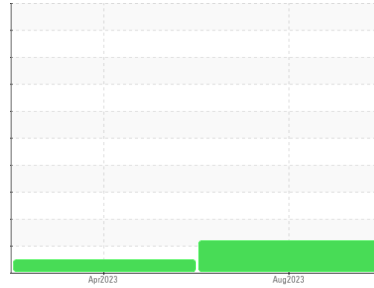




OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Machine Id
27319
 Component
Diesel Engine
 Fluid
NOT GIVEN (--- GAL)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. The filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

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		KL0012001	KLM2339360	---
Sample Date	Client Info		02 Aug 2023	09 Apr 2023	---
Machine Age	mls	Client Info	51581	45714	---
Oil Age	mls	Client Info	0	0	---
Oil Changed	Client Info		N/A	N/A	---
Sample Status			ATTENTION	NORMAL	---

CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>5	<1.0	<1.0	---
Glycol	WC Method		NEG	NEG	---

WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >100	21	30	---
Chromium	ppm	ASTM D5185m >20	<1	1	---
Nickel	ppm	ASTM D5185m >4	0	0	---
Titanium	ppm	ASTM D5185m	<1	<1	---
Silver	ppm	ASTM D5185m >3	0	0	---
Aluminum	ppm	ASTM D5185m >20	5	2	---
Lead	ppm	ASTM D5185m >40	0	0	---
Copper	ppm	ASTM D5185m >330	6	2	---
Tin	ppm	ASTM D5185m >15	<1	<1	---
Vanadium	ppm	ASTM D5185m	0	0	---
Cadmium	ppm	ASTM D5185m	0	0	---

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	19	55	---
Barium	ppm	ASTM D5185m	0	0	---
Molybdenum	ppm	ASTM D5185m	17	65	---
Manganese	ppm	ASTM D5185m	<1	<1	---
Magnesium	ppm	ASTM D5185m	290	1123	---
Calcium	ppm	ASTM D5185m	2272	1084	---
Phosphorus	ppm	ASTM D5185m	1007	1050	---
Zinc	ppm	ASTM D5185m	1254	1320	---
Sulfur	ppm	ASTM D5185m	4352	4061	---

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >25	9	7	---
Sodium	ppm	ASTM D5185m	8	6	---
Potassium	ppm	ASTM D5185m >20	5	4	---

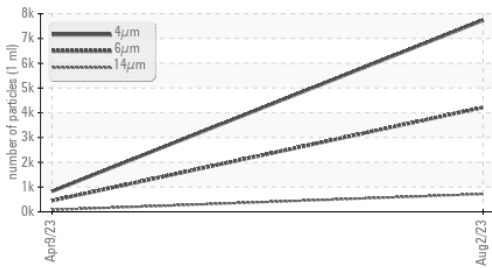
INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844 >3	0.6	0.7	---
Nitration	Abs/cm	*ASTM D7624 >20	8.8	10.3	---
Sulfation	Abs/.1mm	*ASTM D7415 >30	22.8	23.8	---

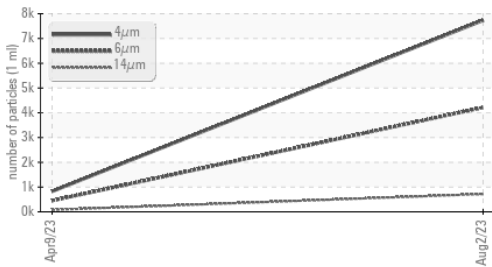


OIL ANALYSIS REPORT

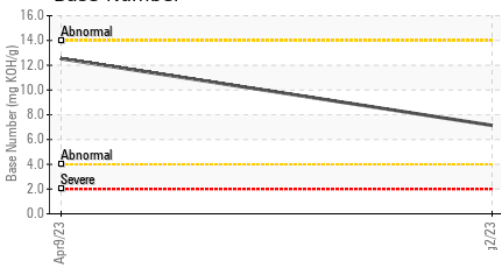
▲ Particle Trend



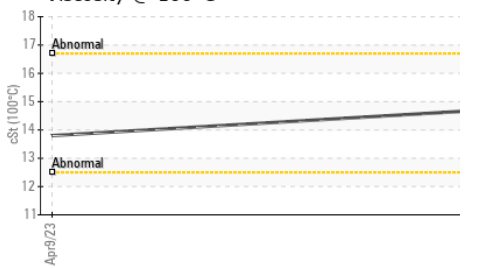
▲ Particle Trend



Base Number



Viscosity @ 100°C



FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		7734	826	---
Particles >6µm	ASTM D7647	>5000	4213	450	---
Particles >14µm	ASTM D7647	>640	▲ 717	77	---
Particles >21µm	ASTM D7647	>160	▲ 242	26	---
Particles >38µm	ASTM D7647	>40	37	4	---
Particles >71µm	ASTM D7647	>10	4	0	---
Oil Cleanliness	ISO 4406 (c)	>19/16	▲ 19/17	16/13	---

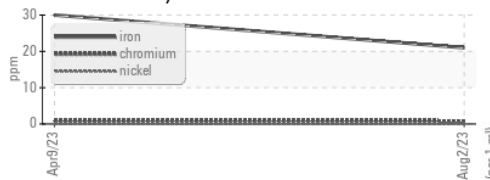
FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs./1mm *ASTM D7414	>25	15.5	22.1	---
Base Number (BN)	mg KOH/g ASTM D2896		7.14	12.53	---

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

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt ASTM D445		14.7	13.8	---

GRAPHS

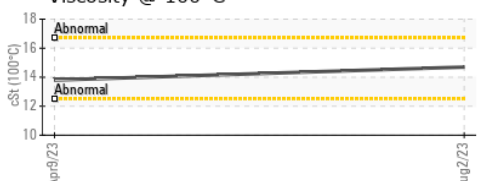
Ferrous Alloys



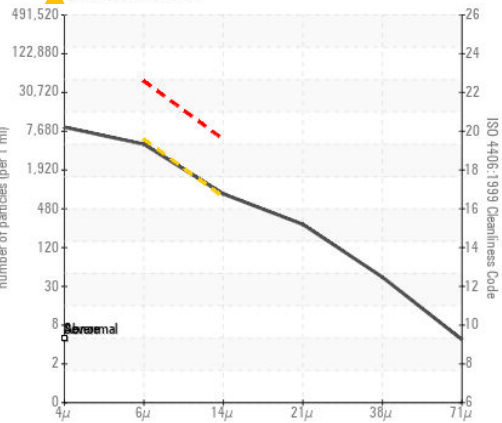
Non-ferrous Metals



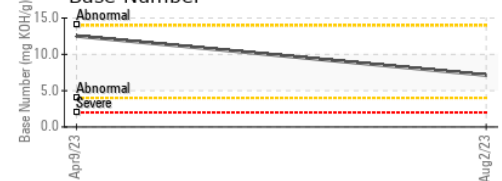
Viscosity @ 100°C



▲ Particle Count



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KL0012001 **Received** : 14 Aug 2023
Lab Number : 05923566 **Diagnosed** : 15 Aug 2023
Unique Number : 10603513 **Diagnostician** : Doug Bogart
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)

CITY & COUNTY HONOLULU
 99-999 IWAENA RD
 AIEA, HI
 US 96701
 Contact: CLYDE OMIJA
 comija@honolulu.gov
 T: (575)623-9952
 F: