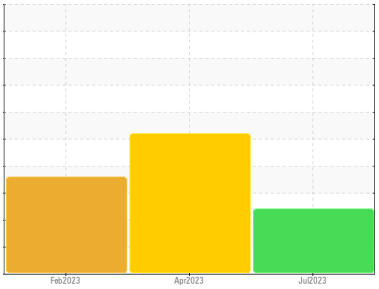
OIL ANALYSIS REPORT

Sample Rating Trend



GLYCOL

Machine Id
27249
Component
Diesel Engine
Fluid
NOT GIVEN (--- QTS)

DIAGNOSIS

Recommendation
Check for low coolant level. 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
Sodium and/or potassium levels are high. The amount and size of particulates present in the system are acceptable.

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		**KL0012054**	KLM2339321	KLM2339351
Sample Date		Client Info		**25 Jul 2023**	07 Apr 2023	11 Feb 2023
Machine Age	mls	Client Info		**108832**	104119	101229
Oil Age	mls	Client Info		**0**	0	0
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**ABNORMAL**	ABNORMAL	ABNORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>5	**<1.0**	<1.0	<1.0

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	**28**	▲ 104	58
Chromium	ppm	ASTM D5185m	>20	**1**	3	2
Nickel	ppm	ASTM D5185m	>4	**0**	<1	<1
Titanium	ppm	ASTM D5185m		**<1**	<1	<1
Silver	ppm	ASTM D5185m	>3	**0**	<1	0
Aluminum	ppm	ASTM D5185m	>20	**4**	16	10
Lead	ppm	ASTM D5185m	>40	**0**	0	0
Copper	ppm	ASTM D5185m	>330	**<1**	2	2
Tin	ppm	ASTM D5185m	>15	**0**	0	0
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		**80**	23	27
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**74**	70	62
Manganese	ppm	ASTM D5185m		**<1**	1	2
Magnesium	ppm	ASTM D5185m		**1035**	1082	1053
Calcium	ppm	ASTM D5185m		**1085**	1014	1067
Phosphorus	ppm	ASTM D5185m		**1153**	1085	959
Zinc	ppm	ASTM D5185m		**1283**	1309	1294
Sulfur	ppm	ASTM D5185m		**4196**	4043	3744

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**9**	24	14
Sodium	ppm	ASTM D5185m		▲ **119**	▲ 294	▲ 128
Potassium	ppm	ASTM D5185m	>20	▲ **163**	▲ 279	▲ 105
Glycol	%	*ASTM D2982		**NEG**	NEG	0.0

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0.3**	1.2	0.8
Nitration	Abs/cm	*ASTM D7624	>20	**7.7**	15.7	12.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	**20.4**	33.9	27.3

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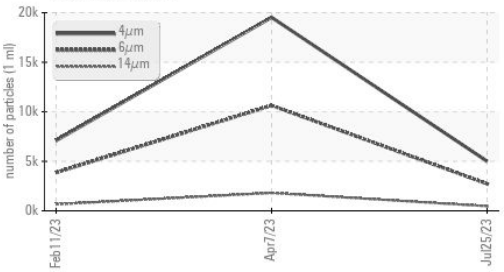
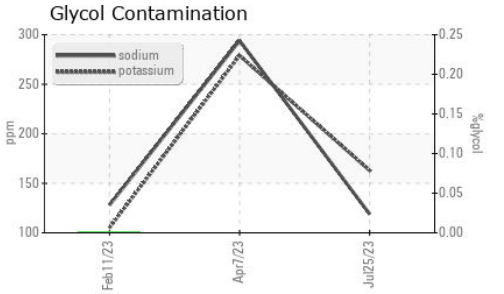
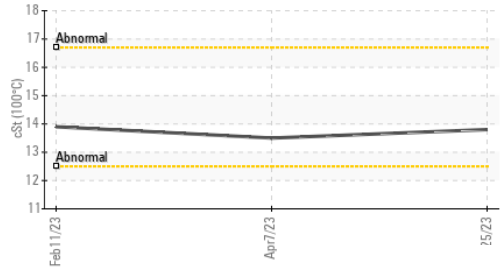
Particle Trend



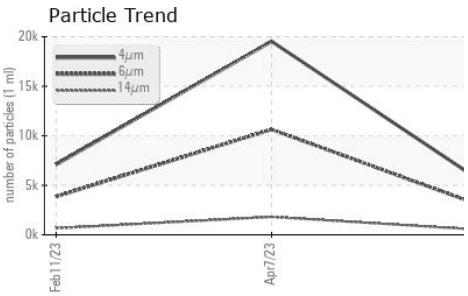
Glycol Contamination



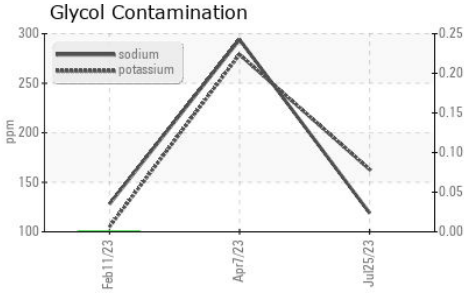
Viscosity @ 100°C



Particle Trend



Glycol Contamination



FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		**5002**	19523	7090
Particles >6µm		ASTM D7647	>5000	**2725**	▲ 10635	3862
Particles >14µm		ASTM D7647	>640	**464**	▲ 1810	▲ 657
Particles >21µm		ASTM D7647	>160	**156**	▲ 610	▲ 221
Particles >38µm		ASTM D7647	>40	**24**	▲ 94	34
Particles >71µm		ASTM D7647	>10	**2**	10	3
Oil Cleanliness		ISO 4406 (c)	>19/16	**19/16**	▲ 21/18	▲ 19/17

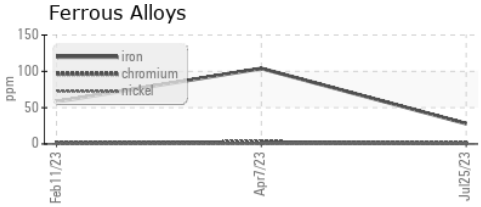
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**16.9**	35.0	27.6
Base Number (BN)	mg KOH/g	ASTM D2896		**10.55**	8.60	9.58

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

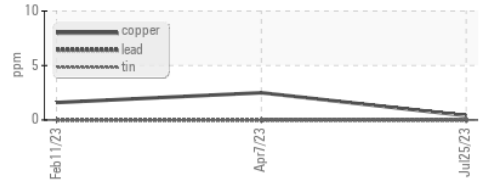
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445		**13.8**	13.5	13.9

GRAPHS

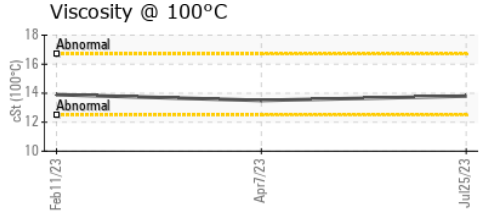
Ferrous Alloys



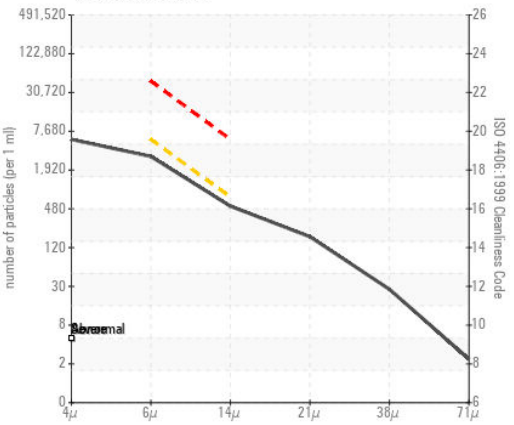
Non-ferrous Metals



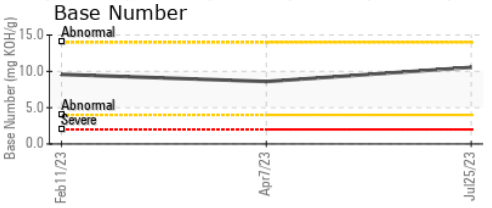
Viscosity @ 100°C



Particle Count



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KL0012054 **Received** : 14 Aug 2023
Lab Number : 05923571 **Diagnosed** : 16 Aug 2023
Unique Number : 10603518 **Diagnostician** : Angela Borella
Test Package : MOB 2 (Additional Tests: Glycol, 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)

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