



# OIL ANALYSIS REPORT

WEAR  
CONTAMINATION  
FLUID CONDITION

**ABNORMAL**  
**SEVERE**  
**ATTENTION**

Machine Id  
**LIEBHERR 31228**

Component  
**Left Final Drive**

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

## RECOMMENDATION

We advise that you check all areas where dirt can enter the system. We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

## WEAR

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

## 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.

## FLUID CONDITION

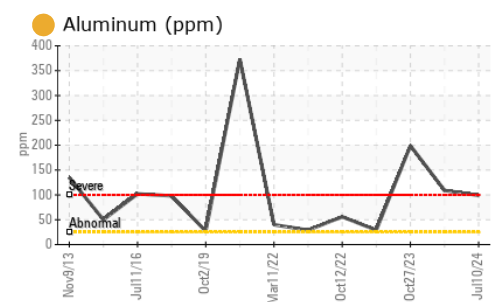
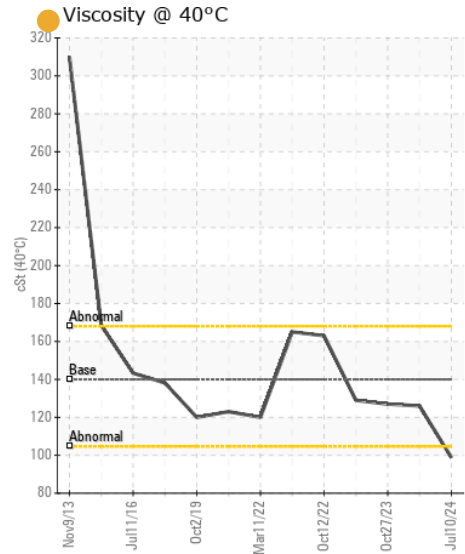
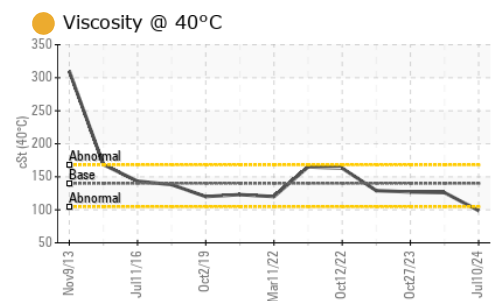
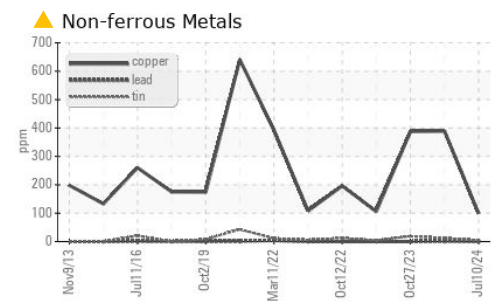
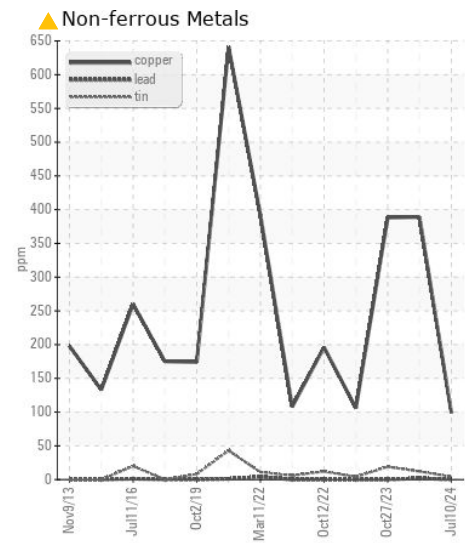
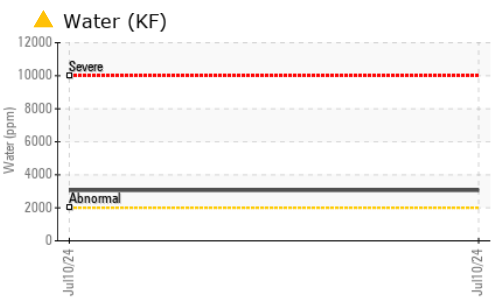
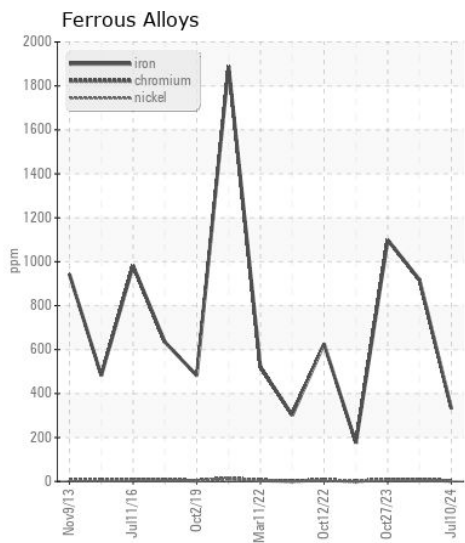
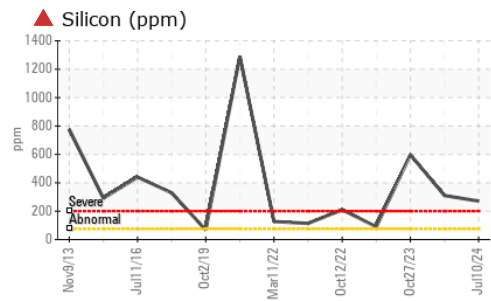
The oil viscosity is lower than normal. Confirm oil type. The oil is no longer serviceable due to the presence of contaminants.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>WC0950521</b>	WC0924461	WC0786568
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>SEVERE</b>	SEVERE	SEVERE

