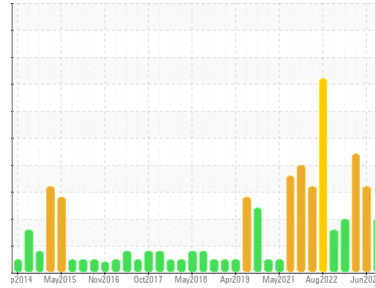




OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Machine Id
2000 FREIGHTLINER L-75

Component
Diesel Engine

Fluid
SHELL ROTELLA T 15W40 (44 QTS)

DIAGNOSIS

▲ Recommendation

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. The filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

▲ Contamination

There is a moderate amount of particulates (2 to 100 microns in size) present in the oil.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	KL0009557	KL0009555	KL0009554
Sample Date	Client Info	15 Jul 2023	20 Jun 2023	08 Nov 2022
Machine Age	mls	Client Info	202443	195206
Oil Age	mls	Client Info	7237	25476
Oil Changed	Client Info	Changed	Changed	Changed
Sample Status		ABNORMAL	SEVERE	SEVERE

CONTAMINATION

method	limit/base	current	history1	history2
Fuel	WC Method >3.0	<1.0	<1.0	<1.0
Glycol	WC Method	NEG	NEG	NEG

WEAR METALS

method	limit/base	current	history1	history2
Iron	ppm ASTM D5185m >200	57	▲ 211	145
Chromium	ppm ASTM D5185m >10	3	8	8
Nickel	ppm ASTM D5185m >4	0	<1	0
Titanium	ppm ASTM D5185m >2	<1	<1	0
Silver	ppm ASTM D5185m >2	0	<1	0
Aluminum	ppm ASTM D5185m >30	3	1	2
Lead	ppm ASTM D5185m >30	<1	6	8
Copper	ppm ASTM D5185m >30	<1	6	2
Tin	ppm ASTM D5185m >4	<1	2	2
Vanadium	ppm ASTM D5185m	0	0	0
Cadmium	ppm ASTM D5185m	0	0	0

ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm ASTM D5185m 316	53	29	28
Barium	ppm ASTM D5185m 0.0	0	4	0
Molybdenum	ppm ASTM D5185m 1.2	65	84	98
Manganese	ppm ASTM D5185m	<1	2	1
Magnesium	ppm ASTM D5185m 24	289	313	348
Calcium	ppm ASTM D5185m 2292	1460	1664	1688
Phosphorus	ppm ASTM D5185m 1064	853	885	874
Zinc	ppm ASTM D5185m 1160	1014	1032	999
Sulfur	ppm ASTM D5185m 4996	3135	2809	3072

CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >30	6	13	28
Sodium	ppm ASTM D5185m	0	0	2
Potassium	ppm ASTM D5185m >20	2	4	0

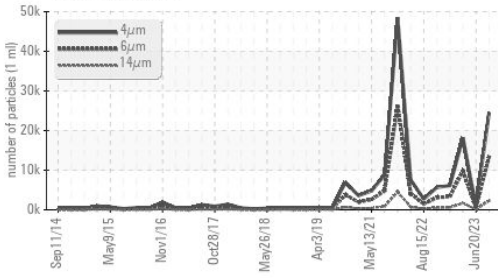
INFRA-RED

method	limit/base	current	history1	history2
Soot %	% *ASTM D7844 >3	2.6	7.1	9.2
Nitration	Abs/cm *ASTM D7624 >20	7.4	20.8	51.7
Sulfation	Abs/.1mm *ASTM D7415 >30	21.1	39.3	75.5

