



WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Area
JOHN R OPERLE
Machine Id
[JOHN R OPERLE] 003 630998-3
Component
Starboard Main Engine
Fluid
CHEVRON DELO 710 LS (300 GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW0066012	MW0061534	MW0061529
Sample Date		Client Info		03 May 2024	02 Jan 2024	01 Dec 2023
Machine Age	hrs	Client Info		61657	61473	61443
Oil Age	hrs	Client Info		13629	19344	13415
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Not Changd	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	24	19	21
Chromium	ppm	ASTM D5185m	>8	1	<1	1
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	1	2	2
Lead	ppm	ASTM D5185m	>18	6	3	3
Copper	ppm	ASTM D5185m	>80	24	25	25
Tin	ppm	ASTM D5185m	>14	4	4	4
Vanadium	ppm	ASTM D5185m		0	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.

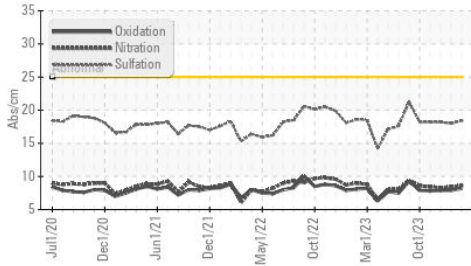
Silicon	ppm	ASTM D5185m	>20	5	4	5
Potassium	ppm	ASTM D5185m	>20	<1	0	0
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	1.5	1.5	1.5
Nitration	Abs/cm	*ASTM D7624	>20	8.6	8.4	8.3
Sulfation	Abs/.1mm	*ASTM D7415	>30	18.4	18.0	18.2
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

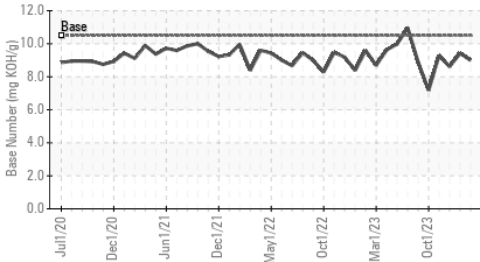
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>75	2	0	4
Boron	ppm	ASTM D5185m		42	30	42
Barium	ppm	ASTM D5185m		<1	0	0
Molybdenum	ppm	ASTM D5185m		45	45	44
Manganese	ppm	ASTM D5185m		1	2	1
Magnesium	ppm	ASTM D5185m		12	14	12
Calcium	ppm	ASTM D5185m		3569	3397	3519
Phosphorus	ppm	ASTM D5185m		0	2	4
Zinc	ppm	ASTM D5185m		12	6	0
Sulfur	ppm	ASTM D5185m		2762	2234	2435
Oxidation	Abs/.1mm	*ASTM D7414	>25	8.2	7.9	7.9
Base Number (BN)	mg KOH/g	ASTM D2896	10.5	9.00	9.42	8.62
Visc @ 100°C	cSt	ASTM D445	15.5	15.0	14.9	15.0

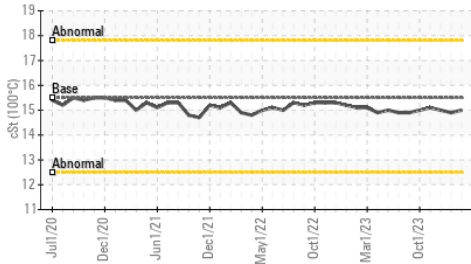
FT-IR (Direct Trend)



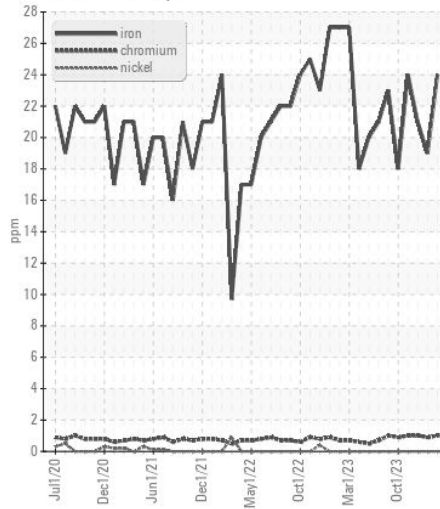
Base Number



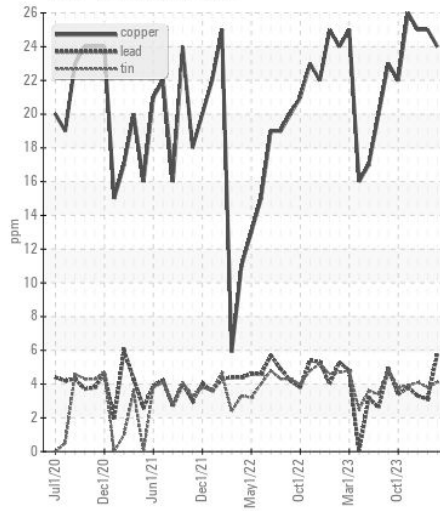
Viscosity @ 100°C



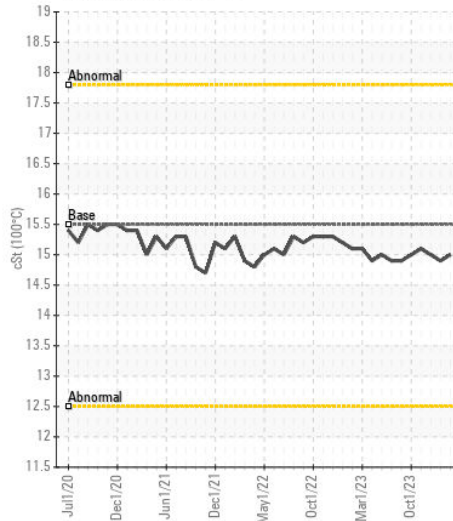
Ferrous Alloys



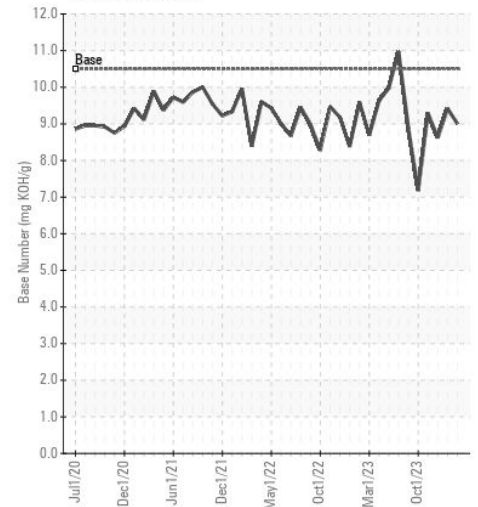
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

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

Sample No. : MW0066012

Lab Number : 06176265

Unique Number : 11022318

Test Package : MAR 2

Received : 10 May 2024

Tested : 13 May 2024

Diagnosed : 13 May 2024 - Wes Davis

INGRAM BARGE

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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)