

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR A934BHD 02282-934 - Diesel Engine

Sample No: LH0244033

Oil Type: AMSOIL (PCO) SYN HD DIESEL15W40



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SAMPLE INFORMATION

Sample Number	LH0244033	LHMC91089	LHMC99443	---
Sample Date	05 Dec 2023	16 Aug 2023	08 Nov 2019	---
Machine Hours	758	48591	40937	---
Oil Hours	166	0	317	---
Oil Changed	Not Changd	Changed	Not Changd	---
Sample Status	ABNORMAL	NORMAL	NORMAL	---



OIL CONDITION

Visc @ 100°C	cSt	13.0	12.8	14.3	---
Base Number (BN)	mg KOH/g	7.8	7.7	---	---
Oxidation (PA)	%	61	65	88	---



CONTAMINATION

Water	%	NEG	NEG	NEG	---
Soot %	%	0.7	1	0.6	---
Nitration (PA)	%	60	67	90	---
Sulfation (PA)	%	57	57	66	---
Glycol	%	NEG	NEG	NEG	---
Fuel	%	<1.0	<1.0	<1.0	---
Silicon	ppm	8	13	7	---
Sodium	ppm	11	19	28	---
Potassium	ppm	10	24	7	---



WEAR METALS

Iron	ppm	106	54	54	---
Copper	ppm	106	13	5	---
Lead	ppm	49	5	6	---
Tin	ppm	3	2	0	---
Aluminum	ppm	5	2	2	---
Chromium	ppm	<1	1	2	---
Molybdenum	ppm	12	13	43	---
Nickel	ppm	<1	0	<1	---
Titanium	ppm	17	<1	6	---
Silver	ppm	0	0	0	---
Manganese	ppm	<1	1	2	---
Vanadium	ppm	0	<1	0	---



ADDITIVES

Calcium	ppm	2093	2115	2210	---
Magnesium	ppm	161	234	487	---
Zinc	ppm	1209	1148	1205	---
Phosphorus	ppm	977	916	933	---
Barium	ppm	0	0	13	---
Boron	ppm	182	172	77	---

Diagnosis

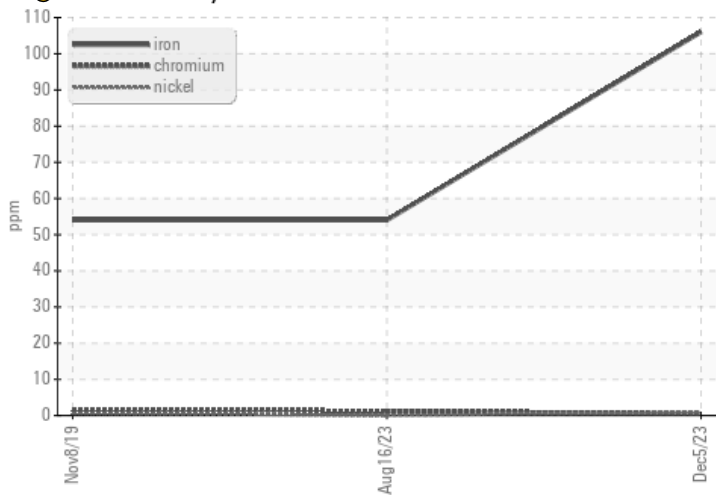
MAJOR ENGINE FAILURE. Cylinder, crank, or cam shaft wear is indicated. Bearing and/or bushing wear is indicated. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil.

Depot: LEC0070
 Unique No: 10779697
 Signed: Don Baldrige
 Report Date: 12 Dec 2023

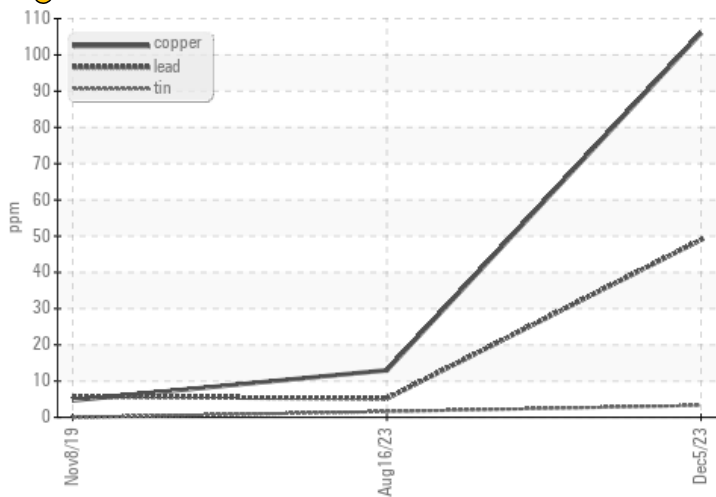


GRAPHS

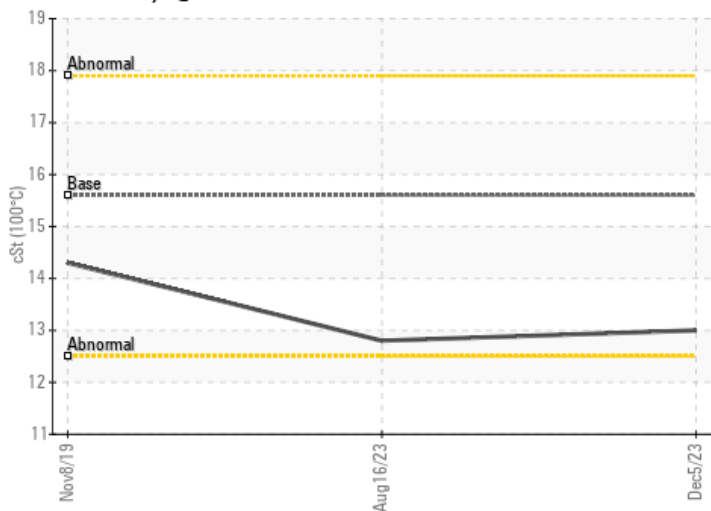
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



Base Number

