

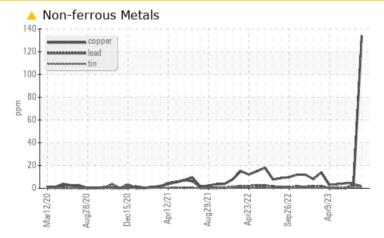
PROBLEM SUMMARY

Marathon Machine Id [Marathon] Oil - Starboard Main Engine

Starboard Main Engine

DIESEL ENGINE OIL SAE 15W40 (150 GAL)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

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

PROBLEMATIC TEST RESULTS								
Sample Status				ABNORMAL	NORMAL	NORMAL		
Copper	ppm	ASTM D5185m	>80	<u> </u>	5	4		

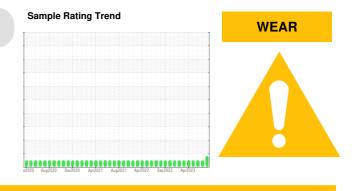
Customer Id: MARCAT Sample No.: WC0769278 Lab Number: 05967934 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data: Don Baldridge +1 <u>don.b505@comcast.net</u>

To change component or sample information: Customer Service +1 1-800-237-1369 <u>customerservice@wearcheck.com</u>



RECOMMENDED ACTIONS

There are no recommended actions for this sample.

HISTORICAL DIAGNOSIS

27 Aug 2023 Diag: Doug Bogart





Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.All

component wear rates are normal. Fuel content negligible. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

27 Jun 2023 Diag: Sean Felton



Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

07 May 2023 Diag: Jonathan Hester



Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



view report

view report





OIL ANALYSIS REPORT

Area Marathon [Marathon] Oil - Starboard Main Engine

Starboard Main Engine

DIESEL ENGINE OIL SAE 15W40 (150 GAL)

DIAGNOSIS

A Recommendation

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

🔺 Wear

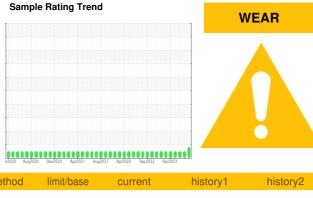
The copper level is abnormal. Elemental level of copper (Cu) probably due to leaching of copper from copper components (i.e. cooling core) by the oil additives. All other component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

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.



Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >75 10 24 6 Chromium ppm ASTM D5185m >2 0 0 0 Nickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >15 1 3 <1 1 Lead ppm ASTM D5185m >14 1 1 <1 0 Copper ppm ASTM D5185m >80 A 134 5 4 1 1 <1 1 <1 1 <1 0 0 0 0 0 0 0 0 0 0	n 2023 ed	27 Jun 1822 999	27 Aug 2023 2866			Client Info		
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Boron ppm ASTM D5185m 250 116 216 135 Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 67 107 47 Manganese ppm ASTM D5185m 100 67 107 47 Magnesium ppm ASTM D5185m 100 682 821 633 Calcium ppm ASTM D5185m 450 682 821 633 Calcium ppm ASTM D5185m 3000 1668 2008 1764 Phosphorus ppm ASTM D5185m 1350 1120 1019 1128 Sulfur ppm ASTM D5185m 1350 1120 1019 1128 Solicon ppm ASTM D5185m >20 3 5 3 Solicon ppm ASTM D5185m >20 3 <1	0	<1.0 NEO 6 <1 0 1 0 <1 0 <1 0 4 <1	0.5 NEG history1 24 <1 0 2 0 2 0 3 3 3 5 1	<1.0 NEG 10 <1 0 <1 0 <1 0 1 2 2 134 1	>4.0 limit/base >75 >8 >2 >3 >2 >15 >18 >80	WC Method WC Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	ppm ppm ppm ppm ppm ppm ppm ppm ppm	Fuel Glycol WEAR METALS Iron Chromium Chromium Nickel Titanium Silver Aluminum Lead Copper Tin



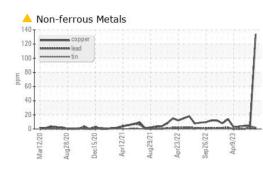
Mar12/20

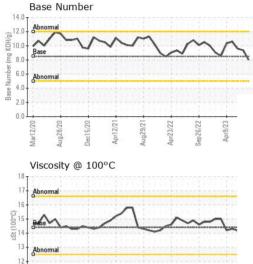
Aug 28/20

Dec15/20

Apr12/21

OIL ANALYSIS REPORT



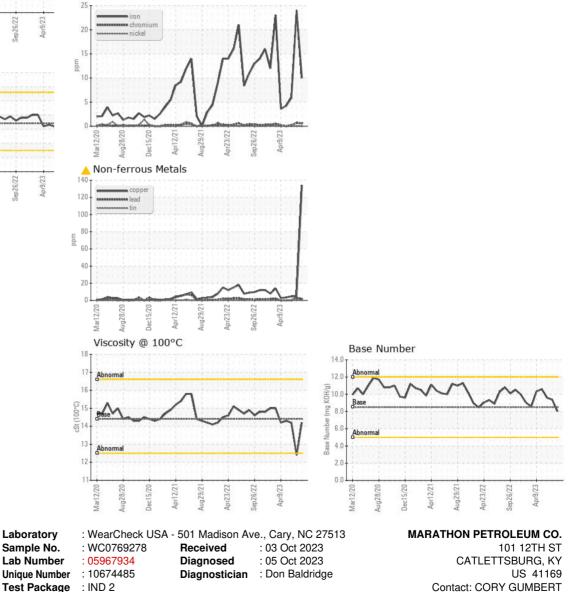


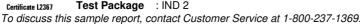
Apr23/22

Sep26/22

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
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
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPER	FIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	14.2	12.4	14.2
GRAPHS						

Ferrous Alloys





* - 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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