

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR 51995 - Diesel Engine

Sample No: LH0203966

Oil Type: SHELL ROTELLA T 15W40



SAMPLE INFORMATION

Sample Number	LH0203966	LH0203964	LH0203970	LH0203972
Sample Date	07 Nov 2023	06 Jul 2023	15 Jan 2023	20 Apr 2022
Machine Hours	902	221	15803	14895
Oil Hours	461	221	113	157
Oil Changed	Changed	Changed	Not Changd	Not Changd
Sample Status	NORMAL	NORMAL	SEVERE	SEVERE

US ARMY CORP OF ENGINEERS

25549 182ND ST

PLEASANT VALLEY, IA

US 52767

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OIL CONDITION

Visc @ 100°C	cSt	13.6	13.4	21.8	14.8
Base Number (BN)	mg KOH/g	9.2	10.3	13.4	12.4
Oxidation (PA)	%	64	64	65	70



CONTAMINATION

Soot %	%	0.2	0.1	0.1	0.1
Nitration (PA)	%	62	61	86	70
Sulfation (PA)	%	55	52	55	58
Glycol	%	NEG	NEG	0.20	0.10
Fuel	%	<1.0	<1.0	<1.0	<1.0
Silicon	ppm	5	11	2	5
Sodium	ppm	4	9	148	121
Potassium	ppm	<1	2	1708	589



WEAR METALS

Iron	ppm	6	9	5	4
Copper	ppm	2	19	309	89
Lead	ppm	0	2	22	2
Tin	ppm	<1	2	3	<1
Aluminum	ppm	1	3	1	<1
Chromium	ppm	<1	<1	<1	<1
Molybdenum	ppm	44	36	39	123
Nickel	ppm	<1	<1	2	<1
Titanium	ppm	0	<1	0	0
Silver	ppm	0	<1	<1	<1
Manganese	ppm	<1	2	1	<1
Vanadium	ppm	0	0	0	0



ADDITIVES

Calcium	ppm	1550	2112	1489	1685
Magnesium	ppm	542	423	17	12
Zinc	ppm	1304	1258	931	1142
Phosphorus	ppm	1073	1054	892	850
Barium	ppm	5	53	0	0
Boron	ppm	32	98	61	27

Diagnosis

Resample at the next service interval to monitor. Metal levels are typical for a new component breaking in. 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: USAPLELH

Unique No: 10741208

Signed: Wes Davis

Report Date: 15 Nov 2023



GRAPHS

