

# LIEBHERR

## CONSTRUCTION EQUIPMENT



### LIEBHERR 51995 - Diesel Engine

Sample No: LH0203964

Oil Type: SHELL ROTELLA T 15W40



#### SAMPLE INFORMATION

Sample Number	LH0203964	LH0203970	LH0203972	LH0203963
Sample Date	06 Jul 2023	15 Jan 2023	20 Apr 2022	01 Apr 2022
Machine Hours	221	15803	14895	14843
Oil Hours	221	113	157	107
Oil Changed	Changed	Not Changd	Not Changd	N/A
Sample Status	NORMAL	SEVERE	SEVERE	SEVERE

US ARMY CORP OF ENGINEERS

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#### OIL CONDITION

Visc @ 100°C	cSt	13.4	21.8	14.8	14.5
Base Number (BN)	mg KOH/g	10.3	13.4	12.4	12.4
Oxidation (PA)	%	64	65	70	74

#### Diagnosis

Resample at the next service interval to monitor. All component wear rates are normal. No evidence of coolant present in the oil. 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.



#### CONTAMINATION

Soot %	%	0.1	0.1	0.1	0.1
Nitration (PA)	%	61	86	70	68
Sulfation (PA)	%	52	55	58	59
Glycol	%	NEG	0.20	0.10	0.10
Fuel	%	<1.0	<1.0	<1.0	<1.0
Silicon	ppm	11	2	5	4
Sodium	ppm	9	148	121	199
Potassium	ppm	2	1708	589	535



#### WEAR METALS

Iron	ppm	9	5	4	5
Copper	ppm	19	309	89	45
Lead	ppm	2	22	2	2
Tin	ppm	2	3	<1	<1
Aluminum	ppm	3	1	<1	<1
Chromium	ppm	<1	<1	<1	<1
Molybdenum	ppm	36	39	123	69
Nickel	ppm	<1	2	<1	<1
Titanium	ppm	<1	0	0	<1
Silver	ppm	<1	<1	<1	<1
Manganese	ppm	2	1	<1	<1
Vanadium	ppm	0	0	0	0



#### ADDITIVES

Calcium	ppm	2112	1489	1685	2275
Magnesium	ppm	423	17	12	21
Zinc	ppm	1258	931	1142	1299
Phosphorus	ppm	1054	892	850	1134
Barium	ppm	53	0	0	0
Boron	ppm	98	61	27	75

Depot: USAPLELH

Unique No: 10550023

Signed: Jonathan Hester

Report Date: 12 Jul 2023



### GRAPHS

