



# OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id  
**MORBARK 002060**  
Component  
**Diesel Engine**  
Fluid  
**CASTROL VECTON 15W40 CK4 (10 GAL)**

## RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>WC0856126</b>	WC0724613	WC0701020
Sample Date		Client Info		<b>10 Apr 2024</b>	08 Aug 2023	21 Oct 2022
Machine Age	hrs	Client Info		<b>3866</b>	3386	3223
Oil Age	hrs	Client Info		<b>480</b>	163	242
Filter Age	hrs	Client Info		<b>480</b>	163	242
Oil Changed		Client Info		<b>Changed</b>	Changed	Changed
Filter Changed		Client Info		<b>Changed</b>	Changed	Changed
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

## WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	<b>20</b>	7	14
Chromium	ppm	ASTM D5185m	>20	<b>&lt;1</b>	<1	<1
Nickel	ppm	ASTM D5185m	>4	<b>&lt;1</b>	0	0
Titanium	ppm	ASTM D5185m		<b>&lt;1</b>	<1	0
Silver	ppm	ASTM D5185m	>3	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>20	<b>3</b>	2	3
Lead	ppm	ASTM D5185m	>40	<b>7</b>	<1	3
Copper	ppm	ASTM D5185m	>330	<b>6</b>	8	10
Tin	ppm	ASTM D5185m	>15	<b>2</b>	<1	<1
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	<1	0
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

## CONTAMINATION

There is no indication of any contamination in the oil.

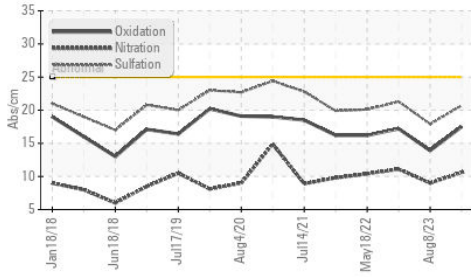
Silicon	ppm	ASTM D5185m	>25	<b>6</b>	4	5
Potassium	ppm	ASTM D5185m	>20	<b>3</b>	0	3
Fuel	%	ASTM D3524	>5	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.2	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.2</b>	0.1	0.2
Nitration	Abs/cm	*ASTM D7624	>20	<b>10.6</b>	9.0	11.1
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>20.7</b>	17.9	21.3
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	LIGHT	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	<b>NEG</b>	NEG	NEG

## FLUID CONDITION

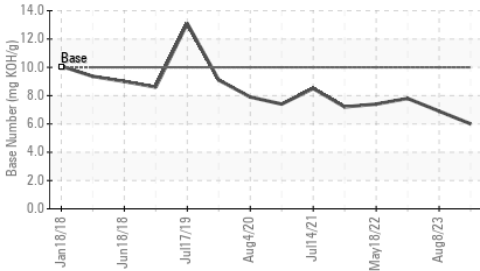
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m		<b>3</b>	2	0
Boron	ppm	ASTM D5185m		<b>40</b>	74	40
Barium	ppm	ASTM D5185m		<b>0</b>	0	2
Molybdenum	ppm	ASTM D5185m		<b>84</b>	89	87
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m		<b>87</b>	106	94
Calcium	ppm	ASTM D5185m		<b>2161</b>	2136	2120
Phosphorus	ppm	ASTM D5185m		<b>1042</b>	1038	968
Zinc	ppm	ASTM D5185m		<b>1159</b>	1226	1164
Sulfur	ppm	ASTM D5185m		<b>3855</b>	4325	3818
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>17.5</b>	13.9	17.2
Base Number (BN)	mg KOH/g	ASTM D2896	10	<b>6.0</b>	6.9	7.8
Visc @ 100°C	cSt	ASTM D445	15.5	<b>12.4</b>	12.9	12.7

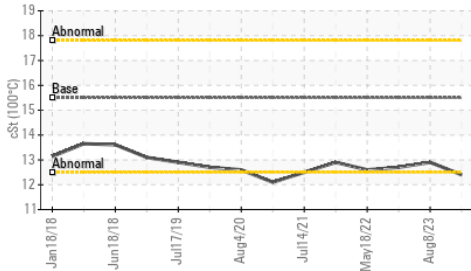
**FT-IR (Direct Trend)**



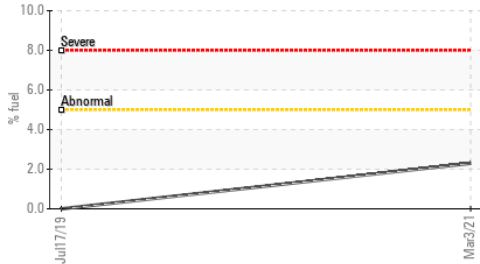
**Base Number**



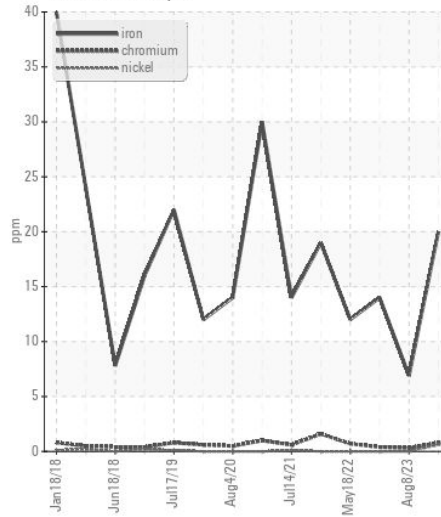
**Viscosity @ 100°C**



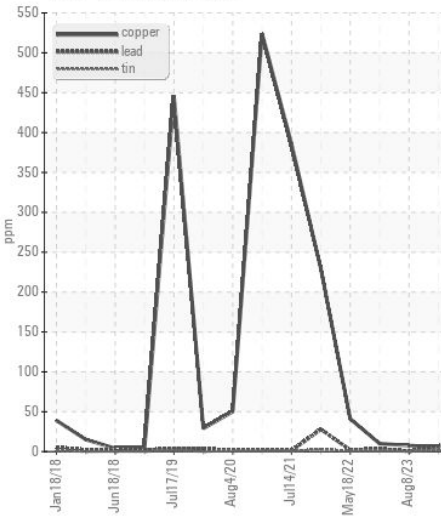
**Fuel Dilution**



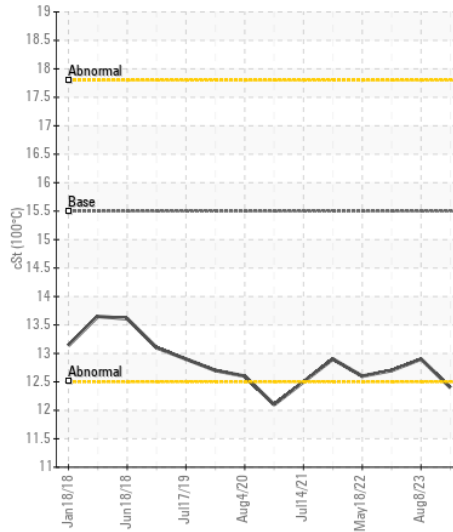
**Ferrous Alloys**



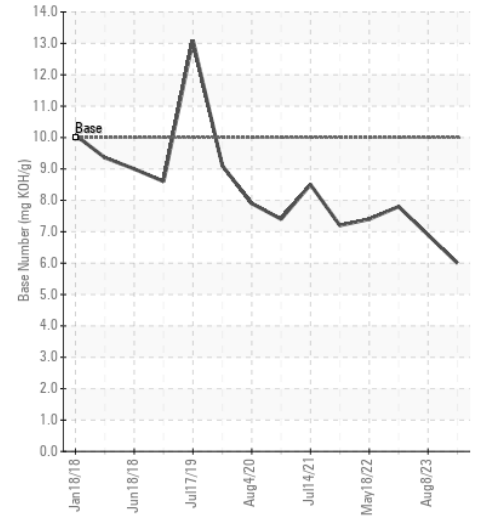
**Non-ferrous Metals**



**Viscosity @ 100°C**



**Base Number**



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : WC0856126 **Received** : 12 Apr 2024  
**Lab Number** : 06147948 **Tested** : 15 Apr 2024  
**Unique Number** : 10978026 **Diagnosed** : 15 Apr 2024 - Jonathan Hester  
**Test Package** : CONST ( Additional Tests: FuelDilution, TBN )

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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