LIEBHERR
CONSTRUCTION EQUIPMENT

LIEBHERR A934C 041654-1006 - Diesel Engine

Sample No: LH0244688

Oil Type: DIESEL ENGINE OIL SAE 15W40

DUMES INC
1640 NORTH 6TH ST
VINCENNES, IN
US 47591
Contact:

T:
F:

SAMPLE INFORMATION

Sample Number		**LH0244688**	DJJ019952	DJJ018837	DJJ018851
Sample Date		**15 Jun 2023**	07 Dec 2016	20 Nov 2015	20 Nov 2015
Machine Hours		**1855**	13397	12886	12886
Oil Hours		**0**	250	250	250
Oil Changed		**Changed**	Changed	N/A	Changed
Sample Status		**SEVERE**	ATTENTION	NORMAL	NORMAL

OIL CONDITION

Visc @ 100°C	cSt	**16.5**	12.03	14.5	14.28
Base Number (BN)	mg KOH/g	**0.0**	---	---	---
Oxidation (PA)	%	**101**	24	44	44

CONTAMINATION

Soot %	%	**6.1**	1.2	1.5	1.4
Nitration (PA)	%	**133**	33	50	58
Sulfation (PA)	%	**102**	42	53	53
Glycol	%	**NEG**	NEG	NEG	NEG
Fuel	%	**<1.0**	<1.0	<1.0	<1.0
Silicon	ppm	**8**	6	6	7
Sodium	ppm	**94**	2	6	3
Potassium	ppm	**27**	2	2	2

WEAR METALS

Iron	ppm	**136**	14	10	20
Copper	ppm	**65**	1	2	2
Lead	ppm	**14**	<1	<1	<1
Tin	ppm	**2**	0	0	<1
Aluminum	ppm	**10**	<1	2	1
Chromium	ppm	**2**	<1	0	<1
Molybdenum	ppm	**92**	36	70	44
Nickel	ppm	**0**	0	0	<1
Titanium	ppm	**0**	0	0	0
Silver	ppm	**0**	0	0	0
Manganese	ppm	**2**	1	<1	<1
Vanadium	ppm	**0**	0	0	0

ADDITIVES

Calcium	ppm	**2336**	664	1262	1215
Magnesium	ppm	**179**	547	487	772
Zinc	ppm	**1295**	827	1067	1062
Phosphorus	ppm	**1024**	689	865	920
Barium	ppm	**4**	0	0	0
Boron	ppm	**11**	8	210	20

Diagnosis

We advise that you check for faulty combustion, plugged air filters, or aftercoolers. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.Piston and cylinder wear is indicated. Bearing and/or bushing wear is indicated. Sodium and/or potassium levels are high. There is an abnormal amount of solids and carbon present in the oil. Test for glycol is negative. The oil viscosity is higher than normal. The BN level is low.

Depot: DUMVINLH
Unique No: 10536535
Signed: Jonathan Hester
Report Date: 03 Jul 2023

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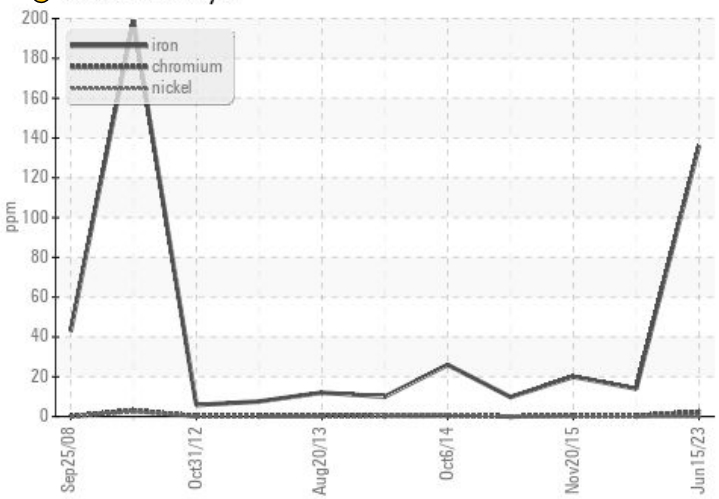
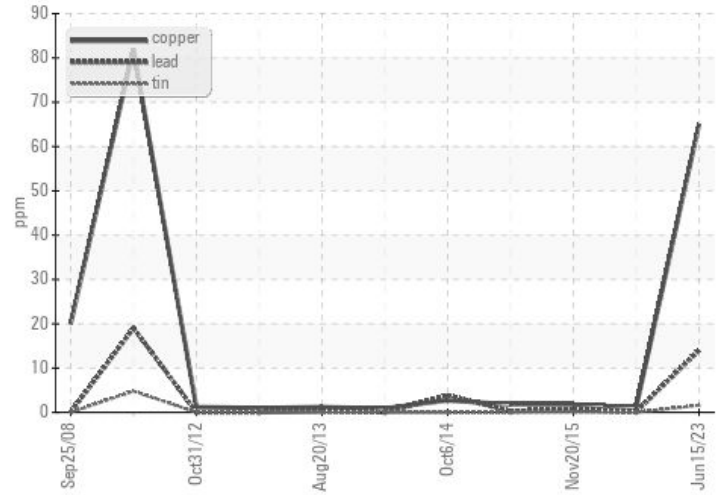
GRAPHS

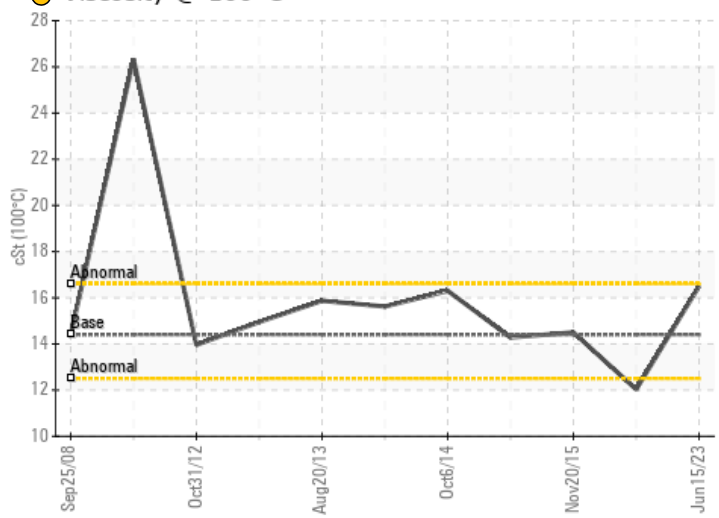
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



Base Number