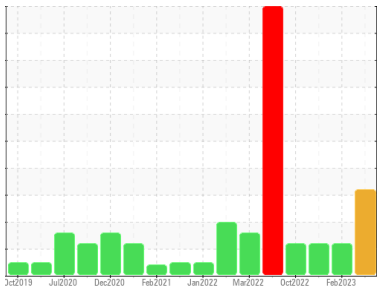
OIL ANALYSIS REPORT

Sample Rating Trend



FUEL

Area
IBACO [CONHER]
Machine Id
IBACO BM COZAR IX
Component
Main Engine
Fluid
Main Engine Oil (160 LTR)

DIAGNOSIS

Recommendation
We advise that you check the fuel injection system. 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. There is a moderate amount of fuel present in the oil.

Fluid Condition
Fuel is present in the oil and is lowering the viscosity. 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		**KL0011405**	KL0010228	KL0011236
Sample Date		Client Info		**30 Mar 2023**	17 Feb 2023	12 Nov 2022
Machine Age	hrs	Client Info		**10604**	0	9363
Oil Age	hrs	Client Info		**303**	0	505
Oil Changed		Client Info		**Not Changd**	N/A	Not Changd
Sample Status				**ABNORMAL**	ABNORMAL	ABNORMAL

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	>75	**7**	21	9
Chromium	ppm	ASTM D5185m	>8	**0**	<1	<1
Nickel	ppm	ASTM D5185m	>2	**0**	<1	<1
Titanium	ppm	ASTM D5185m	>3	**0**	0	0
Silver	ppm	ASTM D5185m	>2	**0**	0	<1
Aluminum	ppm	ASTM D5185m	>15	**<1**	0	1
Lead	ppm	ASTM D5185m	>18	**<1**	2	2
Copper	ppm	ASTM D5185m	>80	**4**	9	8
Tin	ppm	ASTM D5185m	>14	**0**	<1	<1
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		**0**	1	4
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**2**	9	8
Manganese	ppm	ASTM D5185m		**<1**	<1	<1
Magnesium	ppm	ASTM D5185m		**9**	19	23
Calcium	ppm	ASTM D5185m		**3164**	3241	3151
Phosphorus	ppm	ASTM D5185m		**1215**	1144	1113
Zinc	ppm	ASTM D5185m		**1529**	1322	1297
Sulfur	ppm	ASTM D5185m		**4933**	4839	4953

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>20	**5**	6	5
Sodium	ppm	ASTM D5185m	>75	**0**	5	4
Potassium	ppm	ASTM D5185m	>20	**4**	12	13
Fuel	%	ASTM D3524	>4.0	▲ **7.1**	▲ 6.3	▲ 4.5

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		**0.2**	0.5	0.3
Nitration	Abs/cm	*ASTM D7624	>20	**6.9**	10.3	7.7
Sulfation	Abs/.1mm	*ASTM D7415	>30	**15.1**	20.0	17.0

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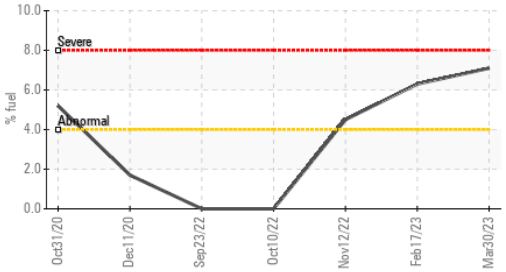
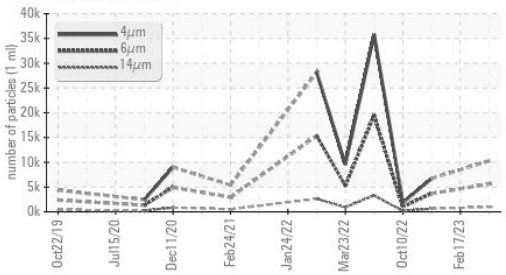
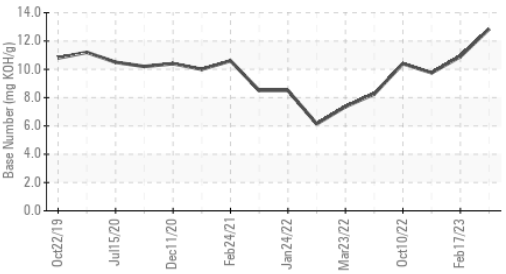
Fuel Dilution



