



WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Area
SANDY B
Machine Id
[SANDY B] 003 562531-3
Component
Starboard Main Engine
Fluid
SHELL ROTELLA T 15W40 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW0061656	MW0061337	MW0061386
Sample Date		Client Info		02 Jan 2024	30 Nov 2023	01 Nov 2023
Machine Age	hrs	Client Info		2682	2273	1877
Oil Age	hrs	Client Info		203	309	394
Filter Age	hrs	Client Info		203	309	394
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	0	2	4
Chromium	ppm	ASTM D5185m	>8	0	0	0
Nickel	ppm	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m	>3	0	0	0
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>15	2	1	0
Lead	ppm	ASTM D5185m	>18	0	<1	<1
Copper	ppm	ASTM D5185m	>80	1	3	6
Tin	ppm	ASTM D5185m	>14	0	<1	0
Vanadium	ppm	ASTM D5185m		0	<1	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

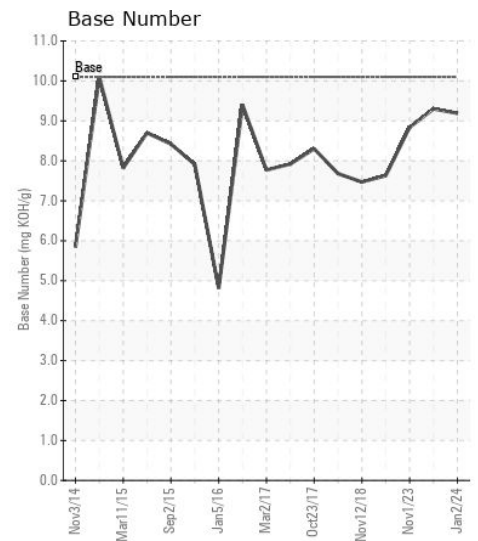
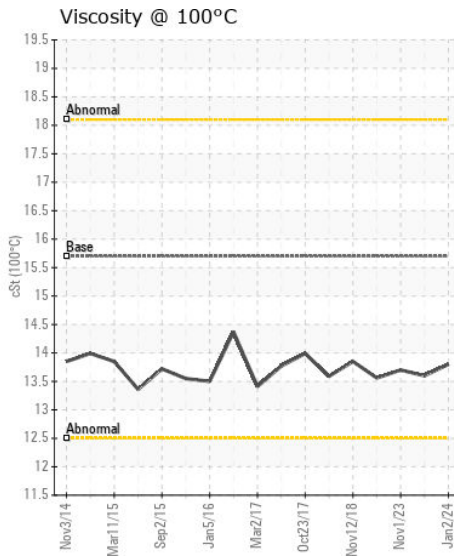
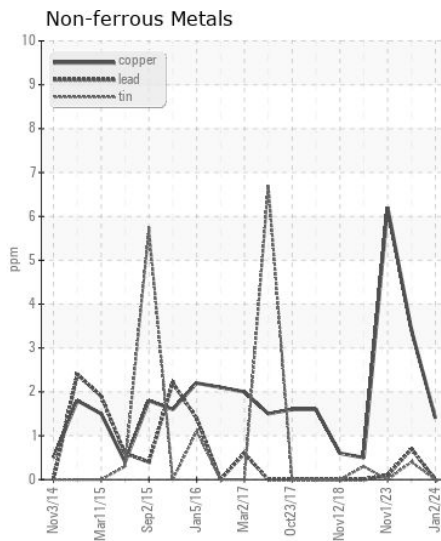
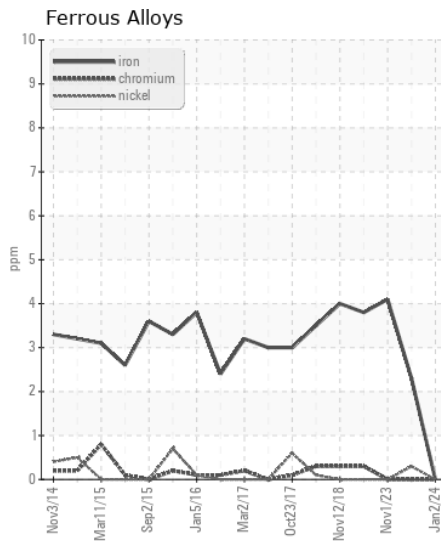
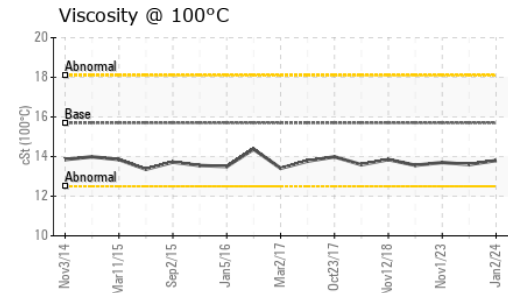
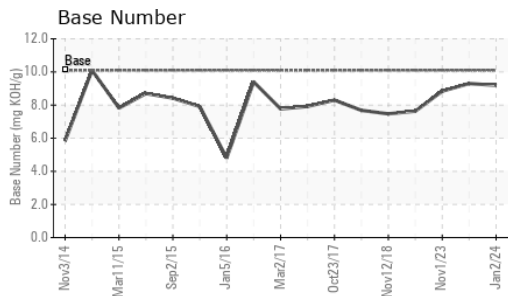
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>20	4	3	3
Potassium	ppm	ASTM D5185m	>20	5	9	7
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	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	5.8	7.4	7.7
Sulfation	Abs/.1mm	*ASTM D7415	>30	19.7	20.2	20.6
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	2	2
Boron	ppm	ASTM D5185m	316	181	181	174
Barium	ppm	ASTM D5185m	0.0	0	0	0
Molybdenum	ppm	ASTM D5185m	1.2	5	6	7
Manganese	ppm	ASTM D5185m		2	<1	0
Magnesium	ppm	ASTM D5185m	24	36	32	39
Calcium	ppm	ASTM D5185m	2292	2044	2120	2090
Phosphorus	ppm	ASTM D5185m	1064	935	979	991
Zinc	ppm	ASTM D5185m	1160	1117	1172	1200
Sulfur	ppm	ASTM D5185m	4996	3283	3538	3657
Oxidation	Abs/.1mm	*ASTM D7414	>25	16.1	17.1	17.6
Base Number (BN)	mg KOH/g	ASTM D2896	10.1	9.19	9.30	8.84
Visc @ 100°C	cSt	ASTM D445	15.7	13.8	13.6	13.7



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW0061656 **Received** : 16 Jan 2024
Lab Number : 06062167 **Diagnosed** : 18 Jan 2024
Unique Number : 10833549 **Diagnostician** : Wes Davis
Test Package : MAR 2

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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