

WEAR
CONTAMINATION
FLUID CONDITION

ABNORMAL NORMAL NORMAL

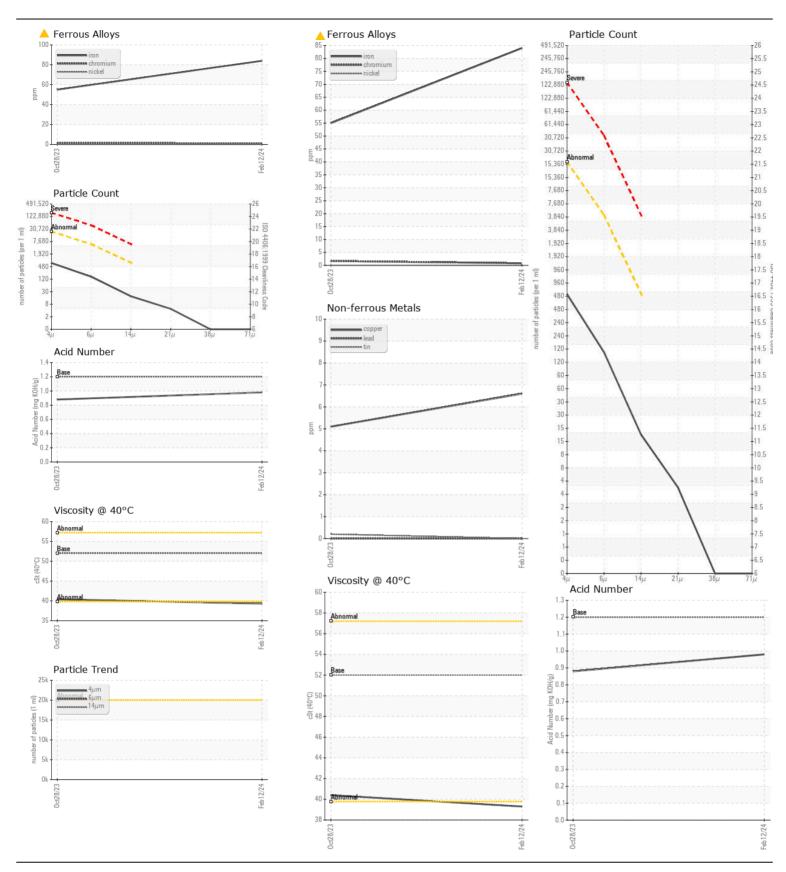


[MCDONAGH] Machine Id LIEBHERR R956 056876-1728

Component Hydraulic System

LIEBHERR HYDRAULIC HVI (--- GAL)

Comparison Com	LIEBHERK HYDRAULIC HVI (GAL)						
Sample Number Client Info Life258905 Life257664	RECOMMENDATION	Test	UOM	Method	Limit/Abn	Current	Historv1	Historv2
Sample Date Client Info 12 Feb 204 80 ct 2023			2 3				,	
The time of sampling has been noted. Resample at the next service terval to monitor. Machine Age hrs Client Info 500 0	No corrective action is recommended at this time. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.							
Col Age nrs Client Info Changed Client Info Changed Client Info Changed Chan		•	hrs	Client Info		1075	552	
Oil Changed Filter Changed Filter Changed Client Info Changed C		Oil Age	hrs	Client Info		500	0	
Filter Changed Sample Status		Filter Age	hrs	Client Info		0	0	
FAR		Oil Changed		Client Info		Changed	Not Changd	
Iron ppm ASTM D5185m >5		Filter Changed		Client Info		Changed	Changed	
In other component wear rates are normal. Chromium ppm ASTM D5185m >5 0 0 0 0 0 0 0 0 0		Sample Status				ABNORMAL	ABNORMAL	
In other component wear rates are normal.	WEAR	Iron	ppm	ASTM D5185m	>50	<u>^</u> 84	55	
Nickel ppm ASTM D5185m S 0 0 0 0 0 0 0 0 0		Chromium		ASTM D5185m	>15	<1	2	
Silver ppm ASTM D5185m 0 0 0	All other component wear rates are normal.	Nickel		ASTM D5185m	>5	0	0	
Silver ppm ASTM D5185m 0 0 0		Titanium		ASTM D5185m		0	0	
Lead ppm ASTM D5185m >5 0 0						0	0	
Copper		Aluminum		ASTM D5185m	>8	2	<1	
Tin		Lead	ppm	ASTM D5185m	>5	0	0	
Vanadium ppm ASTM D5185m NONE NO		Copper	ppm	ASTM D5185m	>15	7	5	
White Metal Yellow Metal Scalar *Visual NONE NO		Tin	ppm	ASTM D5185m	>5	0	<1	
Yellow Metal scalar *Visual NONE N		Vanadium	ppm	ASTM D5185m		0	<1	
Silicon ppm ASTM D5185m >25 4 6		White Metal	scalar	*Visual	NONE	NONE	NONE	
Potassium ppm ASTM D5185m >20 2 0 Water WC Method >0.1 NEG NEG Particles >4µm ASTM D7647 >20000 631 Particles >5µm ASTM D7647 >5000 138 Particles >21µm ASTM D7647 >5000 16 Particles >21µm ASTM D7647 >160 4 Particles >3µm ASTM D7647 >160 4 Particles >7µm ASTM D7647 >10 0 Particles >7µm ASTM D7647 >10 NONE NONE Sand/Dirt scalar "Visual NONE NONE NONE NONE Sand/Dirt scalar "Visual NONE NONE NONE Appearance scalar "Visual NONE NONE NONE Appearance scalar "Visual NONE NONE NONE NONE NONE Sand/Dirt scalar "Visual NONE NONE NONE NONE Appearance scalar "Visual NONE NONE NONE NONE NONE NONE NONE NON		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
Potassium ppm ASTM D5185m >20 2 0 Water WC Method >0.1 NEG NEG Particles >4µm ASTM D7647 >20000 631 Particles >5µm ASTM D7647 >5000 138 Particles >21µm ASTM D7647 >5000 16 Particles >21µm ASTM D7647 >160 4 Particles >3µm ASTM D7647 >160 4 Particles >7µm ASTM D7647 >10 0 Particles >7µm ASTM D7647 >10 NONE NONE Sand/Dirt scalar "Visual NONE NONE NONE NONE Sand/Dirt scalar "Visual NONE NONE NONE Appearance scalar "Visual NONE NONE NONE Appearance scalar "Visual NONE NONE NONE NONE NONE Sand/Dirt scalar "Visual NONE NONE NONE NONE Appearance scalar "Visual NONE NONE NONE NONE NONE NONE NONE NON								
Water WC Method >0.1 NEG NEG Particles >4μm ASTM D7647 >20000 631	CONTAMINATION		ppm					
Particles > 4μm	The amount and size of particulates present in the system are		ppm	ASTM D5185m	>20	2	0	
Particles >4µm ASTM D7647 >5000 138	· · · · · · · · · · · · · · · · · · ·						NEG	
Particles >14µm ASTM D7647 >640 16 Particles >21µm ASTM D7647 >160 4 Particles >38µm ASTM D7647 >40 0 Particles >71µm ASTM D7647 >10 0 Oil Cleanliness ISO 4406 (c) >21/19/16 16/14/11 Silt scalar *Visual NONE NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML NORML NORML Emulsified Water scalar *Visual >0.1 NEG NEG LUID CONDITION Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 8 0	acceptable. There is no indication of any contamination in the oil.			ASTM D7647	>20000	631		
Particles > 21 µm								
Particles > 38µm ASTM D7647 > 40 0 Particles > 71µm ASTM D7647 > 10 0 Oil Cleanliness ISO 4406 (c) > 21/19/16 16/14/11 Silt Scalar *Visual NONE NONE NONE NONE Debris Scalar *Visual NONE NONE NONE NONE NONE NONE Sand/Dirt Scalar *Visual NONE NONE NONE NONE NONE Appearance Scalar *Visual NORML Debris Scalar *Visual NORML Debris Scalar *Visual NORML NO								
Particles >71μm ASTM D7647 >10 0 Oil Cleanliness ISO 4406 (c) >21/19/16 16/14/11 Silt scalar *Visual NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NORML NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML NORML NORML Emulsified Water scalar *Visual >0.1 NEG NEG LUID CONDITION Sodium ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 8 0								
Oil Cleanliness ISO 4406 (c) >21/19/16 16/14/11								
Silt scalar *Visual NONE NONE NONE NONE NONE NONE NONE NON						-		
Debris scalar *Visual NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE NONE NONE NONE NON				. ,				
Sand/Dirt scalar *Visual NONE NONE NONE Appearance scalar *Visual NORML NO								
Appearance scalar *Visual NORML NORM								
Odor scalar *Visual NORML NORML NORML Emulsified Water scalar *Visual >0.1 NEG NEG LUID CONDITION Sodium ppm ASTM D5185m 0 2 Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 8 0						_	_	
Emulsified Water scalar *Visual >0.1 NEG NEG LUID CONDITION Sodium ppm ASTM D5185m 0 2 Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 8 0								
LUID CONDITION Sodium ppm ASTM D5185m Defense AN level is acceptable for this fluid. The condition of the oil is Boron ppm ASTM D5185m Defense AN level is acceptable for this fluid. The condition of the oil is Barium ppm ASTM D5185m								
Boron ppm ASTM D5185m 0 0 he AN level is acceptable for this fluid. The condition of the oil is uitable for further service			Scalai	VISUAI	>0.1	NEG	NEG	
Boron ppm ASTM D5185m 0 0 he AN level is acceptable for this fluid. The condition of the oil is uitable for further service	FLUID CONDITION	Sodium	ppm	ASTM D5185m		0	2	
uitable for further service		Boron	ppm	ASTM D5185m		0	0	
JILIADIE TOT TUTLTIEF SETVICE.	The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.	Barium	ppm	ASTM D5185m		8	0	
Molybaeriani ppin Asim bilosiii 0		Molybdenum	ppm	ASTM D5185m		0	0	
Manganese ppm ASTM D5185m <1 1		Manganese	ppm			<1	1	
MagnesiumppmASTM D5185m760		Magnesium	ppm	ASTM D5185m	7	6	0	
Calcium ppm ASTM D5185m 1500 1035 1114		Calcium	ppm	ASTM D5185m	1500	1035	1114	
Phosphorus ppm ASTM D5185m 750 543 534		Phosphorus	ppm			543	534	
Zinc ppm ASTM D5185m 820 607 616				ACTM DE10Em	920	607	616	
Sulfur ppm ASTM D5185m 4000 3374 3288			ppm					
Acid Number (AN) mg KOH/g ASTM D8045 1.2 0.98 0.88		Sulfur	ppm	ASTM D5185m	4000	3374	3288	
Visc @ 40°C cSt ASTM D445 52 39.3 40.4		Sulfur Acid Number (AN)	ppm mg KOH/g	ASTM D5185m ASTM D8045	4000 1.2	3374 0.98	3288 0.88	





Certificate L2367

Laboratory Sample No.

Lab Number : 06100880 Unique Number: 10899110 Test Package : CONST

: LH0258905

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 26 Feb 2024 **Tested** : 27 Feb 2024

: 28 Feb 2024 - Don Baldridge Diagnosed

To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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