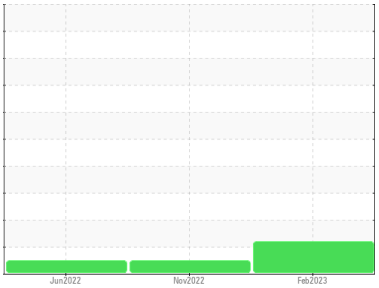
OIL ANALYSIS REPORT

Sample Rating Trend



ISO

Machine Id
35169
Component
Diesel Engine
Fluid
NOT GIVEN (--- QTS)

DIAGNOSIS

Recommendation
No corrective action is recommended at this time. Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

Wear
All component wear rates are normal.

Contamination
Fuel content negligible. 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		**KLM2339318**	KLM2339355	KL0008568
Sample Date		Client Info		**11 Feb 2023**	03 Nov 2022	30 Jun 2022
Machine Age	mls	Client Info		**21142**	11198	1073
Oil Age	mls	Client Info		**21142**	0	0
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**ATTENTION**	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	**20**	10	17
Chromium	ppm	ASTM D5185m	>20	**1**	<1	<1
Nickel	ppm	ASTM D5185m	>4	**0**	<1	0
Titanium	ppm	ASTM D5185m		**<1**	<1	<1
Silver	ppm	ASTM D5185m	>3	**0**	1	<1
Aluminum	ppm	ASTM D5185m	>20	**8**	2	4
Lead	ppm	ASTM D5185m	>40	**3**	2	<1
Copper	ppm	ASTM D5185m	>330	**297**	123	34
Tin	ppm	ASTM D5185m	>15	**1**	1	2
Vanadium	ppm	ASTM D5185m		**0**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

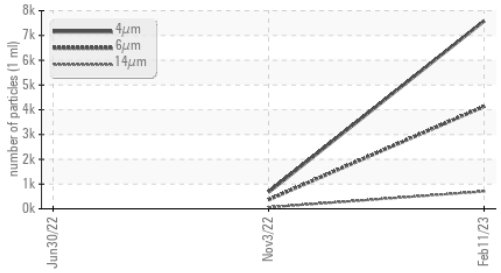
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**41**	93	115
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**54**	51	4
Manganese	ppm	ASTM D5185m		**2**	<1	2
Magnesium	ppm	ASTM D5185m		**1092**	1086	708
Calcium	ppm	ASTM D5185m		**1105**	1174	1416
Phosphorus	ppm	ASTM D5185m		**947**	1027	726
Zinc	ppm	ASTM D5185m		**1263**	1280	809
Sulfur	ppm	ASTM D5185m		**3178**	3862	3935

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**5**	3	5
Sodium	ppm	ASTM D5185m		**2**	<1	4
Potassium	ppm	ASTM D5185m	>20	**24**	6	8
Fuel	%	ASTM D3524	>5	**0.5**	<1.0	0.3

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0.5**	0.2	0.1
Nitration	Abs/cm	*ASTM D7624	>20	**9.6**	7.5	7.6
Sulfation	Abs/.1mm	*ASTM D7415	>30	**21.3**	21.3	19.0

