MAR II

WEAR CHECK Inland Marine Oil Analysis Program

OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
LUDLOW
Component
Port Genset
Fluid
DIESEL ENGINE OIL SAE 15W40 (--- GAL)

RECOMMENDATION

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

WEAR

The copper level is abnormal. Cylinder, crank, or cam shaft wear is indicated. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core).

CONTAMINATION

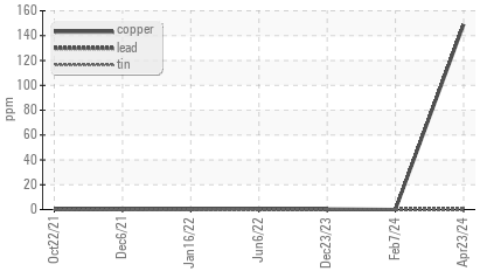
There is no indication of any contamination in the oil.

FLUID CONDITION

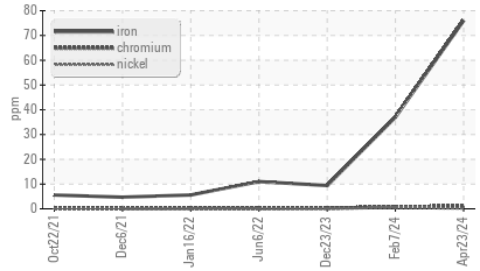
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW0062722	MW0057086	MW0048261
Sample Date		Client Info		23 Apr 2024	07 Feb 2024	23 Dec 2023
Machine Age	hrs	Client Info		23005	22375	21742
Oil Age	hrs	Client Info		500	500	500
Filter Age	hrs	Client Info		500	500	500
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	NORMAL	NORMAL
Iron	ppm	ASTM D5185m	>50	▲ 76	37	9
Chromium	ppm	ASTM D5185m	>4	1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	<1	0
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>12	6	8	4
Lead	ppm	ASTM D5185m	>17	<1	0	0
Copper	ppm	ASTM D5185m	>70	▲ 149	0	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		<1	<1	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Silicon	ppm	ASTM D5185m	>25	9	11	8
Potassium	ppm	ASTM D5185m	>20	2	<1	1
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0.2	1.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	11.2	12.4	11.6
Sulfation	Abs/.1mm	*ASTM D7415	>30	27.0	28.3	26.0
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
Sodium	ppm	ASTM D5185m	>158	1	2	3
Boron	ppm	ASTM D5185m	250	385	276	232
Barium	ppm	ASTM D5185m	10	0	0	0
Molybdenum	ppm	ASTM D5185m	100	124	128	121
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m	450	621	699	653
Calcium	ppm	ASTM D5185m	3000	1496	1521	1568
Phosphorus	ppm	ASTM D5185m	1150	742	711	656
Zinc	ppm	ASTM D5185m	1350	852	875	828
Sulfur	ppm	ASTM D5185m	4250	2636	2367	2261
Oxidation	Abs/.1mm	*ASTM D7414	>25	28.8	28.9	28.2
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	8.3	8.1	7.3
Visc @ 100°C	cSt	ASTM D445	14.4	12.8	14.6	13.7

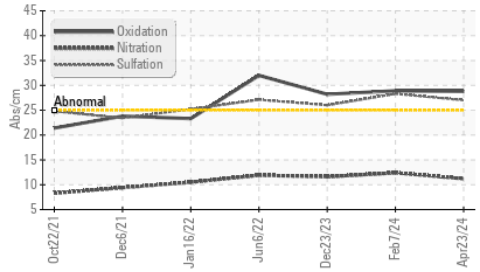
Non-ferrous Metals



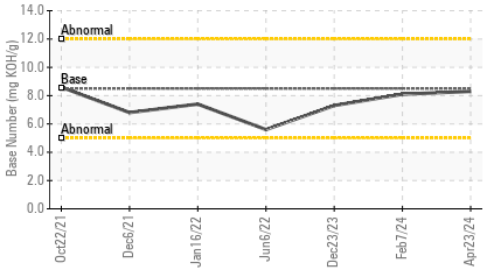
Ferrous Alloys



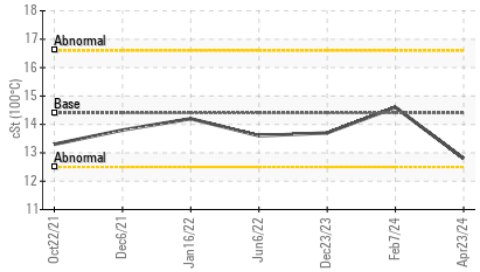
FT-IR (Direct Trend)



