

LIEBHERR

CONSTRUCTION EQUIPMENT



[(340370)] LIEBHERR R945 050696-1866 - Diesel Engine

Sample No: LH0247010

Oil Type: PETRO CANADA 10W40



SAMPLE INFORMATION

Sample Number	LH0247010	LH0178575	LH0222719	LH0213892
Sample Date	27 Jun 2023	18 Jul 2022	28 Apr 2022	16 Dec 2021
Machine Hours	4010	2482	2019	1446
Oil Hours	0	0	0	0
Oil Changed	Changed	Changed	Changed	Changed
Sample Status	ABNORMAL	NORMAL	NORMAL	NORMAL

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OIL CONDITION

Visc @ 100°C	cSt	11.4	13.8	13.6	13.3
Oxidation (PA)	%	72	62	62	60



CONTAMINATION

Soot %	%	0	0	0	0
Nitration (PA)	%	79	60	67	59
Sulfation (PA)	%	57	53	57	53
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	2.2	<1.0	<1.0	<1.0
Silicon	ppm	20	7	6	7
Sodium	ppm	4	2	1	2
Potassium	ppm	<1	<1	<1	<1

Diagnosis

The oil change at the time of sampling has been noted. Resample at the next service interval to monitor. All component wear rates are normal. Light fuel dilution occurring. Fuel is present in the oil and is lowering the viscosity. The condition of the oil is acceptable for the time in service.



WEAR METALS

Iron	ppm	3	4	14	4
Copper	ppm	1	2	3	4
Lead	ppm	0	<1	<1	<1
Tin	ppm	<1	<1	<1	<1
Aluminum	ppm	1	<1	1	1
Chromium	ppm	<1	0	<1	<1
Molybdenum	ppm	58	55	58	61
Nickel	ppm	0	0	<1	<1
Titanium	ppm	0	<1	<1	4
Silver	ppm	0	0	0	0
Manganese	ppm	0	<1	<1	<1
Vanadium	ppm	0	0	0	0



ADDITIVES

Calcium	ppm	843	1115	1052	1194
Magnesium	ppm	1108	939	993	1088
Zinc	ppm	1206	1171	1226	1345
Phosphorus	ppm	1067	987	1084	1164
Barium	ppm	0	0	<1	<1
Boron	ppm	29	1	2	9

Depot: CLOPEM
 Unique No: 5630692
 Signed: Kevin Marson
 Report Date: 24 Aug 2023



GRAPHS

