

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR A934 044099-1007 - Diesel Engine

Sample No: LH0259165

Oil Type: SHELL RIMULA SUPER SAE 15W40



SAMPLE INFORMATION

Sample Number	LH0259165	LH0244933	LH0230017	LH0229938
Sample Date	10 Oct 2023	04 Apr 2023	02 Dec 2022	08 Aug 2022
Machine Hours	31151	30303	29760	29154
Oil Hours	0	0	0	0
Oil Changed	Changed	Changed	Changed	Changed
Sample Status	NORMAL	NORMAL	ABNORMAL	NORMAL



OIL CONDITION

Visc @ 100°C	cSt	14.2	13.6	14.4	14.3
Base Number (BN)	mg KOH/g	6.3	6.5	5.1	7.0
Oxidation (PA)	%	52	58	63	82



CONTAMINATION

Soot %	%	1.1	0.5	3.1	2.7
Nitration (PA)	%	73	73	96	106
Sulfation (PA)	%	53	53	70	81
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	<1.0	<1.0	<1.0	<1.0
Silicon	ppm	7	7	9	6
Sodium	ppm	1	2	7	1
Potassium	ppm	2	<1	<1	0



WEAR METALS

Iron	ppm	5	3	33	16
Copper	ppm	1	<1	64	4
Lead	ppm	<1	0	3	2
Tin	ppm	<1	0	2	<1
Aluminum	ppm	2	1	3	1
Chromium	ppm	<1	<1	<1	<1
Molybdenum	ppm	62	87	93	66
Nickel	ppm	<1	0	<1	0
Titanium	ppm	<1	<1	0	0
Silver	ppm	0	0	<1	<1
Manganese	ppm	0	<1	<1	<1
Vanadium	ppm	0	0	0	0



ADDITIVES

Calcium	ppm	2212	2209	2310	1213
Magnesium	ppm	31	32	45	945
Zinc	ppm	1177	1238	1280	1267
Phosphorus	ppm	1009	1039	999	974
Barium	ppm	0	0	0	<1
Boron	ppm	34	72	24	9

INTEGRITY METALS

835 EAST INDUSTRIAL
MORRISTOWN, IN
US 46161
Contact: HEIDI KERSTIENS
heidi@integrity-metals.com
T: (765)763-8000
F: (765)763-8001

Diagnosis

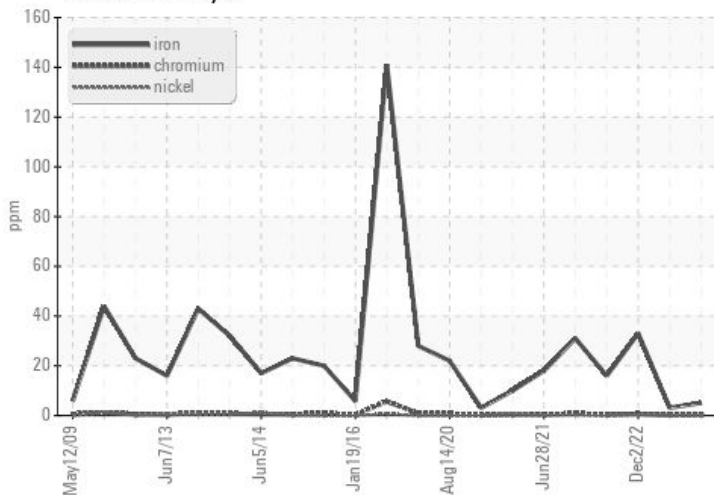
Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Depot: INTMORLH
Unique No: 10716137
Signed: Wes Davis
Report Date: 31 Oct 2023

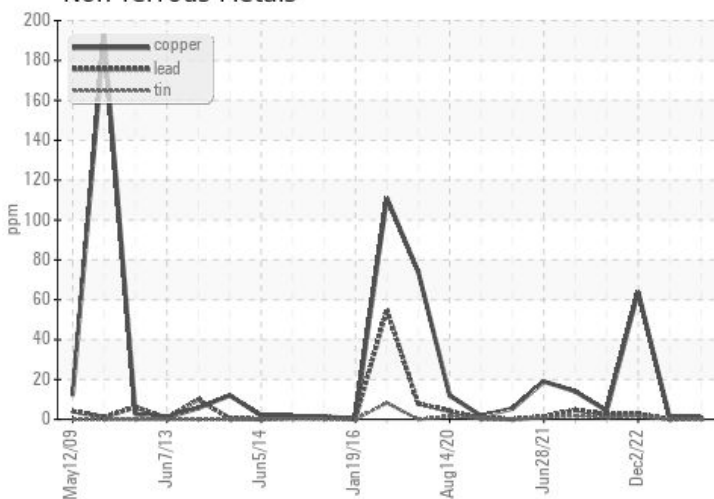


GRAPHS

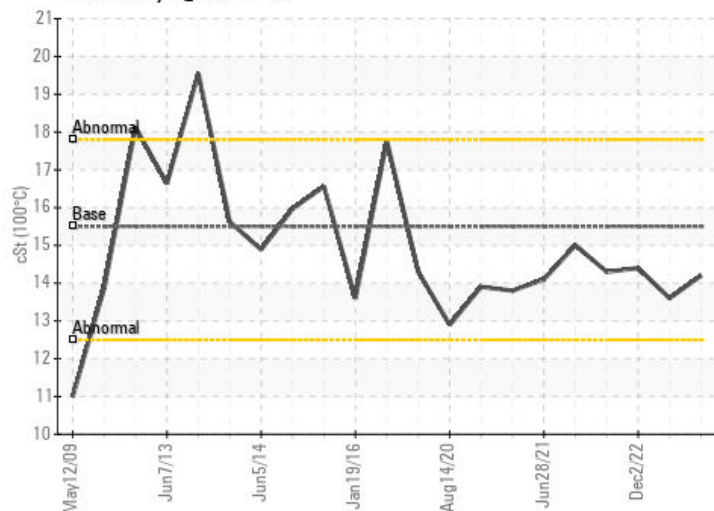
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



Base Number

