



OIL ANALYSIS REPORT

WEAR	SEVERE
CONTAMINATION	SEVERE
FLUID CONDITION	NORMAL

Machine Id
LIEBHERR 31228

Component
Right Final Drive

Fluid
CHEVRON DELO GEAR ESI OIL 80W90 (--- QTS)

RECOMMENDATION

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		WC0924464	WC0786569	WC0756681
Sample Date		Client Info		27 Jun 2024	27 Oct 2023	16 Feb 2023
Machine Age	hrs	Client Info		11267	10900	9887
Oil Age	hrs	Client Info		1250	1000	250
Filter Age	hrs	Client Info		1250	0	0
Oil Changed		Client Info		Changed	Changed	Not Changed
Filter Changed		Client Info		Changed	N/A	Changed
Sample Status				SEVERE	SEVERE	ABNORMAL

WEAR

Gear wear is indicated. Bearing and/or bushing wear is indicated.

Iron	ppm	ASTM D5185m	>500	▲ 694	▲ 2373	255
Chromium	ppm	ASTM D5185m	>10	6	▲ 22	2
Nickel	ppm	ASTM D5185m	>10	3	9	1
Titanium	ppm	ASTM D5185m		7	11	2
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>25	● 154	● 217	● 44
Lead	ppm	ASTM D5185m	>25	3	0	0
Copper	ppm	ASTM D5185m	>50	▲ 508	▲ 657	▲ 122
Tin	ppm	ASTM D5185m	>10	▲ 15	▲ 52	▲ 14
Vanadium	ppm	ASTM D5185m		0	<1	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

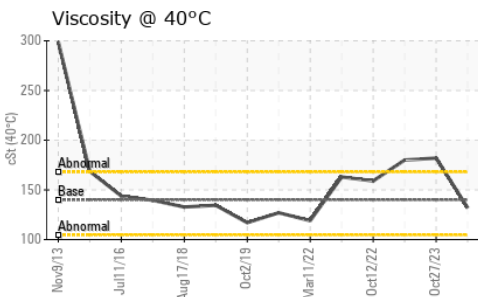
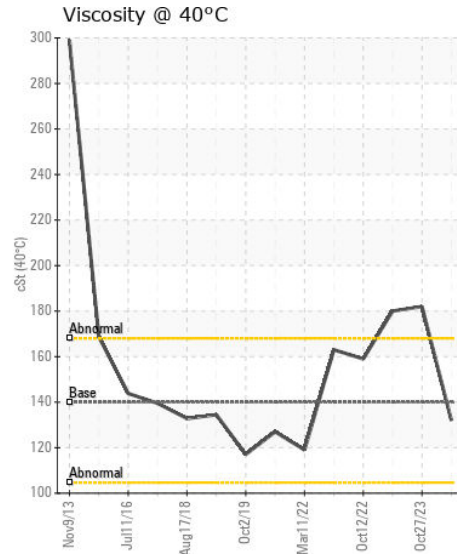
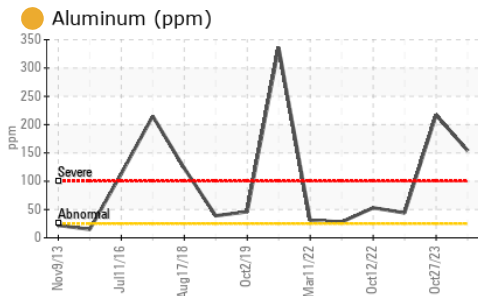
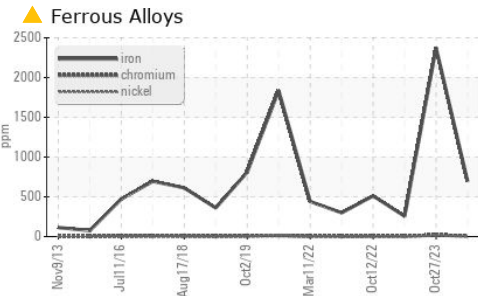
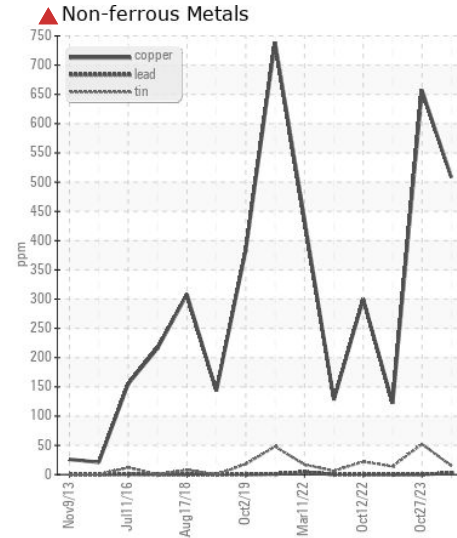
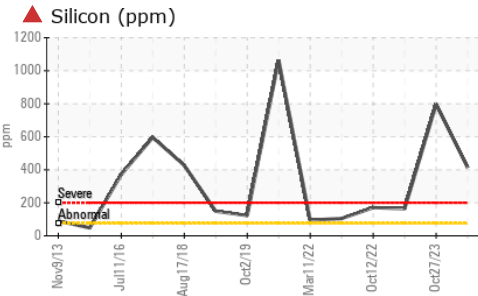
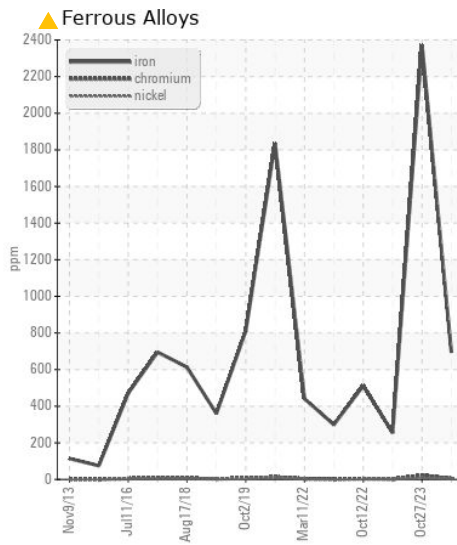
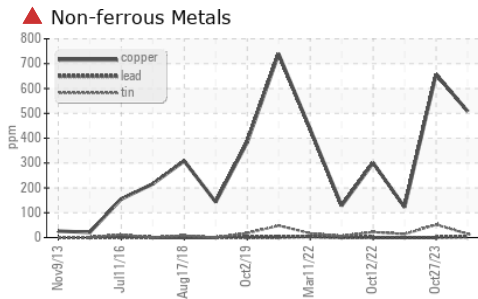
Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Silicon	ppm	ASTM D5185m	>75	▲ 414	▲ 797	▲ 164
Potassium	ppm	ASTM D5185m	>20	36	56	10
Water		WC Method	>0.2	NEG	NEG	NEG
Silt	scalar	*Visual	NONE	MODER	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	NEG	NEG	NEG

FLUID CONDITION

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

Sodium	ppm	ASTM D5185m		14	42	10
Boron	ppm	ASTM D5185m	15	53	33	29
Barium	ppm	ASTM D5185m	0	1	1	0
Molybdenum	ppm	ASTM D5185m	0	6	1	1
Manganese	ppm	ASTM D5185m		7	19	2
Magnesium	ppm	ASTM D5185m	0	29	37	8
Calcium	ppm	ASTM D5185m	5	65	38	33
Phosphorus	ppm	ASTM D5185m	600	1699	2048	2108
Zinc	ppm	ASTM D5185m	0	78	115	49
Sulfur	ppm	ASTM D5185m	22000	22037	22257	27200
Visc @ 40°C	cSt	ASTM D445	140	132	182	180



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0924464
Lab Number : 06227927
Unique Number : 11111420
Test Package : CONST
Received : 03 Jul 2024
Tested : 05 Jul 2024
Diagnosed : 07 Jul 2024 - Don Baldrige

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

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)

T: (919)484-2136
F: (919)484-2136