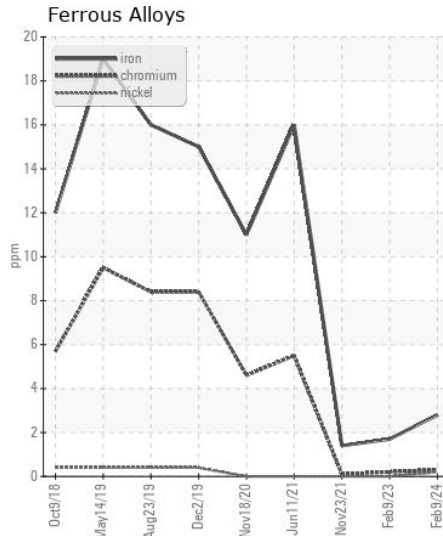
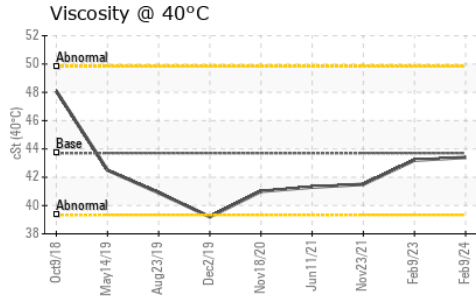
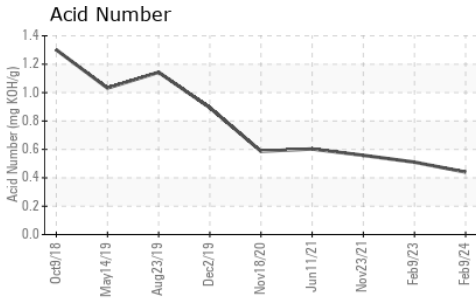
Moderate concentration of visible dirt/debris present in the oil.

Silicon	ppm	ASTM D5185m	>20	2	<1	0
Potassium	ppm	ASTM D5185m	>20	<1	<1	0
Water		WC Method	>0.1	NEG	NEG	NEG
Particles >4µm		ASTM D7647	>20000	---	14685	▲ 53568
Particles >6µm		ASTM D7647	>5000	---	620	▲ 18629
Particles >14µm		ASTM D7647	>640	---	9	▲ 1869
Particles >21µm		ASTM D7647	>160	---	2	▲ 428
Particles >38µm		ASTM D7647	>40	---	1	30
Particles >71µm		ASTM D7647	>10	---	0	1
Oil Cleanliness		ISO 4406 (c)	>21/19/16	---	21/16/10	▲ 23/21/18
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	▲ MODER	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		<1	0	<1
Boron	ppm	ASTM D5185m		11	9	3
Barium	ppm	ASTM D5185m		0	2	0
Molybdenum	ppm	ASTM D5185m		4	5	2
Manganese	ppm	ASTM D5185m		0	0	0
Magnesium	ppm	ASTM D5185m		42	42	17
Calcium	ppm	ASTM D5185m		132	137	109
Phosphorus	ppm	ASTM D5185m		380	349	374
Zinc	ppm	ASTM D5185m		501	458	417
Sulfur	ppm	ASTM D5185m		1149	994	931
Acid Number (AN)	mg KOH/g	ASTM D8045		0.44	0.51	0.558
Visc @ 40°C	cSt	ASTM D445	43.7	43.4	43.2	41.5



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : LH0268187
Lab Number : 06088706
Unique Number : 10876151
Test Package : CONST

Received : 14 Feb 2024
Tested : 15 Feb 2024
Diagnosed : 15 Feb 2024 - Jonathan Hester

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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)