



OIL ANALYSIS REPORT

WEAR	SEVERE
CONTAMINATION	SEVERE
FLUID CONDITION	NORMAL

Machine Id
LIEBHERR 31229
 Component
Left Final Drive
 Fluid
GEAR OIL SAE 80W90 (--- QTS)

RECOMMENDATION

We advise that you check all areas where dirt can enter the system. Oil and filter change at the time of sampling has been noted. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0924404	WC0846551	WC0846479
Sample Date		Client Info		23 May 2024	29 Sep 2023	29 Sep 2023
Machine Age	hrs	Client Info		11435	0	0
Oil Age	hrs	Client Info		750	58	58
Filter Age	hrs	Client Info		750	58	58
Oil Changed		Client Info		Changed	Changed	N/A
Filter Changed		Client Info		Changed	Changed	N/A
Sample Status				SEVERE	ABNORMAL	SEVERE

WEAR

Bearing and/or gear wear is indicated.

Iron	ppm	ASTM D5185m	>500	▲ 1643	▲ 678	▲ 1145
Chromium	ppm	ASTM D5185m	>10	▲ 26	▲ 11	▲ 17
Nickel	ppm	ASTM D5185m	>10	6	2	4
Titanium	ppm	ASTM D5185m		6	<1	4
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>25	● 108	16	● 75
Lead	ppm	ASTM D5185m	>25	1	<1	<1
Copper	ppm	ASTM D5185m	>50	▲ 57	5	28
Tin	ppm	ASTM D5185m	>10	3	<1	2
Vanadium	ppm	ASTM D5185m		<1	0	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

