



WEAR	ABNORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Area

WILLARD HAMMOND

Machine Id

[WILLARD HAMMOND] 003 587215-3

Component

Starboard Main Engine

Fluid

CHEVRON DELO 400 MULTIGRADE 15W40 (36 GAL)

RECOMMENDATION

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW0072275	MW0070927	MW0064393
Sample Date		Client Info		01 Jun 2024	01 May 2024	31 Mar 2024
Machine Age	hrs	Client Info		14407	13681	12794
Oil Age	hrs	Client Info		4763	4043	3180
Filter Age	hrs	Client Info		816	96	708
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Filter Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				ABNORMAL	NORMAL	NORMAL

WEAR

Bearing and/or bushing wear is indicated.

Iron	ppm	ASTM D5185m	>120	16	15	12
Chromium	ppm	ASTM D5185m	>10	0	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	<1	<1
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>5	0	1	0
Aluminum	ppm	ASTM D5185m	>20	4	4	3
Lead	ppm	ASTM D5185m	>40	▲ 54	34	23
Copper	ppm	ASTM D5185m	>300	▲ 80	72	58
Tin	ppm	ASTM D5185m	>10	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

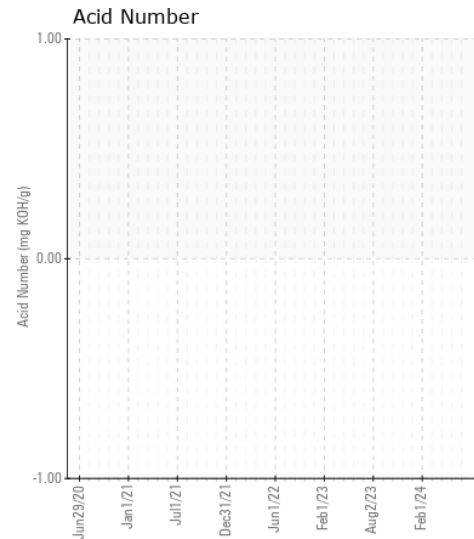
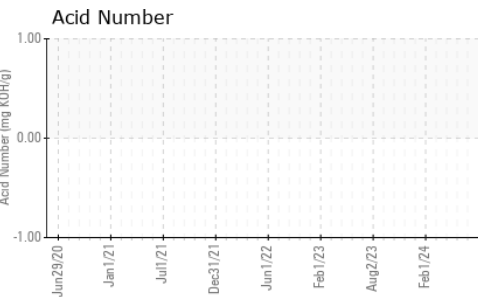
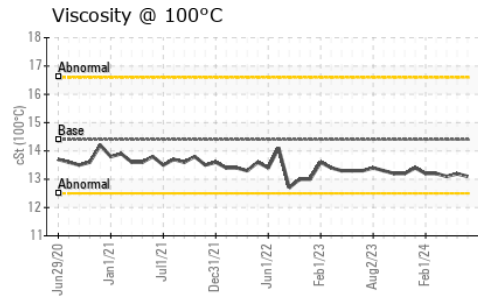
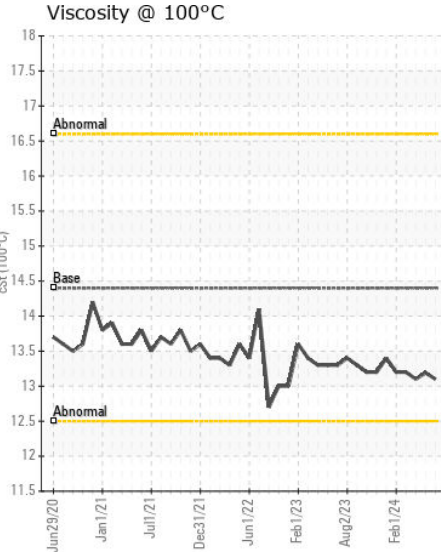
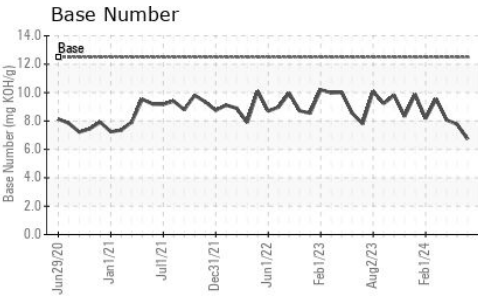
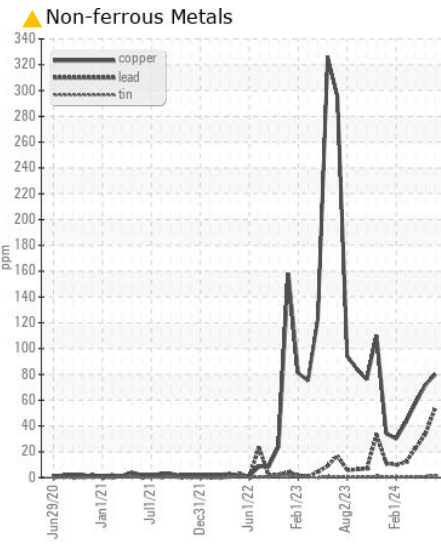
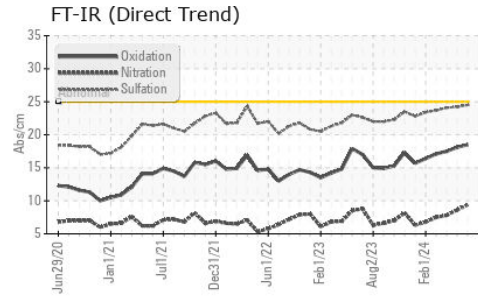
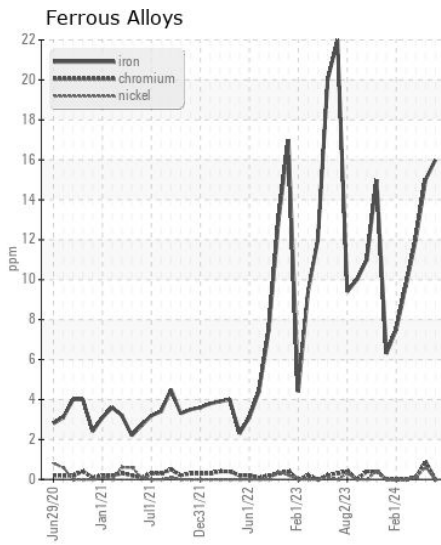
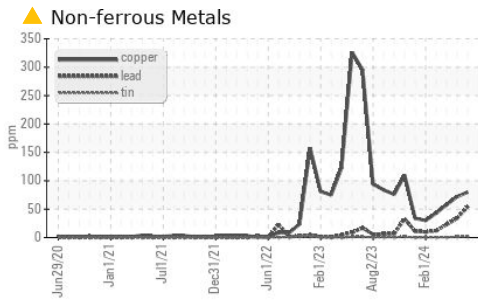
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>25	8	8	6
Potassium	ppm	ASTM D5185m	>20	1	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		0.4	0.4	0.3
Nitration	Abs/cm	*ASTM D7624	>20	9.4	8.6	7.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	24.5	24.2	24.1
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 suitable for further service.

Sodium	ppm	ASTM D5185m		0	2	0
Boron	ppm	ASTM D5185m	151	244	258	293
Barium	ppm	ASTM D5185m	0.4	0	<1	<1
Molybdenum	ppm	ASTM D5185m	250	123	113	132
Manganese	ppm	ASTM D5185m		3	2	2
Magnesium	ppm	ASTM D5185m	0	699	566	730
Calcium	ppm	ASTM D5185m	2046	1764	1438	1977
Phosphorus	ppm	ASTM D5185m	1043	736	592	804
Zinc	ppm	ASTM D5185m	943	934	739	1011
Sulfur	ppm	ASTM D5185m	5012	3092	2393	3486
Oxidation	Abs/.1mm	*ASTM D7414	>25	18.5	18.1	17.5
Base Number (BN)	mg KOH/g	ASTM D2896	12.5	6.72	7.77	8.07
Visc @ 100°C	cSt	ASTM D445	14.4	13.1	13.19	13.1



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW0072275 **Received** : 28 Jun 2024
Lab Number : 06224108 **Tested** : 02 Jul 2024
Unique Number : 11102305 **Diagnosed** : 02 Jul 2024 - Jonathan Hester
Test Package : MAR 2 (Additional Tests: KV40, TAN Man)
 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)

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