



WEAR	ABNORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

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

RECOMMENDATION

No corrective action is recommended at this time. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW05745139	MW05718174	MW05674000
Sample Date		Client Info		19 Jan 2023	14 Dec 2022	23 Oct 2022
Machine Age	hrs	Client Info		5048	4301	3876
Oil Age	hrs	Client Info		1964	1194	769
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	ABNORMAL	ABNORMAL

WEAR

The lead level is abnormal. An increase in the copper level is noted. All other component wear rates are normal.

Iron	ppm	ASTM D5185m	>75	15	15	14
Chromium	ppm	ASTM D5185m	>8	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m	>3	2	2	1
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>15	2	2	2
Lead	ppm	ASTM D5185m	>18	▲ 38	▲ 29	▲ 22
Copper	ppm	ASTM D5185m	>80	● 67	13	9
Tin	ppm	ASTM D5185m	>14	0	<1	1
Vanadium	ppm	ASTM D5185m		0	0	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

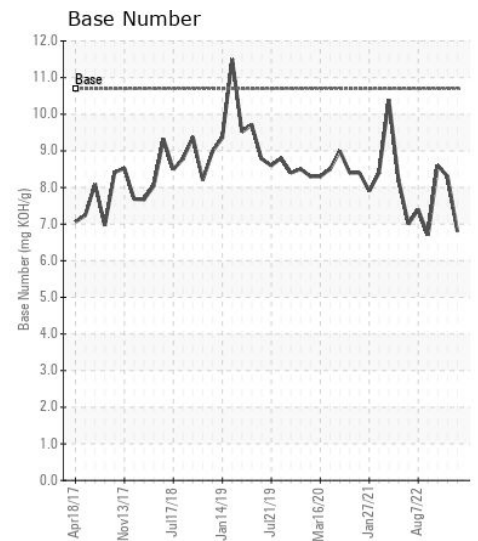
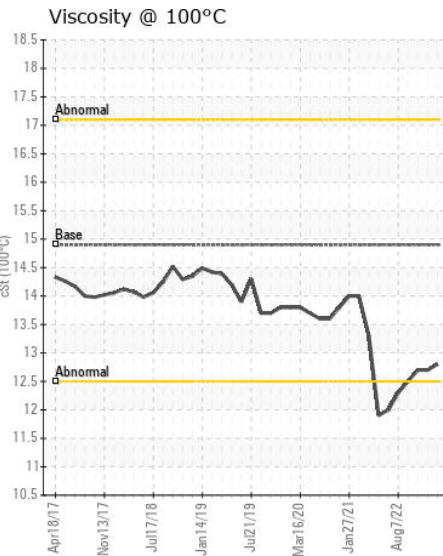
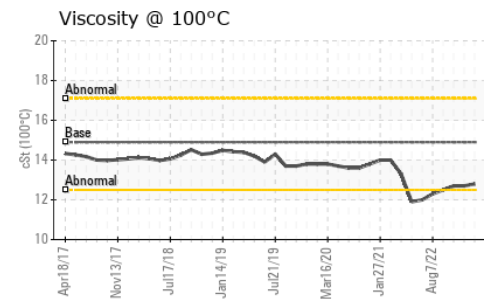
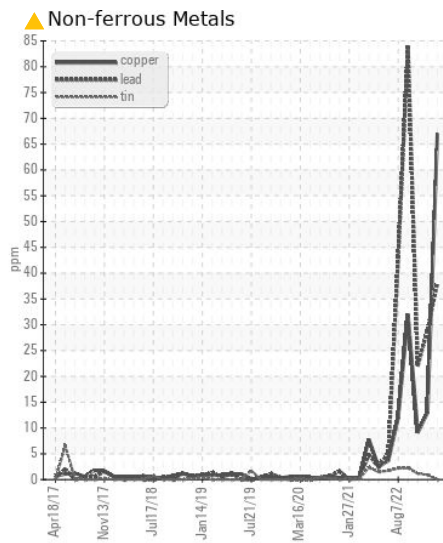
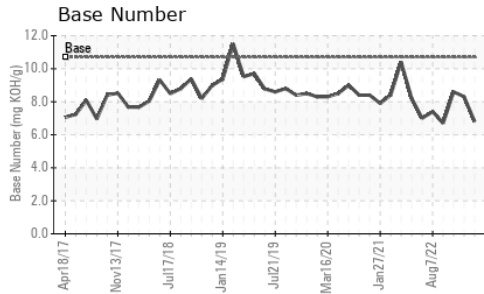
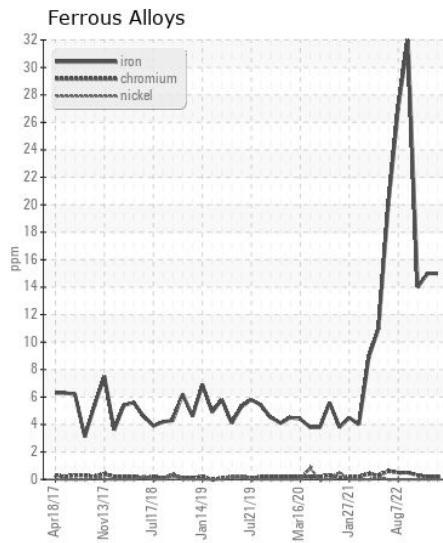
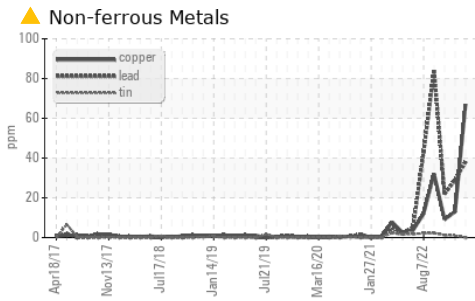
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>20	4	3	4
Potassium	ppm	ASTM D5185m	>20	0	2	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		0.7	0.6	0.6
Nitration	Abs/cm	*ASTM D7624	>20	9.6	9.5	8.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	24.4	25.2	25.1
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

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.

Sodium	ppm	ASTM D5185m	>75	0	0	<1
Boron	ppm	ASTM D5185m		184	188	224
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		95	107	102
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		512	543	585
Calcium	ppm	ASTM D5185m		1447	1567	1543
Phosphorus	ppm	ASTM D5185m	760	633	719	721
Zinc	ppm	ASTM D5185m	830	740	879	872
Sulfur	ppm	ASTM D5185m	2770	2629	2985	3131
Oxidation	Abs/.1mm	*ASTM D7414	>25	19.6	19.5	18.3
Base Number (BN)	mg KOH/g	ASTM D2896	10.7	6.8	8.3	8.6
Visc @ 100°C	cSt	ASTM D445	14.9	12.8	12.7	12.7



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW05745139
Lab Number : 05745139
Unique Number : 10299738
Test Package : MAR 2

Received : 20 Jan 2023
Tested : 23 Jan 2023
Diagnosed : 24 Jan 2023 - Angela Borella

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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)