MAR II

WEAR CHECK Inland Marine Oil Analysis Program

OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	ABNORMAL

Area
CPT OA FRANKS
Machine Id
[CPT OA FRANKS] 003 586734-3
Component
Starboard Main Engine
Fluid
CHEVRON DELO 400 LE 15W40 (41 GAL)

RECOMMENDATION

We advise that you check the fuel injection system. Resample at the next service interval to monitor.

WEAR

The lead level is abnormal. All other component wear rates are normal.

CONTAMINATION

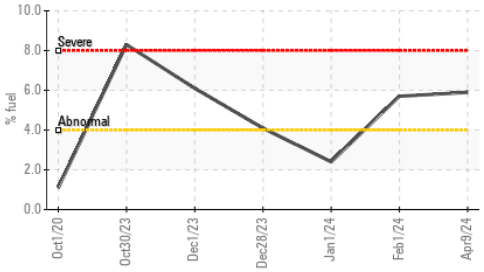
There is a moderate amount of fuel present in the oil.

FLUID CONDITION

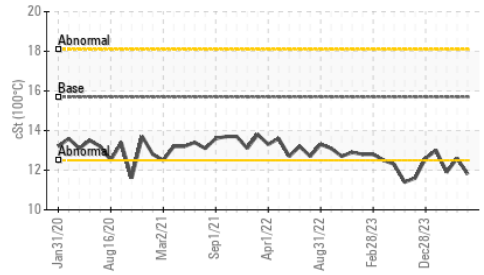
Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW06153833	MW06121738	MW06131506
Sample Date		Client Info		09 Apr 2024	24 Feb 2024	01 Feb 2024
Machine Age	hrs	Client Info		24802	23446	25400
Oil Age	hrs	Client Info		0	1398	829
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				ABNORMAL	NORMAL	ABNORMAL
Iron	ppm	ASTM D5185m	>75	6	9	7
Chromium	ppm	ASTM D5185m	>8	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	<1
Titanium	ppm	ASTM D5185m	>3	3	3	4
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>15	2	3	4
Lead	ppm	ASTM D5185m	>18	▲ 20	2	▲ 18
Copper	ppm	ASTM D5185m	>80	4	2	3
Tin	ppm	ASTM D5185m	>14	<1	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	<1
White Metal	scalar	*Visual	NONE	NONE	LIGHT	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Silicon	ppm	ASTM D5185m	>20	6	8	8
Potassium	ppm	ASTM D5185m	>20	2	2	2
Fuel	%	ASTM D3524	>4.0	▲ 5.9	<1.0	▲ 5.7
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0.2	0.2	0.1
Nitration	Abs/cm	*ASTM D7624	>20	8.0	7.7	8.2
Sulfation	Abs/.1mm	*ASTM D7415	>30	21.8	21.1	21.8
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	0	<1	2
Boron	ppm	ASTM D5185m		338	311	387
Barium	ppm	ASTM D5185m		2	0	0
Molybdenum	ppm	ASTM D5185m		108	107	138
Manganese	ppm	ASTM D5185m		2	<1	1
Magnesium	ppm	ASTM D5185m		561	625	794
Calcium	ppm	ASTM D5185m		1438	1575	2027
Phosphorus	ppm	ASTM D5185m	1200	636	804	922
Zinc	ppm	ASTM D5185m	1300	748	862	1083
Sulfur	ppm	ASTM D5185m	3200	2492	2942	3631
Oxidation	Abs/.1mm	*ASTM D7414	>25	17.1	16.4	17.2
Base Number (BN)	mg KOH/g	ASTM D2896	9.6	8.76	8.72	9.34
Visc @ 100°C	cSt	ASTM D445	15.7	▲ 11.8	12.6	▲ 11.9

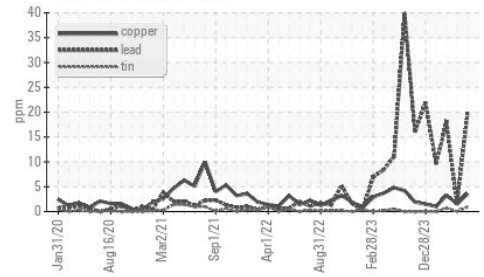
Fuel Dilution



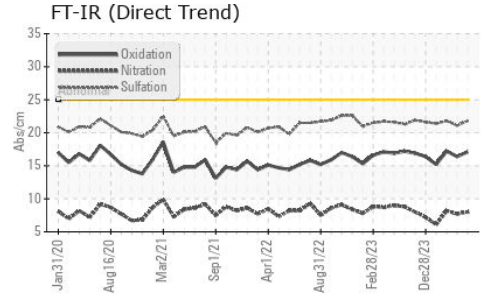
Viscosity @ 100°C



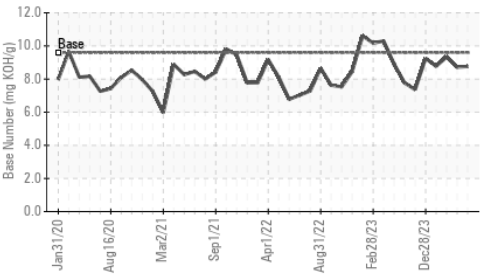
Non-ferrous Metals



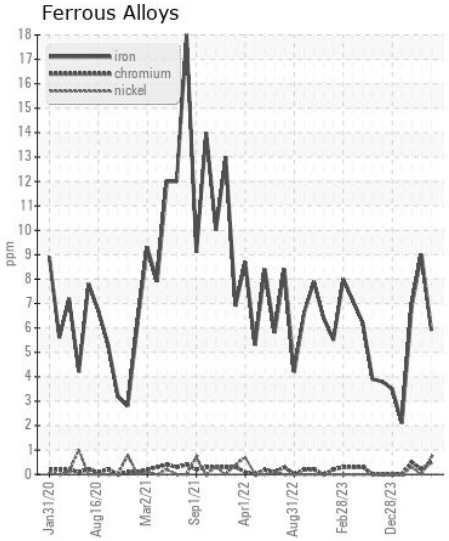
FT-IR (Direct Trend)



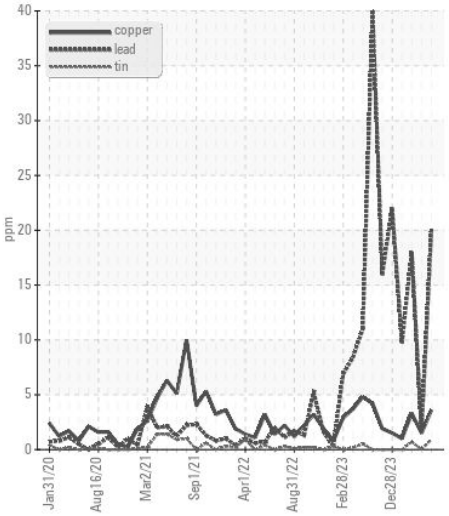
Base Number



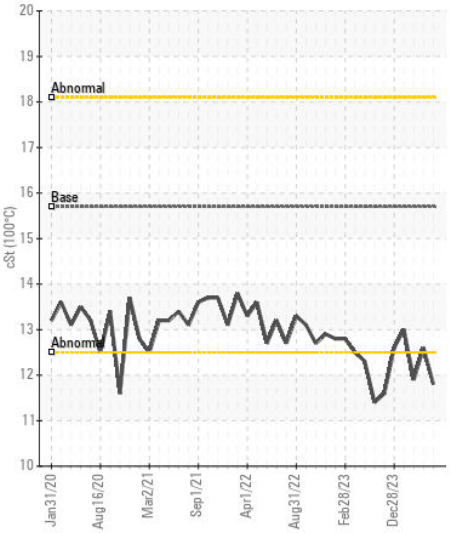
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



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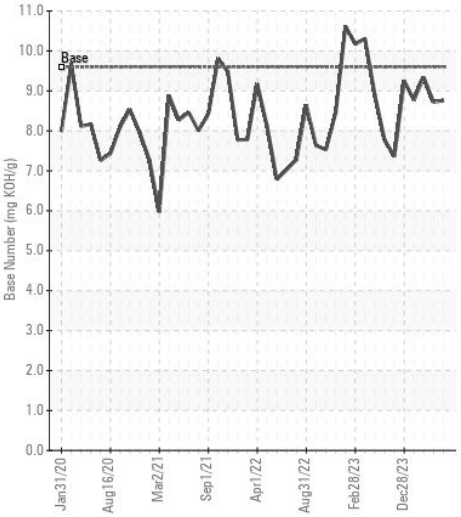

Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW06153833 **Received** : 18 Apr 2024
Lab Number : 06153833 **Tested** : 23 Apr 2024
Unique Number : 10989256 **Diagnosed** : 23 Apr 2024 - Jonathan Hester
Test Package : MAR 2 (Additional Tests: FuelDilution, PercentFuel)

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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