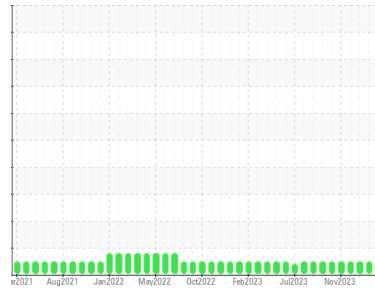




# OIL ANALYSIS REPORT

Sample Rating Trend



## VISCOSITY



Area

**Findlay**

Machine Id

**[Findlay] Oil - Starboard Genset**

Component

**Starboard Genset**

Fluid

**MARATHON 15W40 (8 GAL)**

### DIAGNOSIS

#### ▲ Recommendation

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

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

#### ▲ Fluid Condition

The oil viscosity is higher than normal. The BN result indicates that there is suitable alkalinity remaining in the oil.

### SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>WC0874733</b>	WC0859878	WC0859885
Sample Date	Client Info		<b>19 Mar 2024</b>	23 Feb 2024	24 Jan 2024
Machine Age	hrs	Client Info	<b>10172</b>	9589	9385
Oil Age	hrs	Client Info	<b>3348</b>	2765	2561
Oil Changed	Client Info		<b>Filtered</b>	Not Changd	Filtered
Sample Status			<b>ABNORMAL</b>	NORMAL	NORMAL

### CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>4.0	<b>&lt;1.0</b>	<1.0	<1.0
Glycol	WC Method		<b>NEG</b>	NEG	NEG

### WEAR METALS

	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>50	<b>17</b>	11	9
Chromium	ppm	ASTM D5185m	>4	<b>&lt;1</b>	0	<1
Nickel	ppm	ASTM D5185m	>2	<b>0</b>	0	0
Titanium	ppm	ASTM D5185m		<b>0</b>	0	<1
Silver	ppm	ASTM D5185m	>5	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>12	<b>1</b>	0	<1
Lead	ppm	ASTM D5185m	>17	<b>0</b>	0	<1
Copper	ppm	ASTM D5185m	>70	<b>3</b>	3	<1
Tin	ppm	ASTM D5185m	>15	<b>&lt;1</b>	0	0
Vanadium	ppm	ASTM D5185m		<b>0</b>	0	0
Cadmium	ppm	ASTM D5185m		<b>0</b>	0	0

### ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		<b>26</b>	22	21
Barium	ppm	ASTM D5185m		<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>52</b>	48	53
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	0	<1
Magnesium	ppm	ASTM D5185m		<b>1265</b>	1319	1357
Calcium	ppm	ASTM D5185m		<b>1372</b>	1433	1304
Phosphorus	ppm	ASTM D5185m		<b>1077</b>	964	1045
Zinc	ppm	ASTM D5185m		<b>1282</b>	1254	1303
Sulfur	ppm	ASTM D5185m		<b>3598</b>	3553	3261

### CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>25	<b>3</b>	2	3
Sodium	ppm	ASTM D5185m		<b>6</b>	3	4
Potassium	ppm	ASTM D5185m	>20	<b>1</b>	0	0
Water	%	ASTM D6304	>0.1	<b>NEG</b>	NEG	NEG

### INFRA-RED

	method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844		<b>0.3</b>	0.3	0.2
Nitration	Abs/cm	*ASTM D7624	>20	<b>16.5</b>	14.5	13.4
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>28.3</b>	25.3	24.1

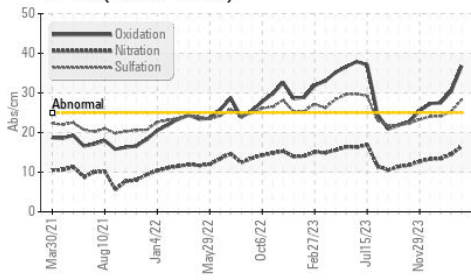
### FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>36.8</b>	30.4	27.5
Base Number (BN)	mg KOH/g	ASTM D2896		<b>8.03</b>	9.34	9.98

