

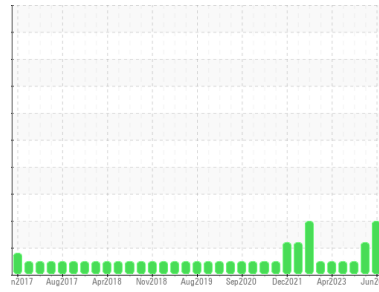


OIL ANALYSIS REPORT



Area
AMR-12 Street
 Machine Id
339324 LIEBHERR LH60 1204-86896
 Component
Diesel Engine
 Fluid
LIEBHERR MOTOROIL 10W-40 LOW ASH (10 GAL)

Sample Rating Trend



GLYCOL



DIAGNOSIS

Recommendation

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

The aluminum level is abnormal. All other component wear rates are normal.

Contamination

Sodium and/or potassium levels are high.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		DJJ0018451	DJJ0017127	DJJ0013899
Sample Date	Client Info		11 Jun 2024	26 Dec 2023	15 Sep 2023
Machine Age	hrs	Client Info	15501	15052	14489
Oil Age	hrs	Client Info	250	250	0
Oil Changed	Client Info		Changed	Changed	Changed
Sample Status			ABNORMAL	ABNORMAL	NORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>5	<1.0	<1.0	<1.0
Water	WC Method	>0.2	NEG	NEG	NEG

WEAR METALS

	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>100	25	15	10
Chromium	ppm	ASTM D5185m	>5	<1	<1	0
Nickel	ppm	ASTM D5185m	>5	0	<1	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>15	▲ 30	13	6
Lead	ppm	ASTM D5185m	>30	1	0	0
Copper	ppm	ASTM D5185m	>125	2	<1	<1
Tin	ppm	ASTM D5185m	>5	0	<1	<1
Vanadium	ppm	ASTM D5185m		<1	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	0

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m	169	145	65	99
Barium	ppm	ASTM D5185m	0	0	0	0
Molybdenum	ppm	ASTM D5185m	2	8	8	18
Manganese	ppm	ASTM D5185m	<1	<1	<1	<1
Magnesium	ppm	ASTM D5185m	724	875	800	773
Calcium	ppm	ASTM D5185m	1323	1547	1260	1378
Phosphorus	ppm	ASTM D5185m	678	953	883	859
Zinc	ppm	ASTM D5185m	776	1109	972	997
Sulfur	ppm	ASTM D5185m	2859	5168	3980	3834

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>60	8	8	7
Sodium	ppm	ASTM D5185m		● 98	▲ 259	19
Potassium	ppm	ASTM D5185m	>20	9	17	6
Glycol	%	*ASTM D2982		NEG	NEG	NEG

INFRA-RED

	method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844	>3	0.6	0.9	0.7
Nitration	Abs/cm	*ASTM D7624	>20	10.0	11.2	9.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	19.9	21.3	20.0

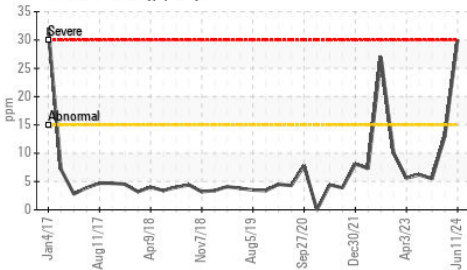
FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	*ASTM D7414	>25	18.7	20.4	18.9
Base Number (BN)	mg KOH/g	ASTM D2896	9.28	8.8	8.1	8.9

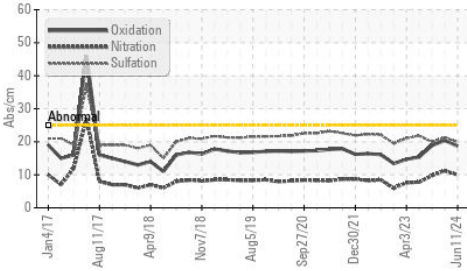


OIL ANALYSIS REPORT

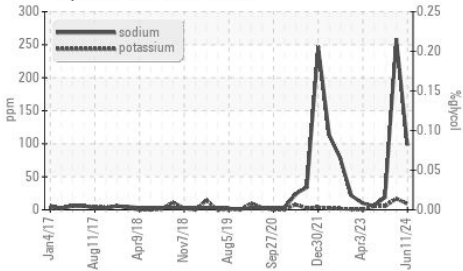
Aluminum (ppm)