Iron	ppm	ASTM D5185m	>500	<b>331</b>	▲ 918	▲ 1099
Chromium	ppm	ASTM D5185m	>10	<b>2</b>	7	▲ 9
Nickel	ppm	ASTM D5185m	>10	<b>2</b>	4	5
Titanium	ppm	ASTM D5185m		<b>4</b>	6	11
Silver	ppm	ASTM D5185m		<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>25	● <b>99</b>	● 109	● 199
Lead	ppm	ASTM D5185m	>25	<b>0</b>	2	0
Copper	ppm	ASTM D5185m	>50	▲ <b>99</b>	▲ 389	▲ 388
Tin	ppm	ASTM D5185m	>10	<b>4</b>	▲ 12	▲ 19
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	0	<1
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

Silicon	ppm	ASTM D5185m	>75	▲ <b>271</b>	▲ 310	▲ 597
Potassium	ppm	ASTM D5185m	>20	<b>25</b>	29	48
Water	%	ASTM D6304	>0.2	▲ <b>0.306</b>	---	---
ppm Water	ppm	ASTM D6304	>2000	▲ <b>3060</b>	---	---
Silt	scalar	*Visual	NONE	<b>MODER</b>	NONE	MODER
Debris	scalar	*Visual	NONE	<b>NONE</b>	LIGHT	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

Sodium	ppm	ASTM D5185m		<b>11</b>	9	25
Boron	ppm	ASTM D5185m	15	<b>107</b>	76	85
Barium	ppm	ASTM D5185m	0	<b>0</b>	1	1
Molybdenum	ppm	ASTM D5185m	0	<b>10</b>	6	5
Manganese	ppm	ASTM D5185m		<b>3</b>	10	12
Magnesium	ppm	ASTM D5185m	0	<b>53</b>	26	55
Calcium	ppm	ASTM D5185m	5	<b>104</b>	29	65
Phosphorus	ppm	ASTM D5185m	600	<b>3166</b>	1514	1366
Zinc	ppm	ASTM D5185m	0	<b>137</b>	99	122
Sulfur	ppm	ASTM D5185m	22000	<b>13569</b>	21062	19870
Visc @ 40°C	cSt	ASTM D445	140	● <b>98.8</b>	126	127



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : WC0950521 **Received** : 18 Jul 2024  
**Lab Number** : 06240742 **Tested** : 19 Jul 2024  
**Unique Number** : 11129576 **Diagnosed** : 20 Jul 2024 - Don Baldrige  
**Test Package** : CONST ( Additional Tests: KF )

**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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