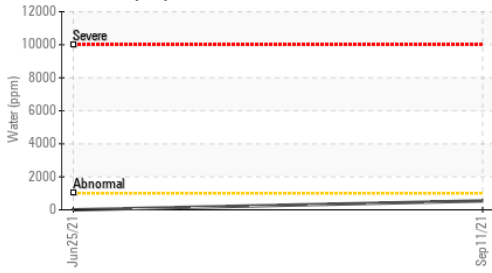


# OIL ANALYSIS REPORT

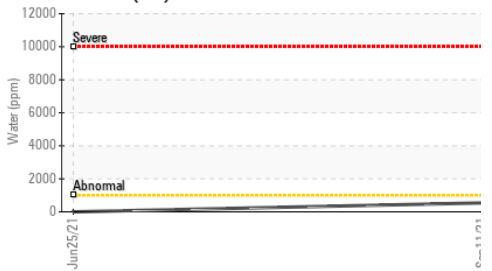
FT-IR (Direct Trend)



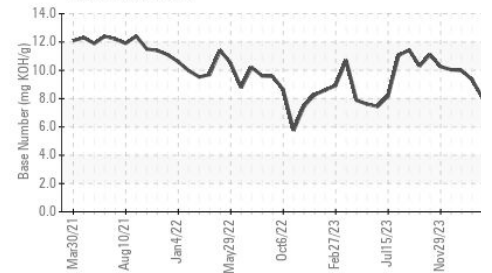
Water (KF)



Water (KF)



Base Number

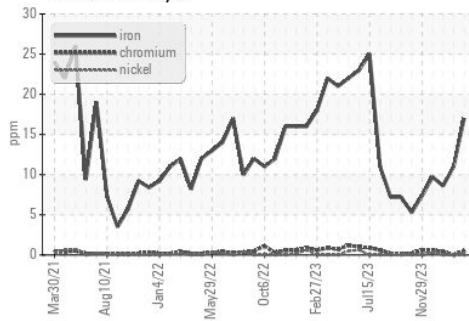


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

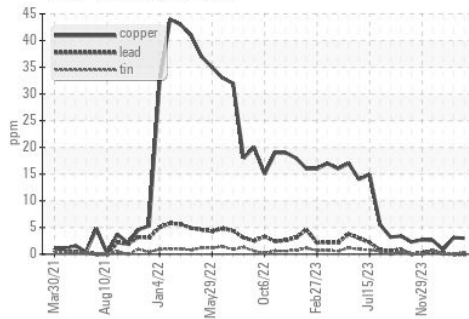
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	▲ 17.2	15.8	15.2

## GRAPHS

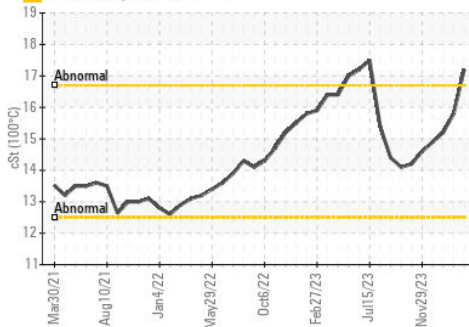
Ferrous Alloys



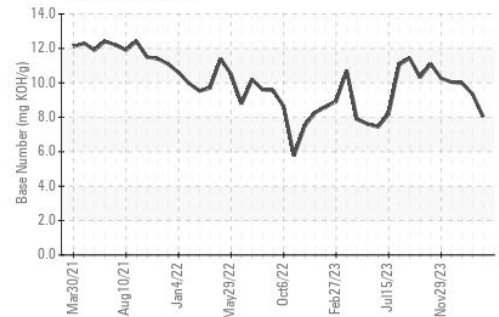
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

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

Sample No. : WC0874733

Lab Number : 06140123

Unique Number : 10964931

Test Package : IND 2 ( Additional Tests: KF )

Received : 05 Apr 2024

Tested : 09 Apr 2024

Diagnosed : 09 Apr 2024 - Sean Felton

MARATHON PETROLEUM CO.

101 12TH ST

CATLETTSBURG, KY

US 41169

Contact: SHAWN MCCLASKEY

stmccclaskey@marathonpetroleum.com

T: (606)739-2416

F: x:

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)