



WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id

RAIN MAN

Component

Starboard Main Engine

Fluid

CHEVRON DELO 400 MULTIGRADE 15W40 (30 GAL)

RECOMMENDATION

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW0047047	MW0059309	MW0059277
Sample Date		Client Info		03 Jul 2024	07 Apr 2024	05 Dec 2023
Machine Age	hrs	Client Info		15073	0	0
Oil Age	hrs	Client Info		0	0	0
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>75	18	15	7
Chromium	ppm	ASTM D5185m	>8	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	<1	<1
Titanium	ppm	ASTM D5185m	>3	13	13	11
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>15	3	2	2
Lead	ppm	ASTM D5185m	>18	<1	1	<1
Copper	ppm	ASTM D5185m	>80	4	4	<1
Tin	ppm	ASTM D5185m	>14	<1	1	<1
Vanadium	ppm	ASTM D5185m		0	<1	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

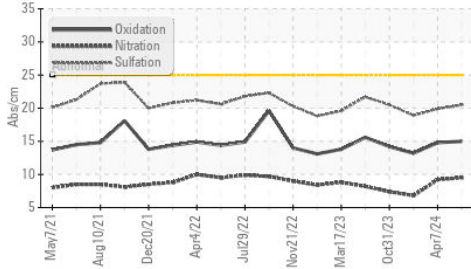
Silicon	ppm	ASTM D5185m	>20	4	4	4
Potassium	ppm	ASTM D5185m	>20	3	4	4
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0.6	0.4	0.2
Nitration	Abs/cm	*ASTM D7624	>20	9.5	9.2	6.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	20.5	19.9	18.9
Silt	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

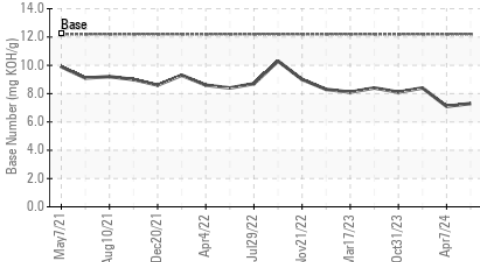
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>75	<1	2	0
Boron	ppm	ASTM D5185m		64	89	159
Barium	ppm	ASTM D5185m		0	0	11
Molybdenum	ppm	ASTM D5185m		36	44	51
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		697	631	607
Calcium	ppm	ASTM D5185m		1596	1648	1572
Phosphorus	ppm	ASTM D5185m	1360	603	650	600
Zinc	ppm	ASTM D5185m	1480	805	750	727
Sulfur	ppm	ASTM D5185m		2555	2856	3250
Oxidation	Abs/.1mm	*ASTM D7414	>25	15.0	14.8	13.2
Base Number (BN)	mg KOH/g	ASTM D2896	12.2	7.3	7.1	8.4
Visc @ 100°C	cSt	ASTM D445	15.1	13.2	13.0	13.5

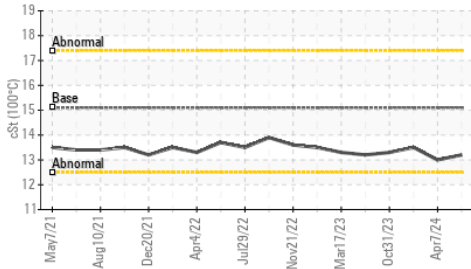
FT-IR (Direct Trend)



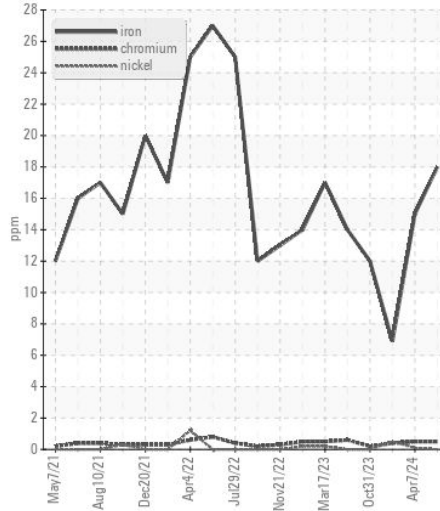
Base Number



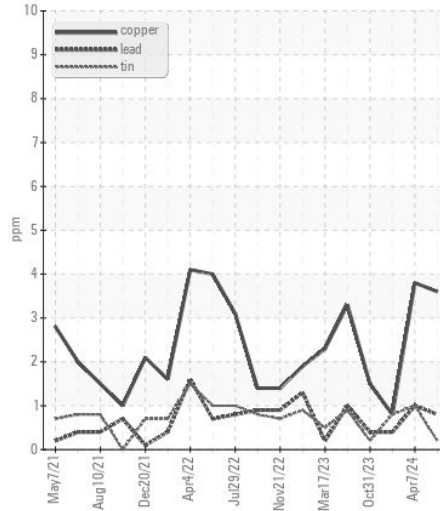
Viscosity @ 100°C



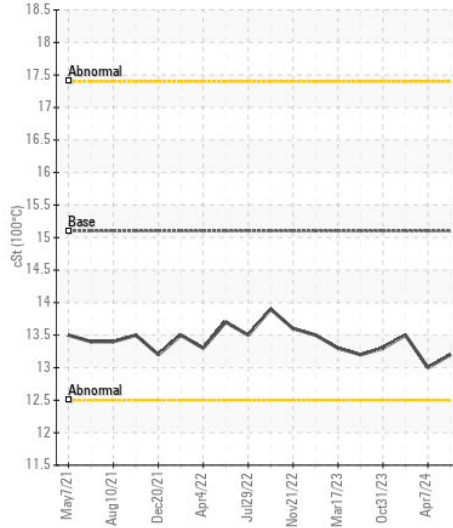
Ferrous Alloys



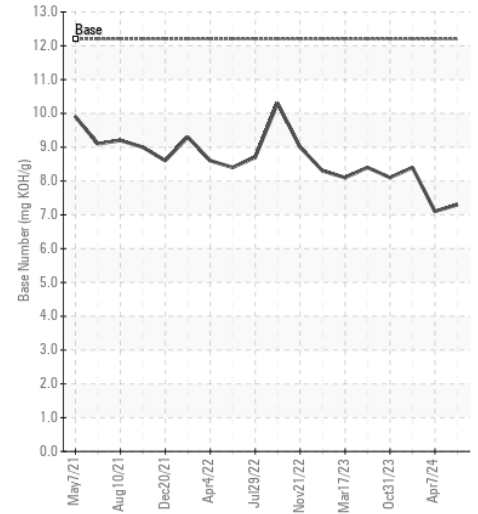
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : MW0047047

Lab Number : 06237596

Unique Number : 11126430

Test Package : MAR 2

Received : 16 Jul 2024

Tested : 17 Jul 2024

Diagnosed : 17 Jul 2024 - Wes Davis

OSAGE MARINE

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ST LOUIS, MO

US 63111

Contact: MIKE KESSLER

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T:

F:

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)