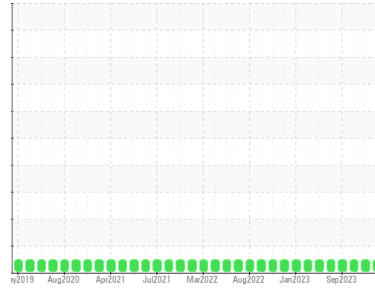




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Area

**Marathon**

Machine Id

**[Marathon] Oil - Starboard Reduction Gear**

Component

**Starboard Reduction Gear**

Fluid

**Reduction Gear Oil (35 GAL)**

## DIAGNOSIS

### Recommendation

( Customer Sample Comment: Chris comuzie )

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number	Client Info			<b>WC0846115</b>	WC0846099	WC0846107
Sample Date	Client Info			<b>31 Mar 2024</b>	12 Feb 2024	13 Dec 2023
Machine Age	hrs	Client Info		<b>7958</b>	6031	4903
Oil Age	hrs	Client Info		<b>6778</b>	6031	4903
Oil Changed	Client Info			<b>Filtered</b>	Filtered	Filtered
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>150	<b>37</b>	39	18
Chromium	ppm	ASTM D5185m	>10	<b>&lt;1</b>	0	0
Nickel	ppm	ASTM D5185m	>10	<b>0</b>	0	0
Titanium	ppm	ASTM D5185m		<b>0</b>	0	<1
Silver	ppm	ASTM D5185m		<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>25	<b>&lt;1</b>	<1	2
Lead	ppm	ASTM D5185m	>100	<b>0</b>	0	<1
Copper	ppm	ASTM D5185m	>50	<b>14</b>	18	17
Tin	ppm	ASTM D5185m	>10	<b>&lt;1</b>	0	0
Vanadium	ppm	ASTM D5185m		<b>0</b>	0	0
Cadmium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0

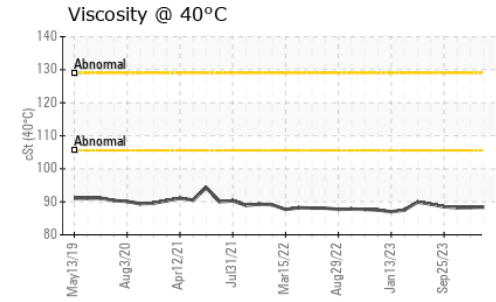
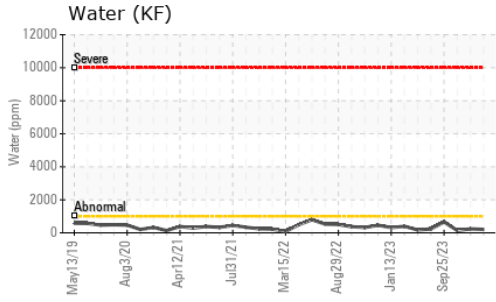
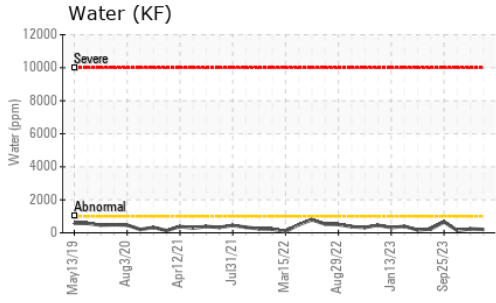
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		<b>5</b>	6	4
Barium	ppm	ASTM D5185m		<b>&lt;1</b>	0	6
Molybdenum	ppm	ASTM D5185m		<b>45</b>	50	51
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	0
Magnesium	ppm	ASTM D5185m		<b>627</b>	678	680
Calcium	ppm	ASTM D5185m		<b>908</b>	1011	944
Phosphorus	ppm	ASTM D5185m		<b>779</b>	822	895
Zinc	ppm	ASTM D5185m		<b>889</b>	921	965
Sulfur	ppm	ASTM D5185m		<b>2725</b>	2635	2973

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	<b>2</b>	2	3
Sodium	ppm	ASTM D5185m		<b>3</b>	4	2
Potassium	ppm	ASTM D5185m	>20	<b>4</b>	2	5
Water	%	ASTM D6304	>0.1	<b>0.020</b>	0.023	0.014
ppm Water	ppm	ASTM D6304	>1000	<b>208</b>	239	144

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		<b>1.22</b>	1.22	1.12



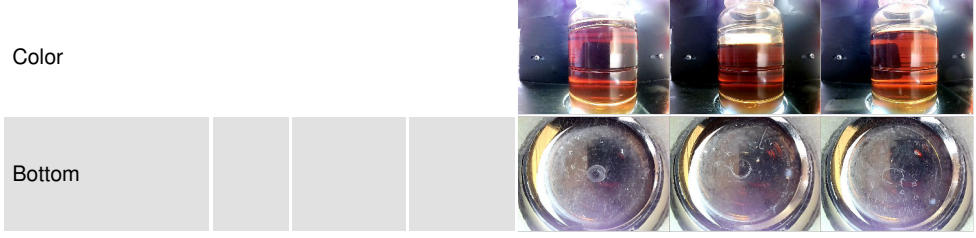
# OIL ANALYSIS REPORT



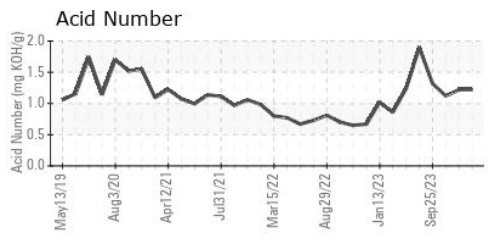
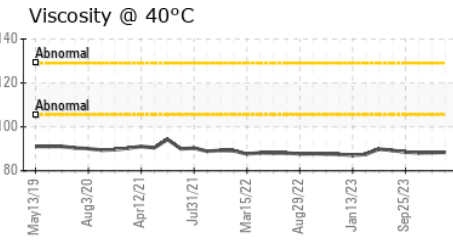
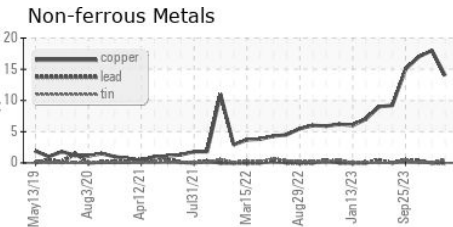
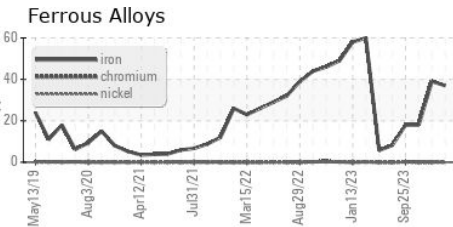
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	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 @ 40°C	cSt	ASTM D445	<b>88.4</b>	88.3	88.2

SAMPLE IMAGES	method	limit/base	current	history1	history2
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## GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : WC0846115      **Received** : 23 Apr 2024  
**Lab Number** : **06157772**      **Tested** : 24 Apr 2024  
**Unique Number** : 10993195      **Diagnosed** : 25 Apr 2024 - Don Baldrige  
**Test Package** : IND 2 ( Additional Tests: KF )

**MARATHON PETROLEUM CO.**  
 101 12TH ST  
 CATLETTSBURG, KY  
 US 41169  
 Contact: CORY GUMBERT  
 cagumbert@marathonpetroleum.com

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)