



# OIL ANALYSIS REPORT

WEAR	<b>ABNORMAL</b>
CONTAMINATION	<b>ABNORMAL</b>
FLUID CONDITION	<b>ATTENTION</b>

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. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>WC0950520</b>	WC0924464	WC0786569
Sample Date		Client Info		<b>10 Jul 2024</b>	27 Jun 2024	27 Oct 2023
Machine Age	hrs	Client Info		<b>0</b>	11267	10900
Oil Age	hrs	Client Info		<b>0</b>	1250	1000
Filter Age	hrs	Client Info		<b>0</b>	1250	0
Oil Changed		Client Info		<b>N/A</b>	Changed	Changed
Filter Changed		Client Info		<b>N/A</b>	Changed	N/A
Sample Status				<b>ABNORMAL</b>	SEVERE	SEVERE

## WEAR

The copper level has decreased, but is still abnormal. All other component wear rates are normal.

Iron	ppm	ASTM D5185m	>500	<b>215</b>	▲ 694	▲ 2373
Chromium	ppm	ASTM D5185m	>10	<b>2</b>	6	▲ 22
Nickel	ppm	ASTM D5185m	>10	<b>1</b>	3	9
Titanium	ppm	ASTM D5185m		<b>1</b>	7	11
Silver	ppm	ASTM D5185m		<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>25	● <b>27</b>	● 154	● 217
Lead	ppm	ASTM D5185m	>25	<b>0</b>	3	0
Copper	ppm	ASTM D5185m	>50	▲ <b>92</b>	▲ 508	▲ 657
Tin	ppm	ASTM D5185m	>10	<b>2</b>	▲ 15	▲ 52
Vanadium	ppm	ASTM D5185m		<b>0</b>	0	<1
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

