

# LIEBHERR

## CONSTRUCTION EQUIPMENT



### - Diesel Engine

Sample No: LHMC165950

Oil Type: DIESEL ENGINE OIL SAE 5W40



**AMERICAN STATE EQUIPMENT CO.**  
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### Sample Information

Sample Number	<b>LHMC165950</b>	LH0268680	LH0267583	LH0254620
Sample Date	<b>11 Apr 2024</b>	29 Jan 2024	28 Oct 2023	19 Jul 2023
Machine Hours	<b>10104</b>	9721	9344	8874
Oil Hours	<b>0</b>	1000	0	500
Oil Changed	<b>N/A</b>	Changed	Changed	Changed
Sample Status	<b>NORMAL</b>	SEVERE	NORMAL	NORMAL



### Oil Condition

Visc @ 100°C	cSt	<b>12.9</b>	7.6	14.5	12.7
Base Number (BN)	mg KOH/g	<b>5.6</b>	5.1	8.1	5.5
Oxidation (PA)	%	<b>68</b>	53	51	72



### Contamination

Water	%	<b>NEG</b>	NEG	NEG	NEG
Soot %	%	<b>0.1</b>	0.1	0.1	0.1
Nitration (PA)	%	<b>83</b>	78	68	88
Sulfation (PA)	%	<b>59</b>	52	50	60
Glycol	%	<b>NEG</b>	NEG	NEG	NEG
Fuel	%	<b>1.6</b>	26.9	<1.0	<1.0
Silicon	ppm	<b>7</b>	7	10	9
Sodium	ppm	<b>4</b>	4	1	2
Potassium	ppm	<b>3</b>	2	5	4



### Wear Metals

Iron	ppm	<b>3</b>	6	3	7
Copper	ppm	<b>1</b>	2	1	2
Lead	ppm	<b>&lt;1</b>	<1	<1	<1
Tin	ppm	<b>&lt;1</b>	0	0	<1
Aluminum	ppm	<b>&lt;1</b>	<1	2	3
Chromium	ppm	<b>0</b>	<1	<1	<1
Molybdenum	ppm	<b>7</b>	8	2	8
Nickel	ppm	<b>0</b>	0	<1	0
Titanium	ppm	<b>&lt;1</b>	<1	<1	<1
Silver	ppm	<b>0</b>	0	0	0
Manganese	ppm	<b>&lt;1</b>	<1	<1	<1
Vanadium	ppm	<b>0</b>	0	0	0



### Additives

Calcium	ppm	<b>1237</b>	885	1228	1314
Magnesium	ppm	<b>674</b>	467	657	647
Zinc	ppm	<b>799</b>	588	800	804
Phosphorus	ppm	<b>722</b>	466	710	676
Barium	ppm	<b>0</b>	<1	9	0
Boron	ppm	<b>60</b>	28	100	29

### Diagnosis

No corrective action is recommended at this time. Resample at the next service interval to monitor. All component wear rates are normal. Light fuel dilution occurring. No other contaminants were detected 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:** LEC0007  
**Unique No:** 10983665  
**Signed:** Wes Davis  
**Report Date:** 23 Apr 2024



### Graphs

