MAR II

WEAR CHECK Inland Marine Oil Analysis Program

OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
CUMMINS MV FRAN C
Component
Starboard Main Engine
Fluid
CHEVRON DELO 400 MULTIGRADE 15W40 (9 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 has decreased, but is still abnormal. All other component wear rates are normal.

CONTAMINATION

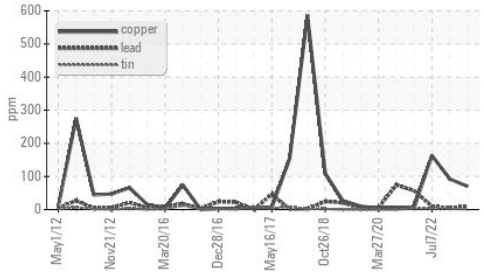
There is no indication of any contamination in the oil.

FLUID CONDITION

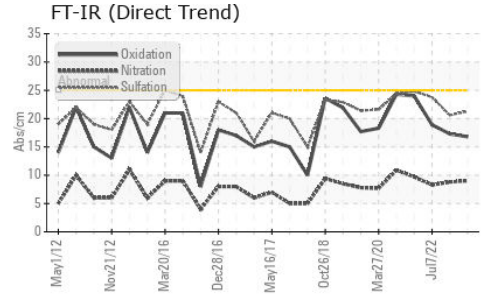
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW0048389	MW0045799	MW0032799
Sample Date		Client Info		10 Sep 2023	13 Jan 2023	07 Jul 2022
Machine Age	hrs	Client Info		3464	2377	1281
Oil Age	hrs	Client Info		1000	500	500
Filter Age	hrs	Client Info		1000	500	500
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	ABNORMAL	ABNORMAL
Iron	ppm	ASTM D5185m	>75	13	16	18
Chromium	ppm	ASTM D5185m	>8	<1	1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m	>3	0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>15	2	2	3
Lead	ppm	ASTM D5185m	>18	10	4	10
Copper	ppm	ASTM D5185m	>80	▲ 70	▲ 92	▲ 163
Tin	ppm	ASTM D5185m	>14	<1	2	2
Vanadium	ppm	ASTM D5185m		<1	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Silicon	ppm	ASTM D5185m	>20	6	8	6
Potassium	ppm	ASTM D5185m	>20	43	3	0
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	0.2	0.2
Nitration	Abs/cm	*ASTM D7624	>20	9.0	8.8	8.3
Sulfation	Abs/.1mm	*ASTM D7415	>30	21.3	20.6	23.8
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	>75	17	3	1
Boron	ppm	ASTM D5185m	151	118	152	274
Barium	ppm	ASTM D5185m	0.4	0	1	0
Molybdenum	ppm	ASTM D5185m	250	90	57	100
Manganese	ppm	ASTM D5185m		<1	1	1
Magnesium	ppm	ASTM D5185m	0	510	119	537
Calcium	ppm	ASTM D5185m	2046	1774	1973	1607
Phosphorus	ppm	ASTM D5185m	1043	859	879	657
Zinc	ppm	ASTM D5185m	943	1051	1116	786
Sulfur	ppm	ASTM D5185m	5012	3177	3575	2725
Oxidation	Abs/.1mm	*ASTM D7414	>25	16.8	17.3	18.9
Base Number (BN)	mg KOH/g	ASTM D2896	12.5	7.3	7.4	8.2
Visc @ 100°C	cSt	ASTM D445	14.4	13.1	13.3	13.3

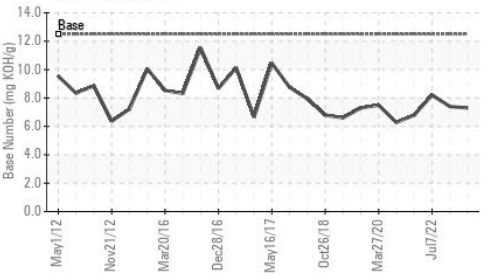
Non-ferrous Metals



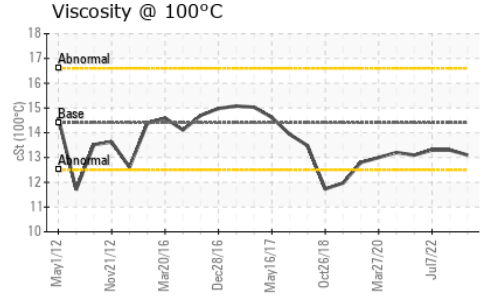
FT-IR (Direct Trend)



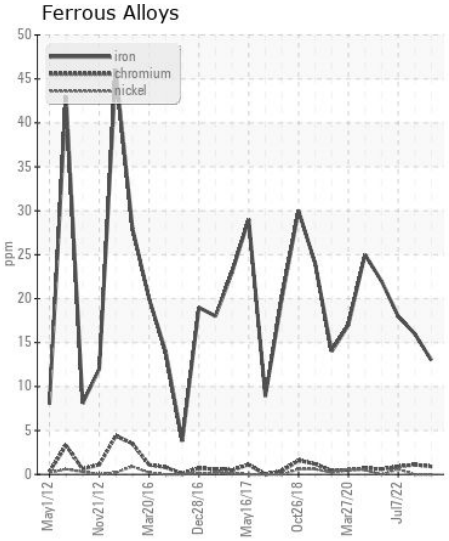
Base Number



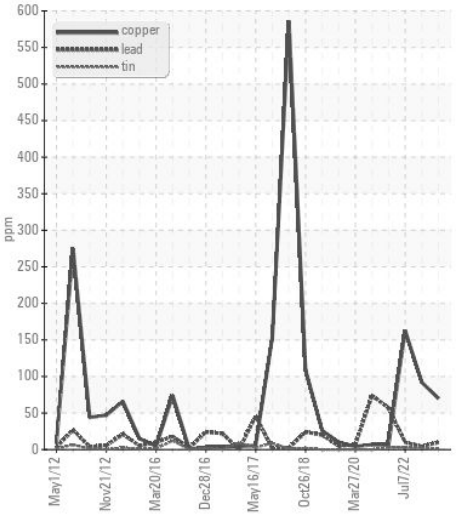
Viscosity @ 100°C



Ferrous Alloys



Non-ferrous Metals



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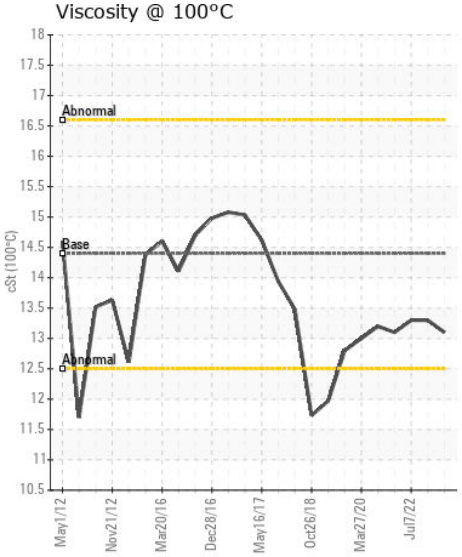

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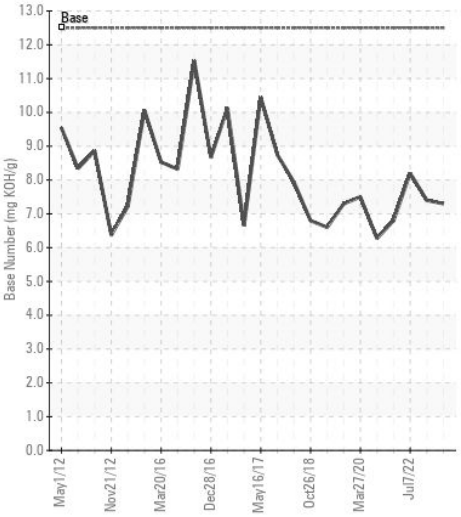

Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW0048389
Lab Number : 06217973
Unique Number : 11096170
Test Package : MAR 2

Received : 24 Jun 2024
Tested : 25 Jun 2024
Diagnosed : 25 Jun 2024 - Don Baldridge

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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