## CONTAMINATION

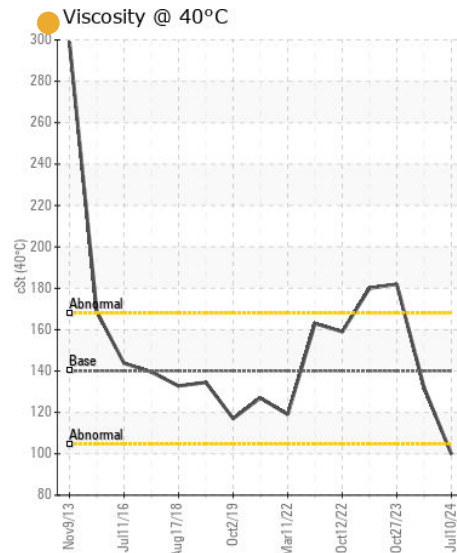
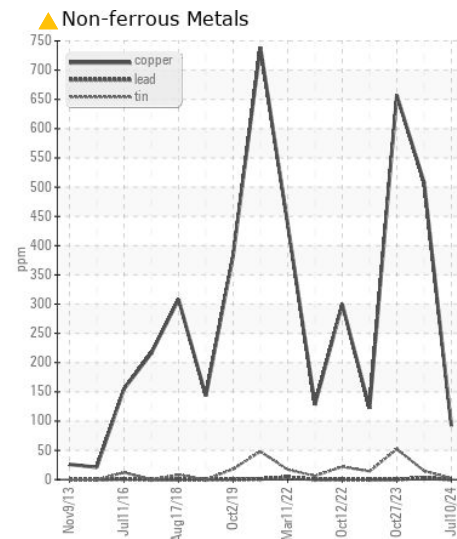
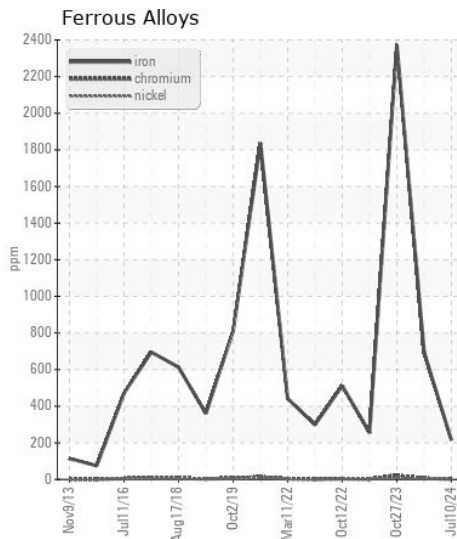
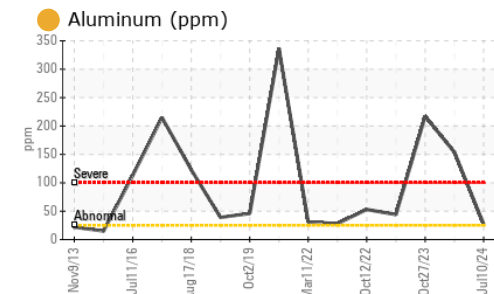
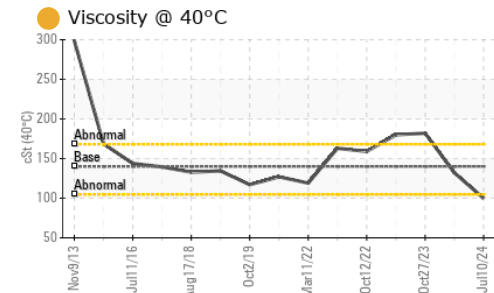
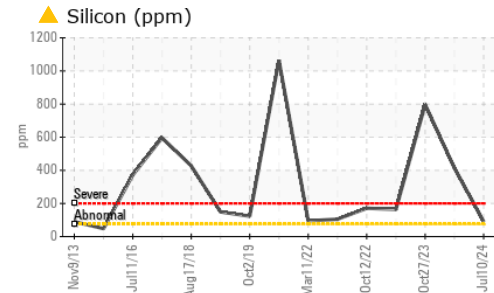
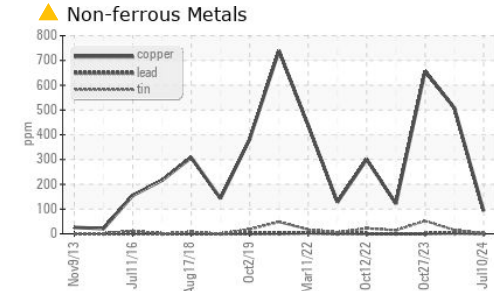
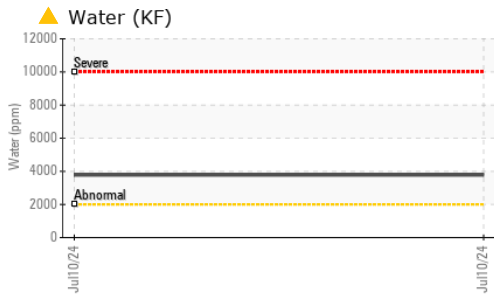
There is a light concentration of water present in the oil. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Silicon	ppm	ASTM D5185m	>75	▲ <b>91</b>	▲ 414	▲ 797
Potassium	ppm	ASTM D5185m	>20	<b>7</b>	36	56
Water	%	ASTM D6304	>0.2	▲ <b>0.378</b>	---	---
ppm Water	ppm	ASTM D6304	>2000	▲ <b>3780</b>	---	---
Silt	scalar	*Visual	NONE	<b>MODER</b>	MODER	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	<b>0.2%</b>	NEG	NEG

## FLUID CONDITION

The oil viscosity is lower than normal. Confirm oil type.

Sodium	ppm	ASTM D5185m		<b>4</b>	14	42
Boron	ppm	ASTM D5185m	15	<b>106</b>	53	33
Barium	ppm	ASTM D5185m	0	<b>0</b>	1	1
Molybdenum	ppm	ASTM D5185m	0	<b>10</b>	6	1
Manganese	ppm	ASTM D5185m		<b>2</b>	7	19
Magnesium	ppm	ASTM D5185m	0	<b>43</b>	29	37
Calcium	ppm	ASTM D5185m	5	<b>101</b>	65	38
Phosphorus	ppm	ASTM D5185m	600	<b>3230</b>	1699	2048
Zinc	ppm	ASTM D5185m	0	<b>129</b>	78	115
Sulfur	ppm	ASTM D5185m	22000	<b>14356</b>	22037	22257
Visc @ 40°C	cSt	ASTM D445	140	● <b>99.8</b>	132	182



Certificate L2367

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

**Sample No.** : WC0950520

**Lab Number** : 06240741

**Unique Number** : 11129575

**Test Package** : CONST ( Additional Tests: KF )

**Received** : 18 Jul 2024

**Tested** : 19 Jul 2024

**Diagnosed** : 20 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)

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