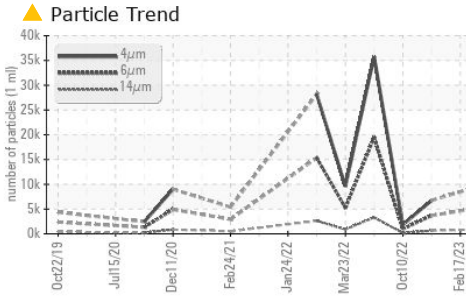
Particle Trend



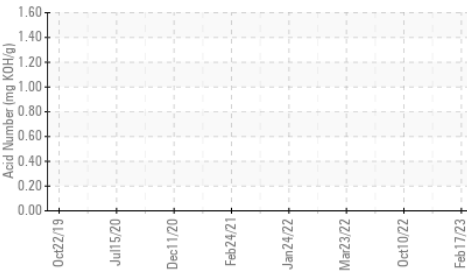
Base Number



Particle Trend



Acid Number



FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		**10283**	---	6744
Particles >6µm		ASTM D7647	>5000	▲ **5602**	---	3674
Particles >14µm		ASTM D7647	>640	▲ **953**	---	625
Particles >21µm		ASTM D7647	>160	▲ **321**	---	211
Particles >38µm		ASTM D7647	>40	▲ **50**	---	33
Particles >71µm		ASTM D7647	>10	**5**	---	3
Oil Cleanliness		ISO 4406 (c)	>19/16	▲ **20/17**	---	19/16

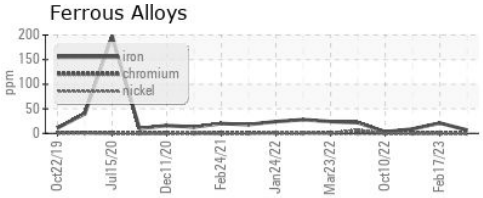
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**8.1**	13.4	9.0
Acid Number (AN)	mg KOH/g	ASTM D8045		**1.45**	---	---
Base Number (BN)	mg KOH/g	ASTM D2896		**12.85**	10.9	9.75

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**LIGHT**	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	>0.1	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

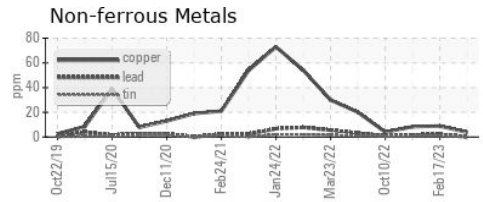
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445		▲ **10.8**	▲ 11.4	▲ 12.0

GRAPHS

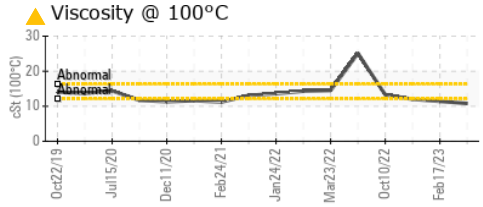
Ferrous Alloys



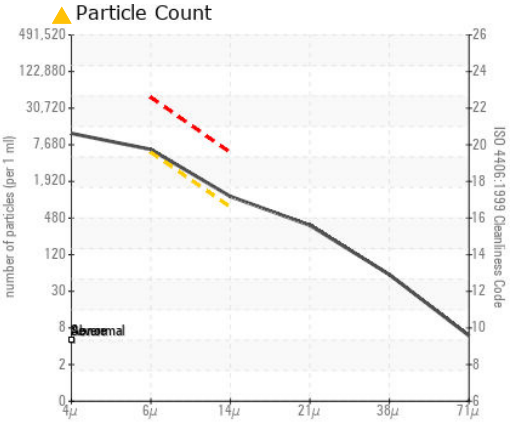
Non-ferrous Metals



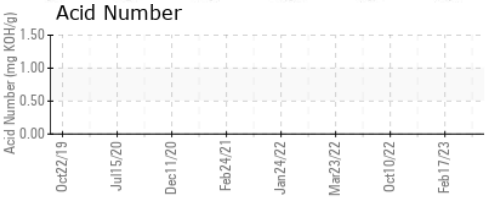
Viscosity @ 100°C



Particle Count



Acid Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KL0011405 **Received** : 14 Apr 2023
Lab Number : 05821110 **Diagnosed** : 19 Apr 2023
Unique Number : 10429193 **Diagnostician** : Jonathan Hester
Test Package : MOB 2 (Additional Tests: 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)

CONOR
JUAREZ 348
HERMOSILLO,
MX 83140
Contact: EDUARDO GARCIA
egarcia.comsa@gmail.com
T: (526)622-1581 x:81
F: x: