



WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Area

ROBERT H BROWN

Machine Id

[ROBERT H BROWN] 003 536019-3

Component

Starboard Main Engine

Fluid

CHEVRON DELO 400 MULTIGRADE 15W40 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW0065805	MW0065876	MW0060223
Sample Date		Client Info		05 Apr 2024	01 Mar 2024	01 Feb 2024
Machine Age	hrs	Client Info		18674	17816	17138
Oil Age	hrs	Client Info		1016	170	1000
Filter Age	hrs	Client Info		1016	170	1000
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Filter Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>75	5	3	4
Chromium	ppm	ASTM D5185m	>8	0	0	0
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m	>3	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>15	3	2	3
Lead	ppm	ASTM D5185m	>18	7	2	2
Copper	ppm	ASTM D5185m	>80	6	<1	2
Tin	ppm	ASTM D5185m	>14	<1	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
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.

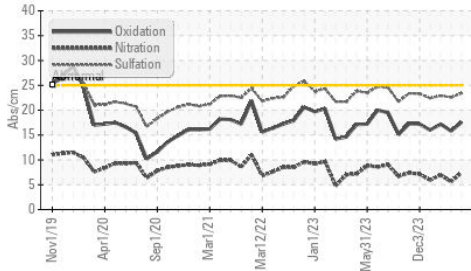
Silicon	ppm	ASTM D5185m	>20	5	5	5
Potassium	ppm	ASTM D5185m	>20	0	0	0
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0.1	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	7.4	5.6	7.0
Sulfation	Abs/.1mm	*ASTM D7415	>30	23.4	22.6	22.9
Silt	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

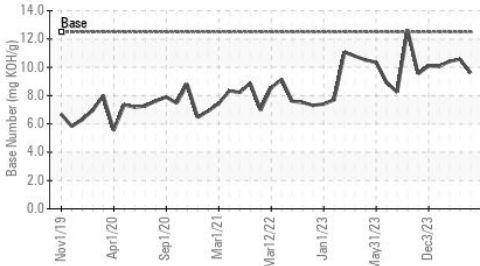
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>75	0	<1	<1
Boron	ppm	ASTM D5185m	151	343	342	340
Barium	ppm	ASTM D5185m	0.4	<1	0	0
Molybdenum	ppm	ASTM D5185m	250	140	125	121
Manganese	ppm	ASTM D5185m		1	<1	<1
Magnesium	ppm	ASTM D5185m	0	737	685	639
Calcium	ppm	ASTM D5185m	2046	1968	1703	1580
Phosphorus	ppm	ASTM D5185m	1043	820	702	670
Zinc	ppm	ASTM D5185m	943	988	844	781
Sulfur	ppm	ASTM D5185m	5012	3468	2625	2808
Oxidation	Abs/.1mm	*ASTM D7414	>25	17.6	15.8	17.2
Base Number (BN)	mg KOH/g	ASTM D2896	12.5	9.59	10.56	10.43
Visc @ 100°C	cSt	ASTM D445	14.4	12.8	13.4	12.9

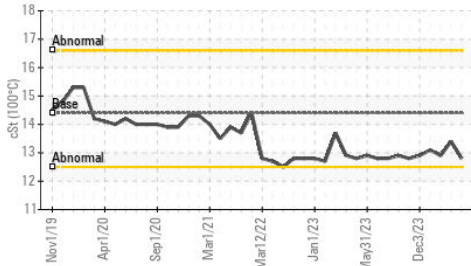
FT-IR (Direct Trend)



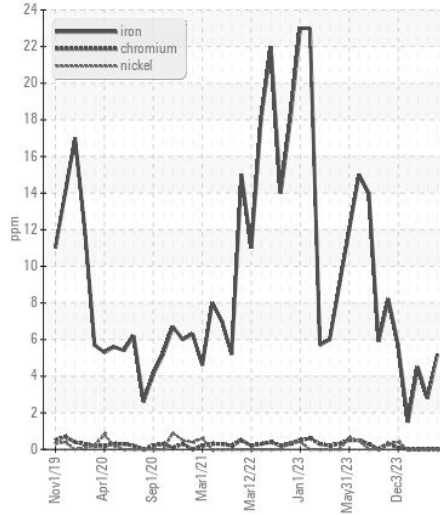
Base Number



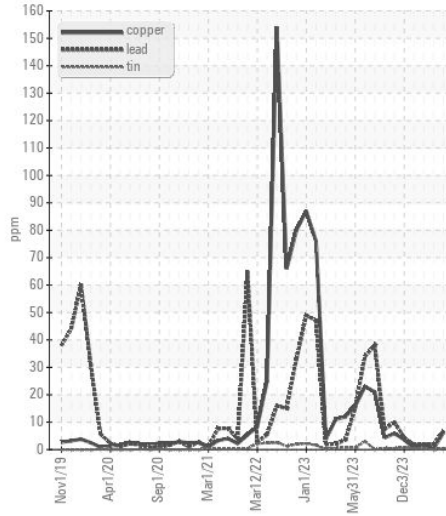
Viscosity @ 100°C



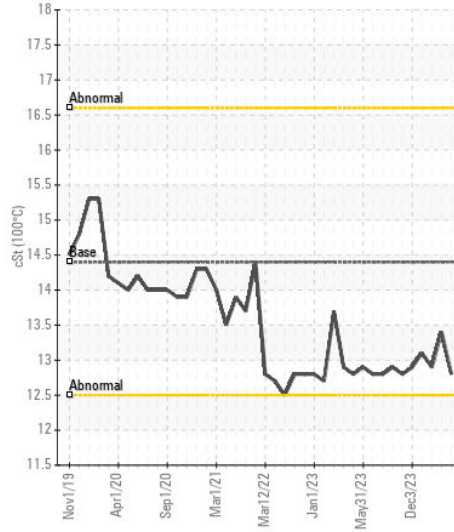
Ferrous Alloys



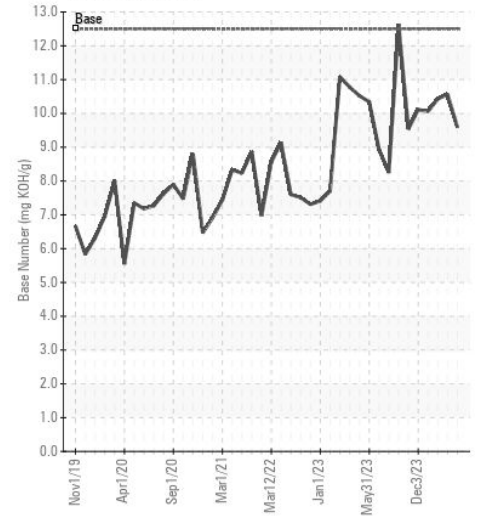
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW0065805 **Received** : 11 Apr 2024
Lab Number : 06146717 **Tested** : 15 Apr 2024
Unique Number : 10976795 **Diagnosed** : 15 Apr 2024 - Wes Davis
Test Package : MAR 2

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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)