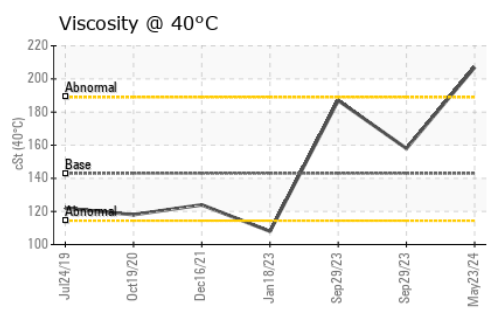
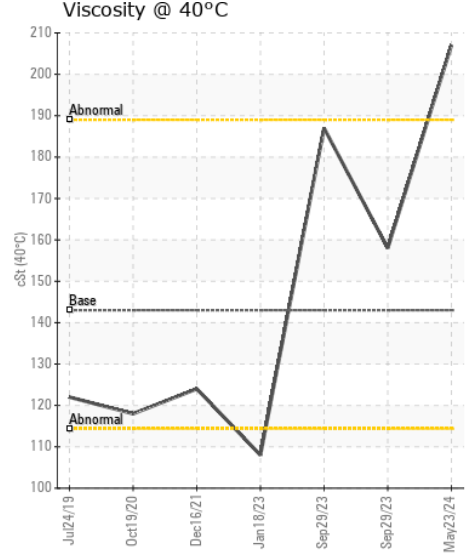
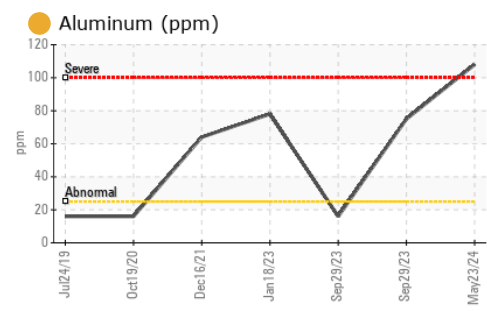
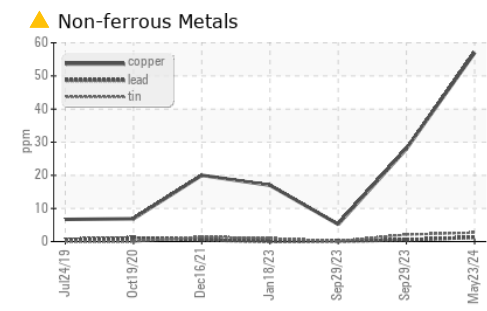
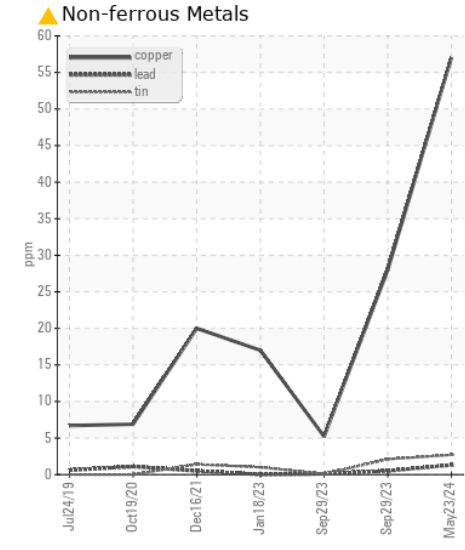
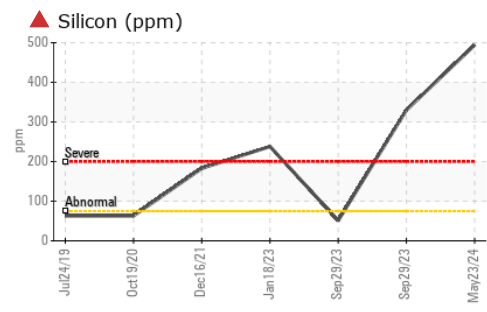
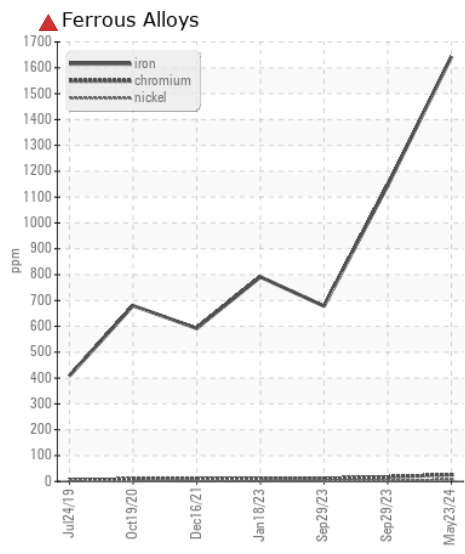
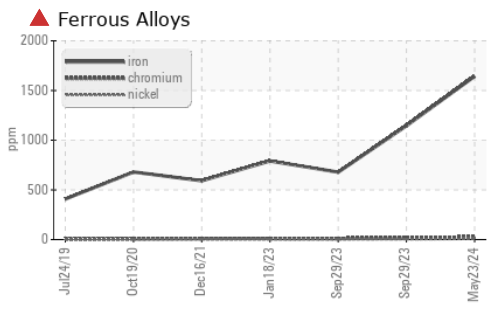
Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Silicon	ppm	ASTM D5185m	>75	▲ 494	51	▲ 330
Potassium	ppm	ASTM D5185m	>20	29	3	19
Water		WC Method	>0.2	NEG	NEG	NEG
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	LIGHT	LIGHT
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 is no longer serviceable due to the presence of contaminants.

Sodium	ppm	ASTM D5185m	>170	22	<1	14
Boron	ppm	ASTM D5185m	400	91	115	91
Barium	ppm	ASTM D5185m	200	<1	0	0
Molybdenum	ppm	ASTM D5185m	12	3	<1	<1
Manganese	ppm	ASTM D5185m		14	5	10
Magnesium	ppm	ASTM D5185m	12	13	8	14
Calcium	ppm	ASTM D5185m	150	42	26	41
Phosphorus	ppm	ASTM D5185m	1650	2903	3122	2798
Zinc	ppm	ASTM D5185m	125	31	27	16
Sulfur	ppm	ASTM D5185m	22500	28609	24496	25222
Visc @ 40°C	cSt	ASTM D445	143	207	158	187



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0924404
Lab Number : 06196070
Unique Number : 11058193
Test Package : CONST
Received : 30 May 2024
Tested : 03 Jun 2024
Diagnosed : 03 Jun 2024 - Sean Felton

SULLIVAN EASTERN INC-LIEBHERR
 2860 C SLATER RD
 MORRISVILLE, NC
 US 27560
 Contact: CHRIS CALTON

Certificate L2367
 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)