CONST

WEAR CHECK

OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	SEVERE
FLUID CONDITION	ABNORMAL

Machine Id
LIEBHERR A944B-HD C-40 (S/N 018737-744)
Component
Diesel Engine
Fluid
CONOCO PHILLIPS GUARDOL ECT 15W40 (6 GAL)

RECOMMENDATION

We advise that you check for the source of the coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

WEAR

Bearing and/or bushing wear is indicated. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core).

CONTAMINATION

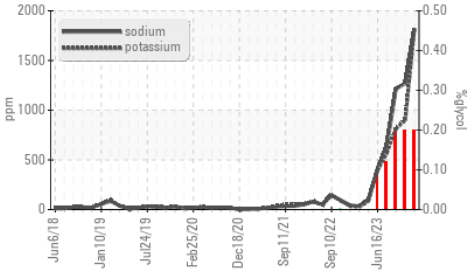
Sodium and/or potassium levels are high. There is a high concentration of glycol present in the oil. Elemental level of silicon (Si) above normal indicating ingress of seal material.

FLUID CONDITION

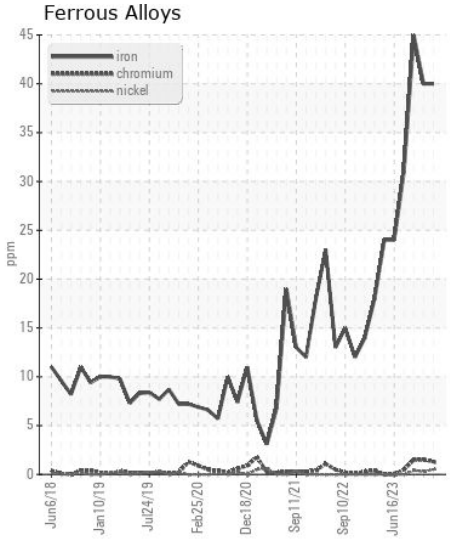
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0879518	WC0828401	WC0869372
Sample Date		Client Info		12 Feb 2024	18 Dec 2023	01 Nov 2023
Machine Age	hrs	Client Info		41430	41156	40883
Oil Age	hrs	Client Info		274	273	1038
Filter Age	hrs	Client Info		274	273	1038
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				SEVERE	SEVERE	SEVERE
Iron	ppm	ASTM D5185m	>100	40	40	45
Chromium	ppm	ASTM D5185m	>5	1	2	2
Nickel	ppm	ASTM D5185m	>5	<1	<1	<1
Titanium	ppm	ASTM D5185m		67	65	36
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>15	3	4	2
Lead	ppm	ASTM D5185m	>30	▲ 50	11	13
Copper	ppm	ASTM D5185m	>125	▲ 546	▲ 371	47
Tin	ppm	ASTM D5185m	>5	4	<1	<1
Vanadium	ppm	ASTM D5185m		<1	1	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Silicon	ppm	ASTM D5185m	>60	▲ 100	▲ 55	▲ 60
Potassium	ppm	ASTM D5185m	>20	▲ 1823	▲ 901	▲ 814
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol	%	*ASTM D2982		▲ 0.20	▲ 0.20	▲ 0.20
Soot %	%	*ASTM D7844	>3	0.4	0.4	1.2
Nitration	Abs/cm	*ASTM D7624	>20	11.9	10.8	10.6
Sulfation	Abs/.1mm	*ASTM D7415	>30	24.1	23.2	22.9
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	NEG	NEG	NEG
Sodium	ppm	ASTM D5185m		▲ 1820	▲ 1269	▲ 1214
Boron	ppm	ASTM D5185m	85	386	117	41
Barium	ppm	ASTM D5185m		6	0	0
Molybdenum	ppm	ASTM D5185m		17	18	54
Manganese	ppm	ASTM D5185m		1	1	<1
Magnesium	ppm	ASTM D5185m	350	374	415	813
Calcium	ppm	ASTM D5185m	1800	1711	1474	1413
Phosphorus	ppm	ASTM D5185m	1000	1821	1444	1340
Zinc	ppm	ASTM D5185m	1100	1166	1107	1353
Sulfur	ppm	ASTM D5185m	3500	3448	3110	3145
Oxidation	Abs/.1mm	*ASTM D7414	>25	14.0	14.4	15.7
Base Number (BN)	mg KOH/g	ASTM D2896	9.5	18.0	10.2	9.8
Visc @ 100°C	cSt	ASTM D445	15.3	15.4	15.2	14.7

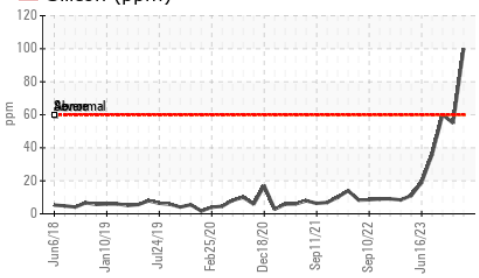
Glycol Contamination



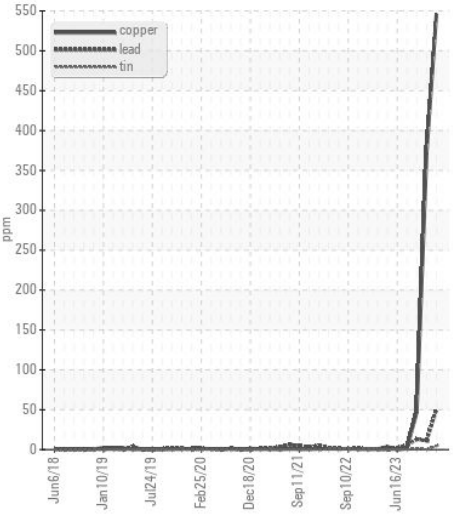
Ferrous Alloys



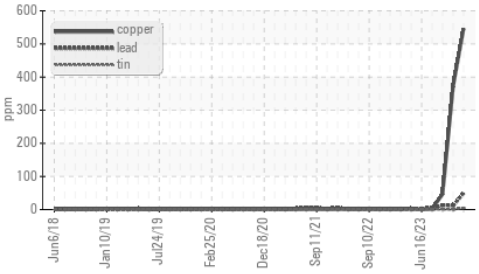
Silicon (ppm)



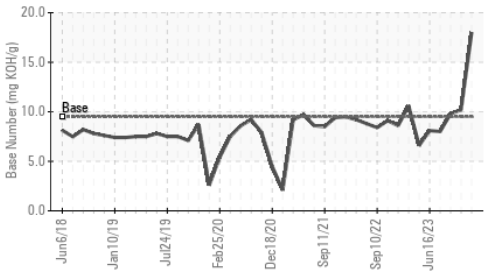
Non-ferrous Metals



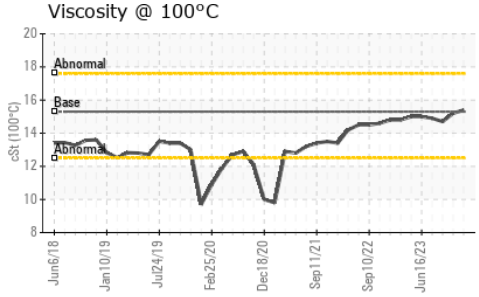
Non-ferrous Metals



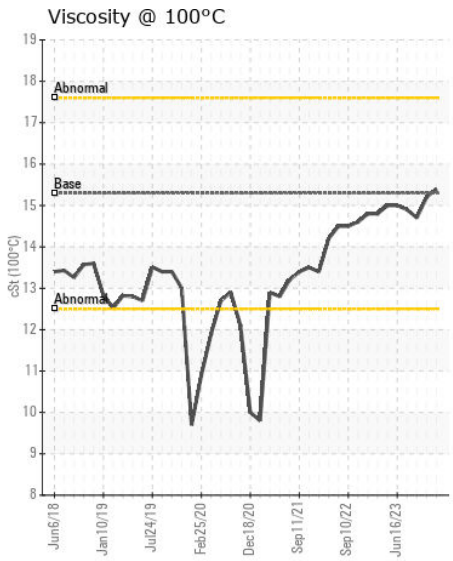
Base Number



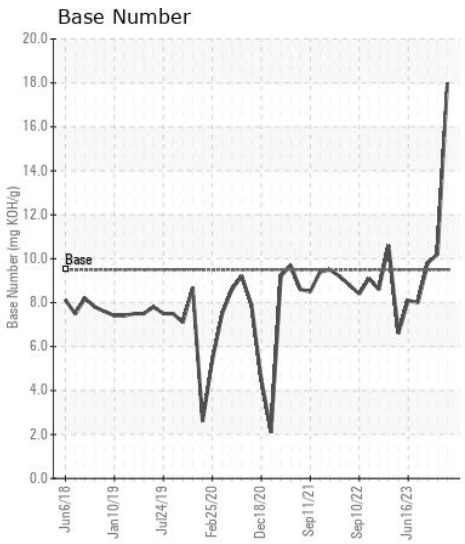
Viscosity @ 100°C



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0879518
Lab Number : 06101301
Unique Number : 10899531
Test Package : CONST (Additional Tests: TBN)

Received : 27 Feb 2024
Tested : 28 Feb 2024
Diagnosed : 28 Feb 2024 - Jonathan Hester

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)

FRANKLIN IRON & METAL CORP
1939 EAST 1ST ST
DAYTON, OH
US 45403
Contact: BILL PITTL JR
parts@franklinIron.com
T: (937)253-8184
F: