MAR II

WEAR CHECK Inland Marine Oil Analysis Program

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	MARGINAL
FLUID CONDITION	ABNORMAL

Machine Id
PRS
Component
Starboard Main Engine
Fluid
CHEVRON DELO 400 XLE 15W40 (28 GAL)

RECOMMENDATION

We advise that you check the cylinder liner seals for deterioration to ensure that cooling water is not entering the sump. We recommend an early resample to monitor this condition.

WEAR

All component wear rates are normal.

CONTAMINATION

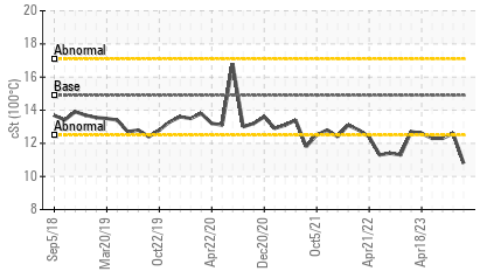
Elemental level of sodium (Na) and/or boron (B) indicates a possible cooling water leak. Light fuel dilution occurring.

FLUID CONDITION

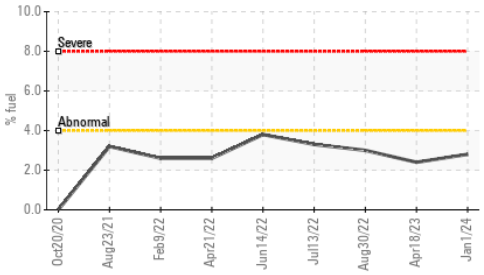
The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The condition of the oil is suitable for further service.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW06048283	MW06017187	MW05862886
Sample Date		Client Info		01 Jan 2024	23 Nov 2023	01 Jun 2023
Machine Age	hrs	Client Info		31123	30321	29389
Oil Age	hrs	Client Info		802	507	623
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	ATTENTION
Iron	ppm	ASTM D5185m	>75	2	3	1
Chromium	ppm	ASTM D5185m	>8	<1	<1	0
Nickel	ppm	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m	>3	<1	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>15	<1	2	0
Lead	ppm	ASTM D5185m	>18	<1	0	0
Copper	ppm	ASTM D5185m	>80	2	<1	<1
Tin	ppm	ASTM D5185m	>14	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Silicon	ppm	ASTM D5185m	>20	3	5	4
Potassium	ppm	ASTM D5185m	>20	5	5	5
Fuel	%	ASTM D3524	>4.0	▲ 2.8	<1.0	<1.0
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0.1	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	6.3	5.5	5.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	18.5	21.9	21.4
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	7	5	8
Boron	ppm	ASTM D5185m		● 87	332	255
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		● 38	112	85
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		● 215	532	507
Calcium	ppm	ASTM D5185m		1972	1381	1616
Phosphorus	ppm	ASTM D5185m	760	788	654	726
Zinc	ppm	ASTM D5185m	830	1100	848	879
Sulfur	ppm	ASTM D5185m	2770	3352	2581	3154
Oxidation	Abs/.1mm	*ASTM D7414	>25	13.7	16.1	15.3
Base Number (BN)	mg KOH/g	ASTM D2896	10.7	6.6	7.9	8.1
Visc @ 100°C	cSt	ASTM D445	14.9	▲ 10.8	12.6	● 12.3

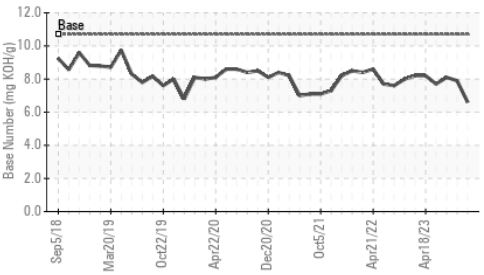
Viscosity @ 100°C



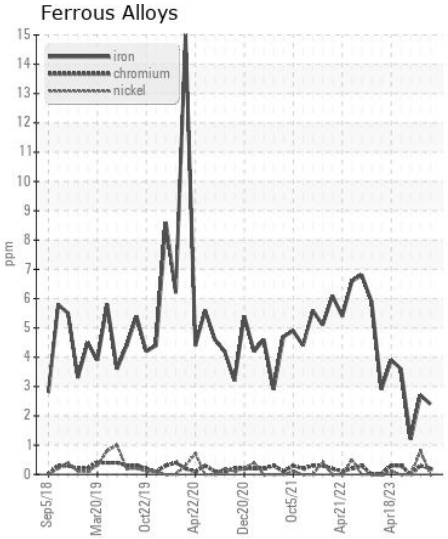
Fuel Dilution



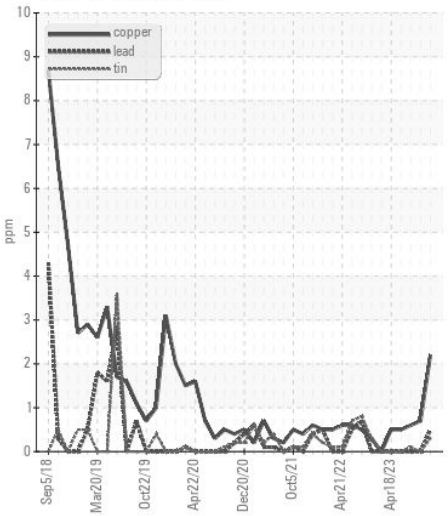
Base Number



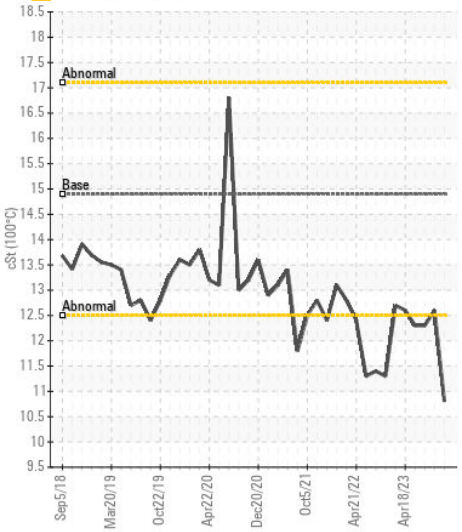
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



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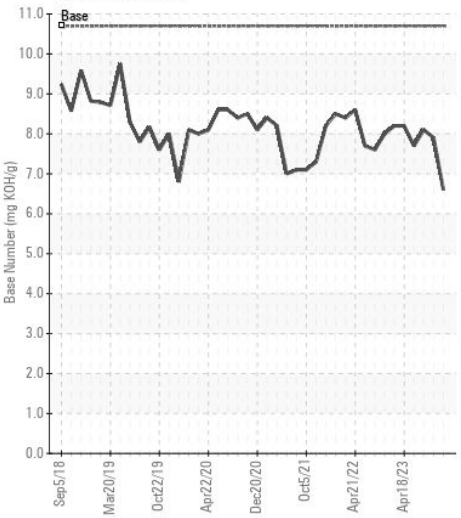

Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW06048283 **Received** : 29 Dec 2023
Lab Number : 06048283 **Tested** : 03 Jan 2024
Unique Number : 10808891 **Diagnosed** : 03 Jan 2024 - Wes Davis
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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