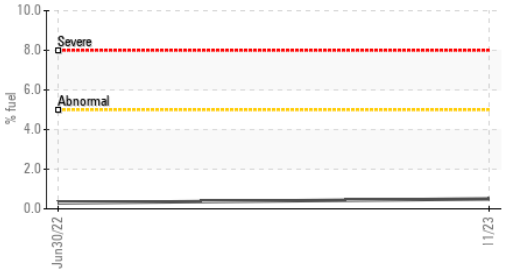
OIL ANALYSIS REPORT

Particle Trend

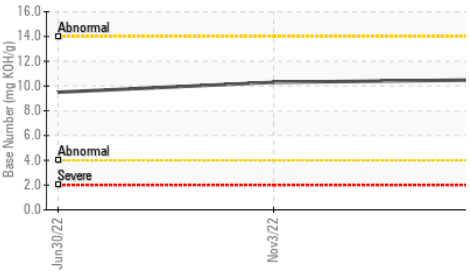


Fuel Dilution

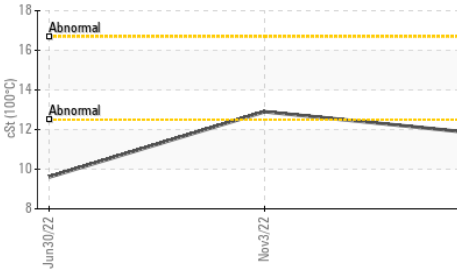
Fuel Dilution



Base Number



Viscosity @ 100°C



FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		**7586**	670	---
Particles >6µm		ASTM D7647	>5000	**4133**	365	---
Particles >14µm		ASTM D7647	>640	▲ **703**	62	---
Particles >21µm		ASTM D7647	>160	▲ **237**	21	---
Particles >38µm		ASTM D7647	>40	**37**	3	---
Particles >71µm		ASTM D7647	>10	**4**	0	---
Oil Cleanliness		ISO 4406 (c)	>19/16	▲ **19/17**	16/13	---

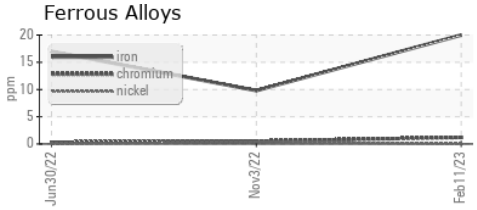
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**17.8**	16.0	13.9
Base Number (BN)	mg KOH/g	ASTM D2896		**10.50**	10.3	9.5

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

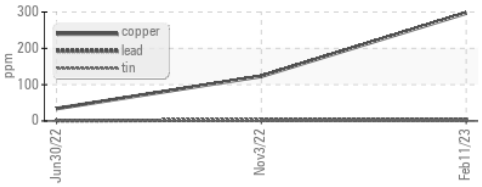
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445		**11.8**	12.9	9.6

GRAPHS

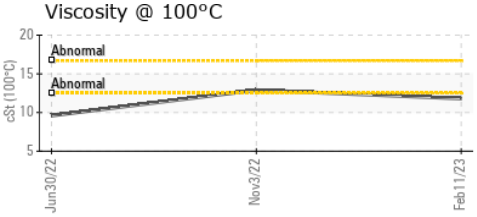
Ferrous Alloys



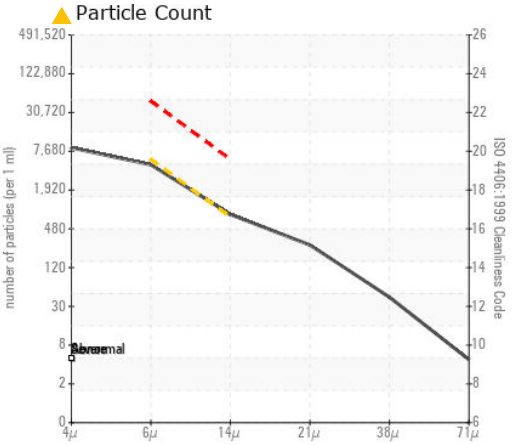
Non-ferrous Metals



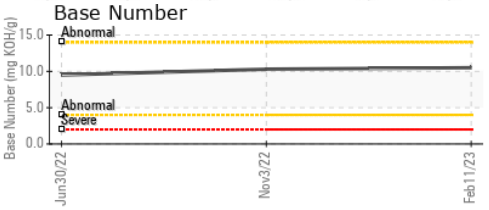
Viscosity @ 100°C



Particle Count



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KLM2339318 **Received** : 02 Mar 2023
Lab Number : 05782027 **Diagnosed** : 06 Mar 2023
Unique Number : 10361697 **Diagnostician** : Don Baldridge
Test Package : MOB 2 (Additional Tests: FuelDilution, PercentFuel, 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: