



OIL ANALYSIS REPORT

WEAR	SEVERE
CONTAMINATION	SEVERE
FLUID CONDITION	NORMAL

Machine Id
LIEBHERR 31241
Component
Right Final Drive
Fluid
CHEVRON DELO GEAR ESI OIL 80W90 (--- GAL)

RECOMMENDATION

We advise that you check for the source of water entry. We advise that you check all areas where dirt can enter the system. The oil 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		WC0882635	WC0733673	WC0671618
Sample Date		Client Info		11 Jan 2024	27 Sep 2022	27 Apr 2022
Machine Age	hrs	Client Info		6311	4759	4211
Oil Age	hrs	Client Info		2000	548	582
Filter Age	hrs	Client Info		2000	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	N/A	N/A
Sample Status				SEVERE	SEVERE	ABNORMAL

WEAR

Moderate concentration of visible metal present. Gear wear is indicated.

Iron	ppm	ASTM D5185m	>500	2910	1688	928
Chromium	ppm	ASTM D5185m	>10	33	18	10
Nickel	ppm	ASTM D5185m	>10	15	7	4
Titanium	ppm	ASTM D5185m		20	5	5
Silver	ppm	ASTM D5185m		0	0	<1
Aluminum	ppm	ASTM D5185m	>25	691	120	102
Lead	ppm	ASTM D5185m	>25	<1	1	0
Copper	ppm	ASTM D5185m	>50	2	<1	<1
Tin	ppm	ASTM D5185m	>10	0	<1	0
Vanadium	ppm	ASTM D5185m		1	<1	<1
White Metal	scalar	*Visual	NONE	NONE	MODER	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

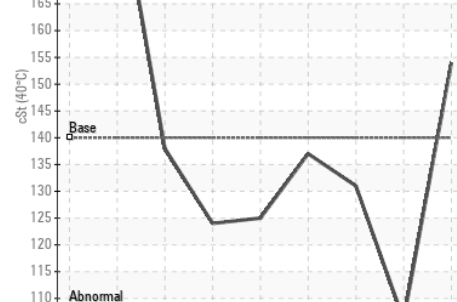
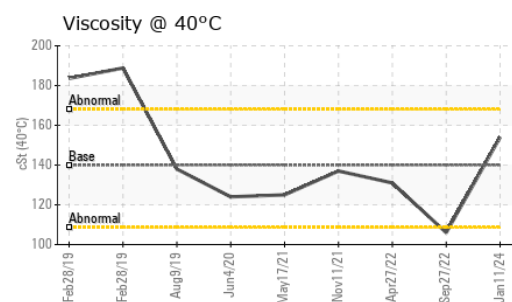
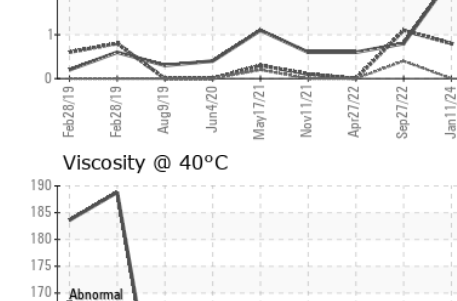
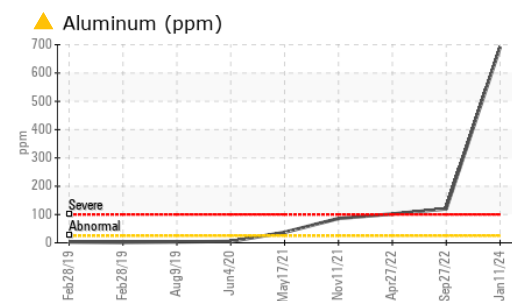
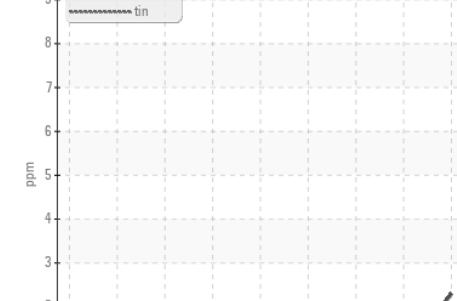
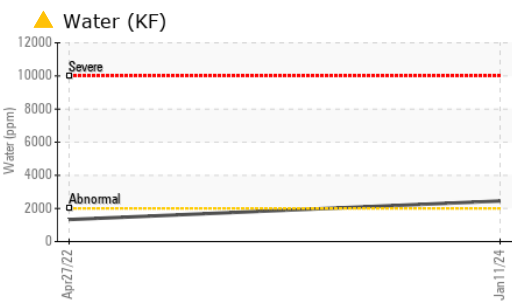
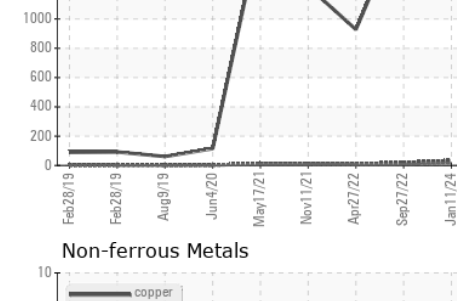
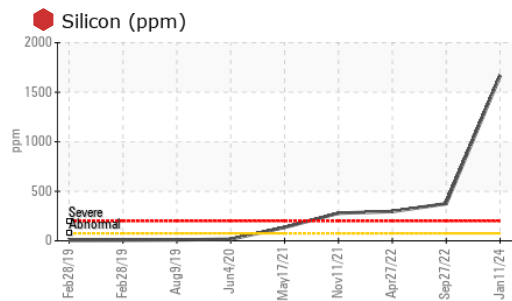
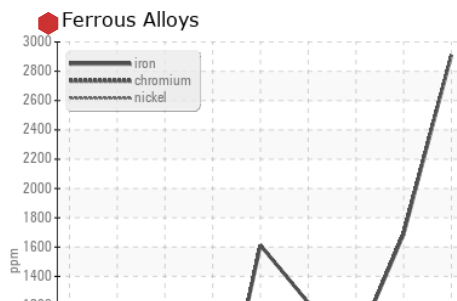
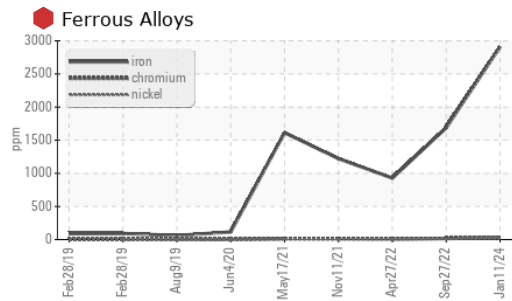
There is a light concentration of water present in the oil. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Silicon	ppm	ASTM D5185m	>75	1667	375	296
Potassium	ppm	ASTM D5185m	>20	170	28	21
Water	%	ASTM D6304	>0.2	0.245	---	0.133
ppm Water	ppm	ASTM D6304	>2000	2450	---	1330
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	>0.2	0.2%	NEG	0.2%

FLUID CONDITION

The oil is no longer serviceable due to the presence of contaminants.

Sodium	ppm	ASTM D5185m		63	13	8
Boron	ppm	ASTM D5185m		87	136	114
Barium	ppm	ASTM D5185m		0	6	0
Molybdenum	ppm	ASTM D5185m		10	8	4
Manganese	ppm	ASTM D5185m		23	13	8
Magnesium	ppm	ASTM D5185m		50	38	19
Calcium	ppm	ASTM D5185m		125	135	44
Phosphorus	ppm	ASTM D5185m		2621	4164	1446
Zinc	ppm	ASTM D5185m		47	95	30
Sulfur	ppm	ASTM D5185m		21093	20311	17435
Visc @ 40°C	cSt	ASTM D445	140	154	106	131



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0882635 **Received** : 16 Jan 2024
Lab Number : 06061534 **Diagnosed** : 18 Jan 2024
Unique Number : 10832916 **Diagnostician** : Angela Borella
Test Package : CONST (Additional Tests: KF)

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)

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