



WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
HBR
Component
Starboard Main Engine
Fluid
CHEVRON DELO 400 XLE 15W40 (11 GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW06225763	MW06166392	MW06132973
Sample Date		Client Info		01 Jul 2024	30 Apr 2024	28 Mar 2024
Machine Age	hrs	Client Info		29815	28835	28340
Oil Age	hrs	Client Info		980	495	2648
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				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>75	10	7	5
Chromium	ppm	ASTM D5185m	>8	<1	0	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	<1
Titanium	ppm	ASTM D5185m	>3	<1	0	0
Silver	ppm	ASTM D5185m	>2	<1	0	0
Aluminum	ppm	ASTM D5185m	>15	3	1	2
Lead	ppm	ASTM D5185m	>18	<1	0	<1
Copper	ppm	ASTM D5185m	>80	<1	4	0
Tin	ppm	ASTM D5185m	>14	<1	0	0
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.

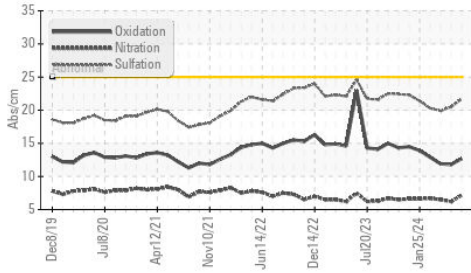
Silicon	ppm	ASTM D5185m	>20	5	4	5
Potassium	ppm	ASTM D5185m	>20	3	0	1
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		2.1	1.4	1.1
Nitration	Abs/cm	*ASTM D7624	>20	7.2	6.2	6.5
Sulfation	Abs/.1mm	*ASTM D7415	>30	21.7	20.5	19.9
Silt	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

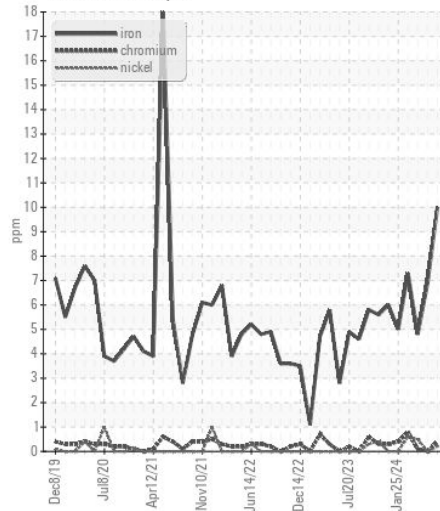
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>75	<1	<1	<1
Boron	ppm	ASTM D5185m		230	277	176
Barium	ppm	ASTM D5185m		<1	<1	0
Molybdenum	ppm	ASTM D5185m		63	61	53
Manganese	ppm	ASTM D5185m		<1	2	0
Magnesium	ppm	ASTM D5185m		270	279	254
Calcium	ppm	ASTM D5185m		1740	1987	1971
Phosphorus	ppm	ASTM D5185m	760	877	970	840
Zinc	ppm	ASTM D5185m	830	1079	1104	1008
Sulfur	ppm	ASTM D5185m	2770	2846	3661	3539
Oxidation	Abs/.1mm	*ASTM D7414	>25	12.7	11.8	11.9
Base Number (BN)	mg KOH/g	ASTM D2896	10.7	6.8	7.0	7.1
Visc @ 100°C	cSt	ASTM D445	14.9	13.3	12.8	12.5

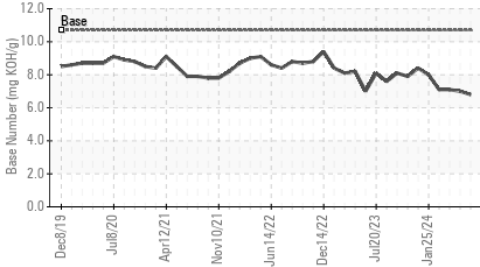
FT-IR (Direct Trend)



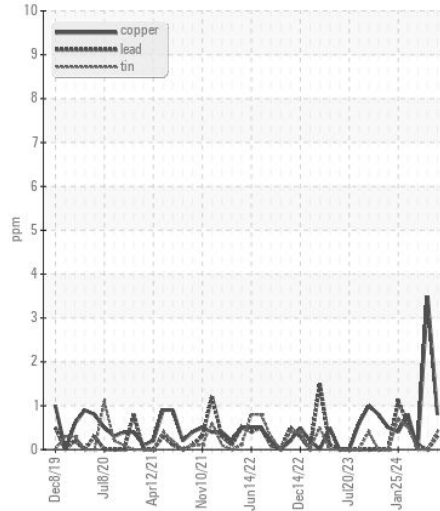
Ferrous Alloys



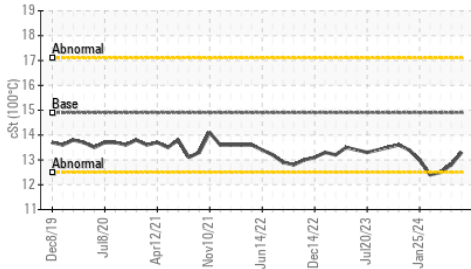
Base Number



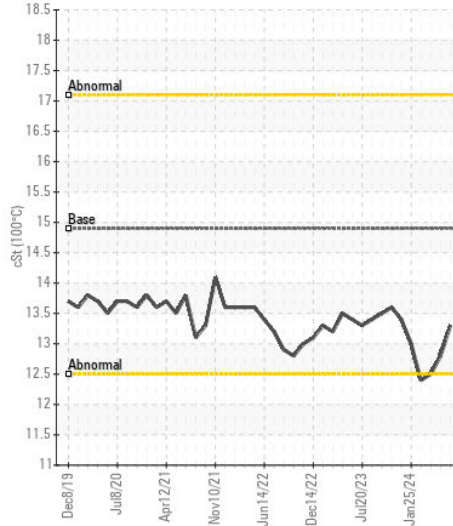
Non-ferrous Metals



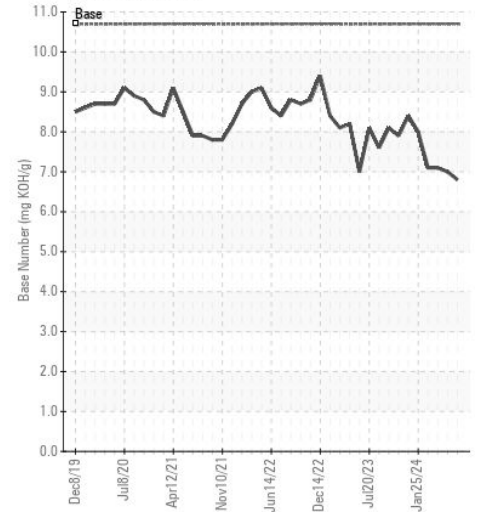
Viscosity @ 100°C



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW06225763
Lab Number : 06225763
Unique Number : 11103960
Test Package : MAR 2
Received : 02 Jul 2024
Tested : 03 Jul 2024
Diagnosed : 03 Jul 2024 - Don Baldridge

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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)