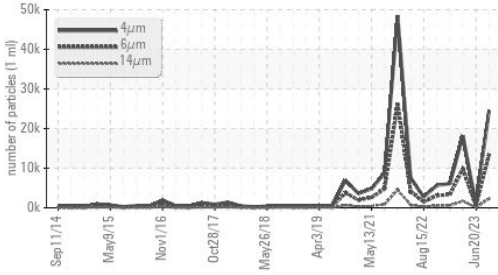


OIL ANALYSIS REPORT

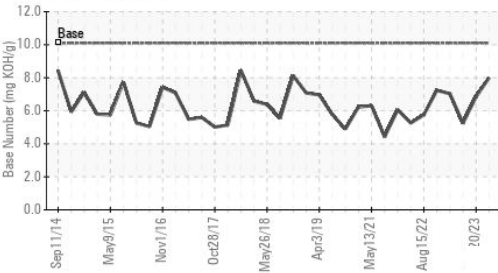
Particle Trend



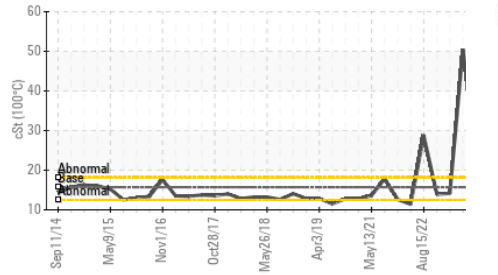
Particle Trend



Base Number



Viscosity @ 100°C



FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		24516	853	18169
Particles >6µm	ASTM D7647	>5000	▲ 13355	464	▲ 9898
Particles >14µm	ASTM D7647	>640	▲ 2273	79	▲ 1684
Particles >21µm	ASTM D7647	>160	▲ 766	27	▲ 567
Particles >38µm	ASTM D7647	>40	▲ 118	4	▲ 88
Particles >71µm	ASTM D7647	>10	12	0	9
Oil Cleanliness	ISO 4406 (c)	>19/16	▲ 21/18	16/13	▲ 20/18

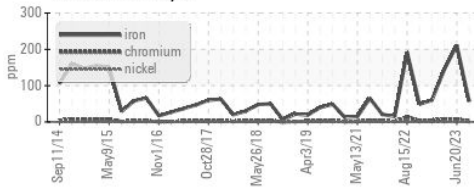
FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs./1mm *ASTM D7414	>25	12.1	34.5	115.4
Base Number (BN)	mg KOH/g ASTM D2896	10.1	8.00	6.85	5.24

VISUAL	method	limit/base	current	history1	history2
White Metal	scalar *Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar *Visual	NONE	NONE	NONE	NONE
Precipitate	scalar *Visual	NONE	NONE	NONE	NONE
Silt	scalar *Visual	NONE	NONE	NONE	NONE
Debris	scalar *Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar *Visual	NONE	NONE	NONE	NONE
Appearance	scalar *Visual	NORML	NORML	NORML	NORML
Odor	scalar *Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar *Visual	>0.2	NEG	NEG	NEG
Free Water	scalar *Visual		NEG	NEG	NEG

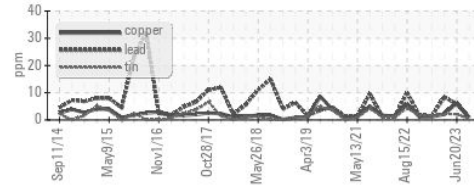
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt ASTM D445	15.7	14.2	▲ 24.6	▲ 50.5

GRAPHS

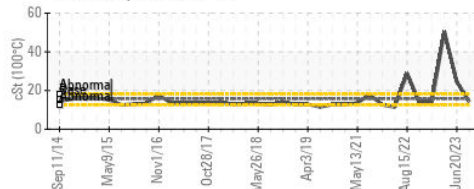
Ferrous Alloys



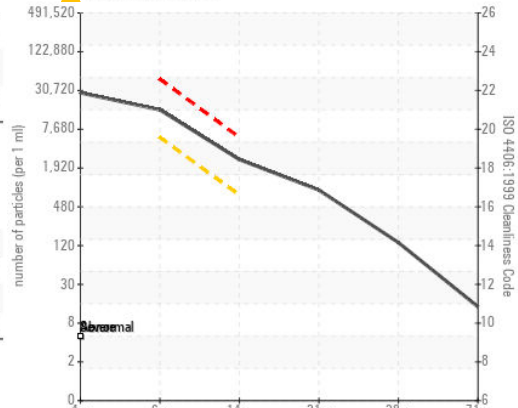
Non-ferrous Metals



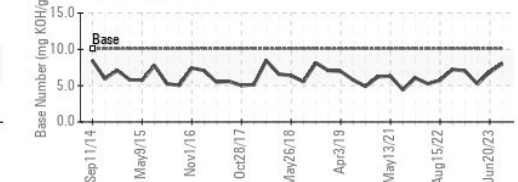
Viscosity @ 100°C



Particle Count



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KL0009557 **Received** : 02 Oct 2023
Lab Number : **05967175** **Diagnosed** : 04 Oct 2023
Unique Number : 10673726 **Diagnostician** : Wes Davis
Test Package : MOB 2 (Additional Tests: PrtCount)

LOUISVILLE CARTAGE CO
P.O. BOX 16219
LOUISVILLE, KY
US 40256-0219
Contact: Steve Skaggs
Safety@louisvillecartage.com
T: (502)447-4252
F: 5(02)448-0367

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)