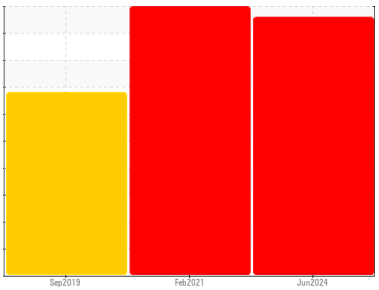
LIEBHERR

FUEL REPORT

Sample Rating Trend



ISO

Machine Id

LIEBHERR HS8100 184947

Component

Diesel Fuel

Fluid

No.2 DIESEL FUEL (ULTRALOW SULPHUR) (--- GAL)

DIAGNOSIS

Recommendation

We advise that you check all areas where contaminants can enter the system. Laboratory test indicate that this fuel is suitable for use and meets all test requirements. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We advise that you filter this fluid before use. Resample in 30-45 days to monitor this situation.

Contaminants

There is a high amount of particulates (2 to 100 microns in size) present in the fuel. The water content is negligible.

Fuel Condition

The fuel is still serviceable provided that the contaminant(s) can be reduced to acceptable levels. All laboratory tests indicate that this sample meets specifications for No.2 ultra-low-sulfur diesel fuel (US EPA/CGSB-3.517-3 type B).

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**LH0286598**	LH0194128	LH0134239
Sample Date		Client Info		**25 Jun 2024**	26 Feb 2021	17 Sep 2019
Machine Age	hrs	Client Info		**16097**	8062	0
Sample Status				**SEVERE**	SEVERE	SEVERE

PHYSICAL PROPERTIES		method	limit/base	current	history1	history2
Specific Gravity		ASTM D1298*	0.839	**0.850**	0.857	0.852
Fuel Color	text	Visual Screen*	Yllow	**Pink**	Red	Purpl
Visc @ 40°C	cSt	ASTM D7279(m)	3.0	**2.9**	2.4	2.7
Pensky-Martens Flash Point	°C	ASTM D7215*	52	**58**	55.9	55

SULFUR CONTENT		method	limit/base	current	history1	history2
Sulfur	ppm	ASTM D5185(m)	10	**9**	11	6

DISTILLATION		method	limit/base	current	history1	history2
Initial Boiling Point	°C	ASTM D2887*	165	**170**	152	156
5% Distillation Point	°C	ASTM D2887*		**201**	189	192
10% Distill Point	°C	ASTM D2887*	201	**211**	201	206
15% Distillation Point	°C	ASTM D2887*		**219**	209	215
20% Distill Point	°C	ASTM D2887*	216	**227**	215	222
30% Distill Point	°C	ASTM D2887*	230	**242**	229	235
40% Distill Point	°C	ASTM D2887*	243	**255**	241	247
50% Distill Point	°C	ASTM D2887*	255	**268**	253	259
60% Distill Point	°C	ASTM D2887*	267	**281**	267	271
70% Distill Point	°C	ASTM D2887*	280	**295**	281	284
80% Distill Point	°C	ASTM D2887*	295	**309**	297	299
85% Distillation Point	°C	ASTM D2887*		**319**	307	309
90% Distill Point	°C	ASTM D2887*	310	**328**	320	320
95% Distillation Point	°C	ASTM D2887*		**345**	339	338
Final Boiling Point	°C	ASTM D2887*	341	**359**	360	351
Distillation Residue	%	ASTM D86(e)*	3.0	**---**	---	1.4
Distillation Loss	%	ASTM D86(e)*	3.0	**---**	---	0.4

IGNITION QUALITY	method	limit/base	current	history1	history2
API Gravity	ASTM D1298*	37.7	**---**	33	34.6
Cetane Index	ASTM D4737*	<40.0	**---**	41	43.9

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	<1.0	**0**	1	0
Sodium	ppm	ASTM D5185(m)	<0.1	**0**	<1	0
Potassium	ppm	ASTM D5185(m)	<0.1	**0**	0	<1
Water	%	ASTM D6304*	<0.05	**0.003**	▲ 0.011	0.004
ppm Water	ppm	ASTM D6304*	<500	**31**	▲ 119.1	47.2

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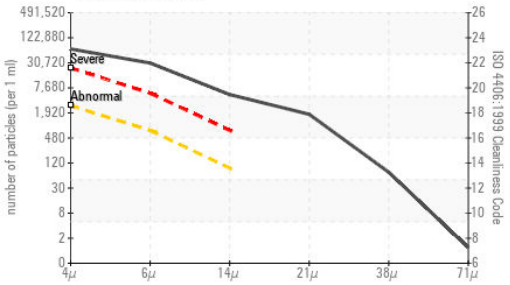
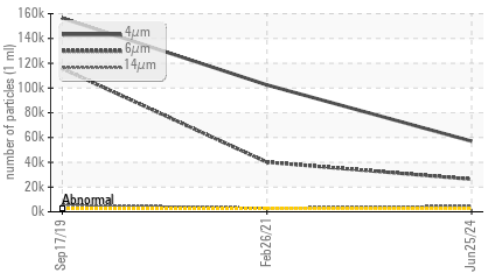
FUEL REPORT

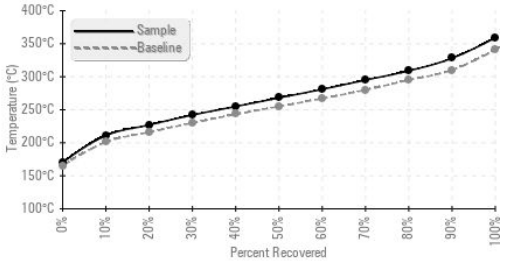
Particle Count



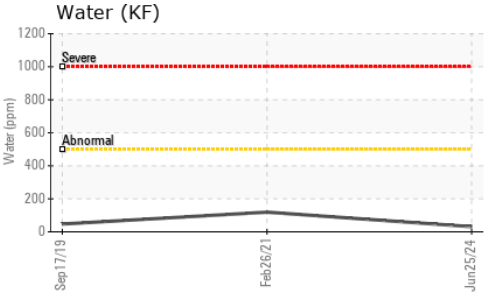
Particle Trend



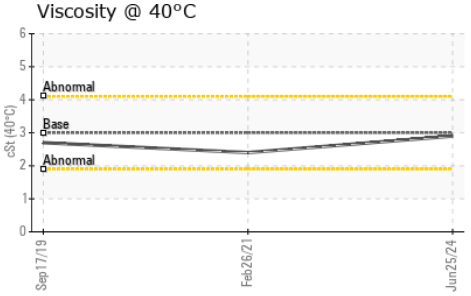
Fuel Distillation Curve



Water (KF)

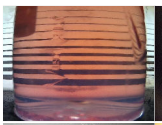
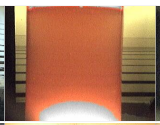


Viscosity @ 40°C



FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>2500	▲ **57026**	▲ 102460	▲ 156427
Particles >6µm	ASTM D7647	>640	▲ **26270**	▲ 40075	▲ 115709
Particles >14µm	ASTM D7647	>80	▲ **4622**	▲ 2961	▲ 5500
Particles >21µm	ASTM D7647	>20	▲ **1556**	▲ 530	▲ 537
Particles >38µm	ASTM D7647	>4	▲ **64**	▲ 14	4
Particles >71µm	ASTM D7647	>3	**1**	0	0
Oil Cleanliness	ISO 4406 (c)	>18/16/13	▲ **23/22/19**	▲ 24/23/19	▲ 24/24/20

HEAVY METALS		method	limit/base	current	history1	history2
Aluminum	ppm	ASTM D5185(m)	<0.1	**0**	<1	<1
Nickel	ppm	ASTM D5185(m)	<0.1	**0**	0	0
Lead	ppm	ASTM D5185(m)	<0.1	**0**	0	0
Vanadium	ppm	ASTM D5185(m)	<0.1	**0**	0	0
Iron	ppm	ASTM D5185(m)	<0.1	**0**	<1	<1
Calcium	ppm	ASTM D5185(m)	<0.1	**<1**	<1	<1
Magnesium	ppm	ASTM D5185(m)	<0.1	**<1**	<1	<1
Phosphorus	ppm	ASTM D5185(m)	<0.1	**<1**	<1	0
Zinc	ppm	ASTM D5185(m)	<0.1	**<1**	<1	<1

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : LH0286598 **Received** : 02 Jul 2024
Lab Number : 02645054 **Tested** : 08 Jul 2024
Unique Number : 5802593 **Diagnosed** : 08 Jul 2024 - Kevin Marson
Test Package : FUEL (Additional Tests: CC Flash, PrtCount)

To discuss this sample report, contact Customer Service at 1-800-268-2131.
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
Validity of results and interpretation are based on the sample and information as supplied.

HIGGS & HIGGS
RR # 4
ST THOMAS, ON
CA N5P 3S8
Contact: Bernie Higgs

T: (519)631-4095
F: (519)631-2745