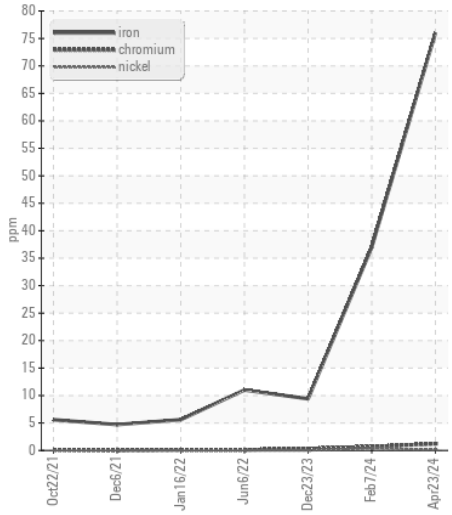
Base Number



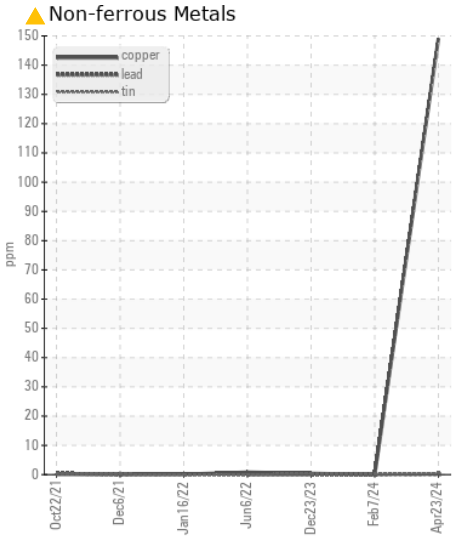
Viscosity @ 100°C



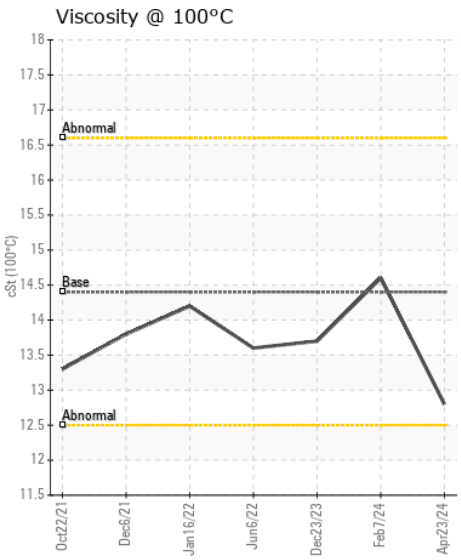
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



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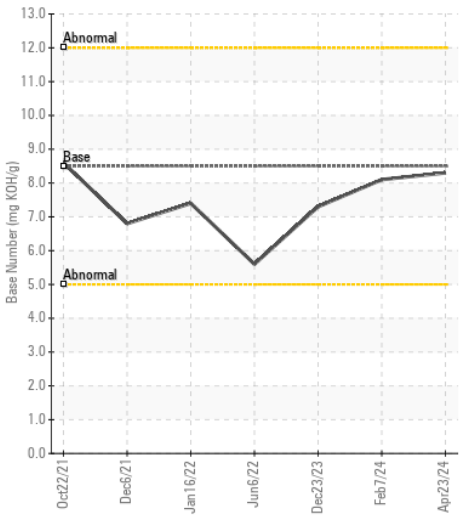

Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW0062722
Lab Number : 06174858
Unique Number : 11020911
Test Package : MAR 2

Received : 09 May 2024
Tested : 10 May 2024
Diagnosed : 13 May 2024 - Sean Felton

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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