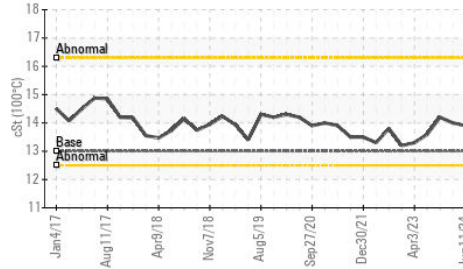
FT-IR (Direct Trend)



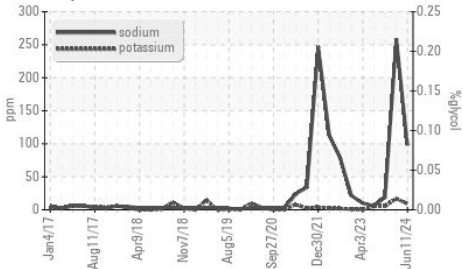
Glycol Contamination



Viscosity @ 100°C



Glycol Contamination

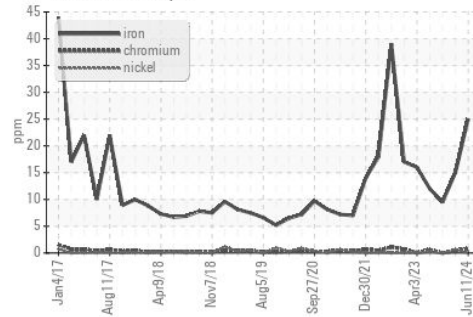


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

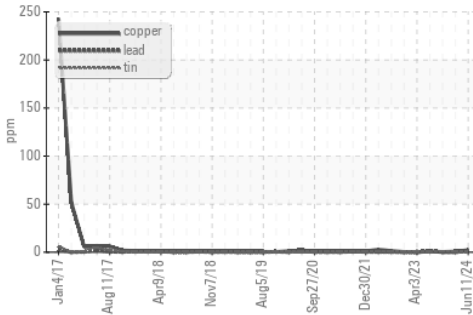
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	13.0	13.9	14.0

GRAPHS

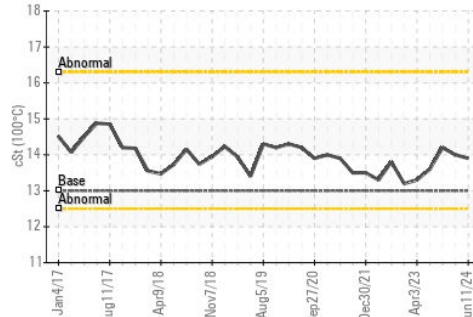
Ferrous Alloys



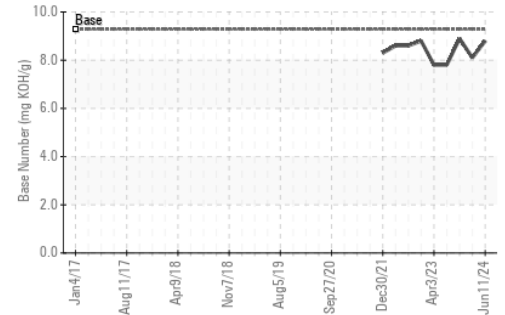
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

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

Sample No. : DJJ0018451

Lab Number : 06215581

Unique Number : 11088445

Test Package : CONST (Additional Tests: Glycol, TBN)

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)

Received : 20 Jun 2024

Tested : 21 Jun 2024

Diagnosed : 21 Jun 2024 - Sean Felton

ADVANTAGE METALS RECYCLING - 12 STREET

1153 S. 12TH STREET

KANSAS CITY, KS

US 66105

Contact: JOHN PEEK

john.peek@advantagerecycling.com

T: (660)424-9134

F: (913)621-2766