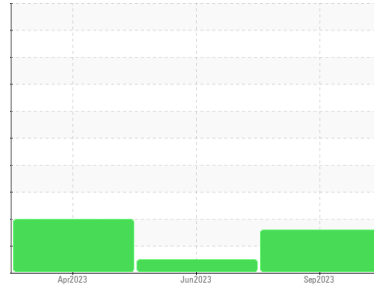




OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Area
[CONHER]

Machine Id
FREIGHTLINER LAMO - #194 Freightliner

Component
Diesel Engine

Fluid
Volvo Mineral 15W40 CI-4 (45 LTR)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. (Customer Sample Comment: Volvo Mineral CI-4 plus 15W40)

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of particulates present in the oil.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		KL0012830	KL0012384	KL0012340
Sample Date	Client Info		16 Sep 2023	30 Jun 2023	19 Apr 2023
Machine Age	kms	Client Info	77741	46089	23491
Oil Age	kms	Client Info	64250	22598	10000
Oil Changed	Client Info		Not Chngd	Not Chngd	Not Chngd
Sample Status			ATTENTION	NORMAL	ATTENTION

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	39	26	24
Chromium	ppm	ASTM D5185m >6	2	1	1
Nickel	ppm	ASTM D5185m >3	<1	<1	<1
Titanium	ppm	ASTM D5185m >2	<1	<1	0
Silver	ppm	ASTM D5185m >2	0	0	0
Aluminum	ppm	ASTM D5185m >50	9	5	4
Lead	ppm	ASTM D5185m >10	0	0	0
Copper	ppm	ASTM D5185m >50	7	6	3
Tin	ppm	ASTM D5185m >6	<1	<1	0
Vanadium	ppm	ASTM D5185m	<1	0	0
Cadmium	ppm	ASTM D5185m	0	0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	17	25	51
Barium	ppm	ASTM D5185m	0	0	0
Molybdenum	ppm	ASTM D5185m	54	52	56
Manganese	ppm	ASTM D5185m	<1	<1	<1
Magnesium	ppm	ASTM D5185m	740	788	810
Calcium	ppm	ASTM D5185m	2001	1818	1479
Phosphorus	ppm	ASTM D5185m	1044	1038	1026
Zinc	ppm	ASTM D5185m	1381	1330	1227
Sulfur	ppm	ASTM D5185m	3278	3772	3894

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >50	13	9	10
Sodium	ppm	ASTM D5185m	3	2	2
Potassium	ppm	ASTM D5185m >20	2	4	1

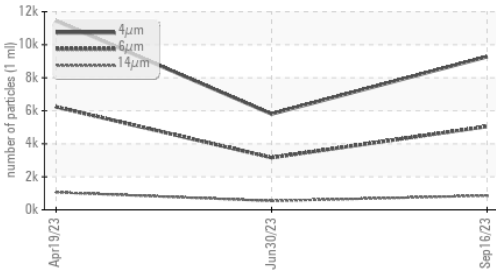
INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844 >3	0.8	0.5	0.2
Nitration	Abs/cm	*ASTM D7624 >20	9.3	8.5	5.7
Sulfation	Abs./1mm	*ASTM D7415 >30	22.4	20.8	18.7

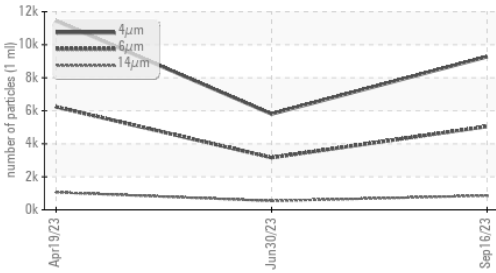


OIL ANALYSIS REPORT

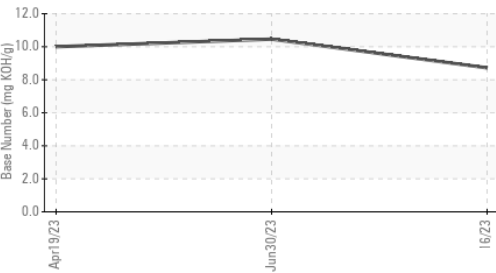
▲ Particle Trend



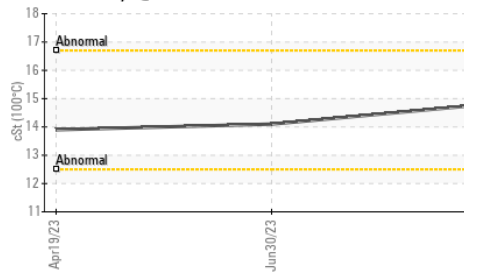
▲ Particle Trend



Base Number



Viscosity @ 100°C



FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		9274	5803	11449
Particles >6µm	ASTM D7647	>5000	▲ 5052	3161	▲ 6237
Particles >14µm	ASTM D7647	>640	▲ 860	538	▲ 1061
Particles >21µm	ASTM D7647	>160	▲ 290	181	▲ 358
Particles >38µm	ASTM D7647	>40	45	28	▲ 55
Particles >71µm	ASTM D7647	>10	5	3	6
Oil Cleanliness	ISO 4406 (c)	>19/16	▲ 20/17	19/16	▲ 20/17

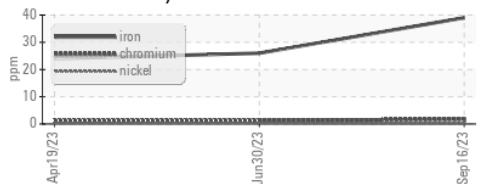
FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414	>25	17.6	15.9	13.3
Base Number (BN)	mg KOH/g ASTM D2896		8.72	10.46	10.00

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

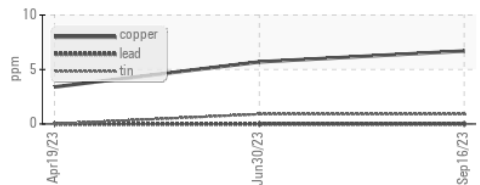
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt ASTM D445		14.8	14.1	13.9

GRAPHS

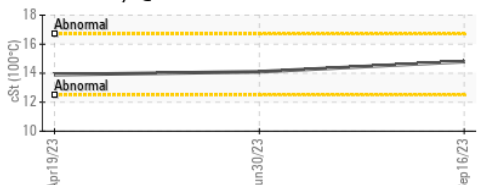
Ferrous Alloys



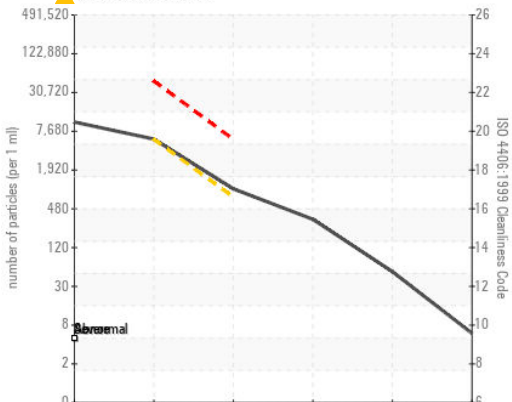
Non-ferrous Metals



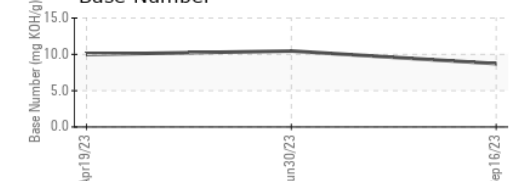
Viscosity @ 100°C



▲ Particle Count



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KL0012830 **Received** : 29 Sep 2023
Lab Number : 05964785 **Diagnosed** : 03 Oct 2023
Unique Number : 10671336 **Diagnostician** : Angela Borella
Test Package : MOB 2 (Additional Tests: PrtCount)

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)

LAMO

NAVOJOA,
MX

Contact: ANDRES MONROY
andres.monroy@cmoderna.com

T:
F: