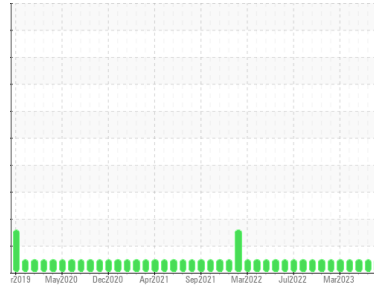




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Area  
**Galveston Bay**  
 Machine Id  
**[Galveston Bay] Oil - Starboard Main Engine**  
 Component  
**Starboard Main Engine**  
 Fluid  
**DIESEL ENGINE OIL SAE 15W40 (150 GAL)**

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: Top Up Amount: 1 GAL )

### Wear

All 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.

## SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>WC0735525</b>	WC0805197	WC0769420
Sample Date	Client Info		<b>08 Nov 2023</b>	10 Oct 2023	20 Jun 2023
Machine Age	hrs	Client Info	<b>10617</b>	10185	8421
Oil Age	hrs	Client Info	<b>8297</b>	7862	6102
Oil Changed	Client Info		<b>Oil Added</b>	N/A	Filtered
Sample Status			<b>NORMAL</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 >75	<b>30</b>	32	28
Chromium	ppm	ASTM D5185m >8	<b>&lt;1</b>	<1	1
Nickel	ppm	ASTM D5185m >2	<b>0</b>	<1	<1
Titanium	ppm	ASTM D5185m >3	<b>&lt;1</b>	<1	<1
Silver	ppm	ASTM D5185m >2	<b>0</b>	0	<1
Aluminum	ppm	ASTM D5185m >15	<b>1</b>	2	0
Lead	ppm	ASTM D5185m >18	<b>8</b>	8	10
Copper	ppm	ASTM D5185m >80	<b>6</b>	6	6
Tin	ppm	ASTM D5185m >14	<b>&lt;1</b>	1	1
Vanadium	ppm	ASTM D5185m	<b>0</b>	0	0
Cadmium	ppm	ASTM D5185m	<b>0</b>	0	<1

## ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m 250	<b>33</b>	40	42
Barium	ppm	ASTM D5185m 10	<b>0</b>	0	4
Molybdenum	ppm	ASTM D5185m 100	<b>34</b>	41	39
Manganese	ppm	ASTM D5185m	<b>&lt;1</b>	<1	1
Magnesium	ppm	ASTM D5185m 450	<b>1050</b>	1103	1193
Calcium	ppm	ASTM D5185m 3000	<b>1395</b>	1479	1576
Phosphorus	ppm	ASTM D5185m 1150	<b>880</b>	1039	972
Zinc	ppm	ASTM D5185m 1350	<b>1147</b>	1203	1228
Sulfur	ppm	ASTM D5185m 4250	<b>2965</b>	4018	3777

## CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >20	<b>3</b>	4	3
Sodium	ppm	ASTM D5185m >158	<b>2</b>	1	3
Potassium	ppm	ASTM D5185m >20	<b>1</b>	4	4

## INFRA-RED

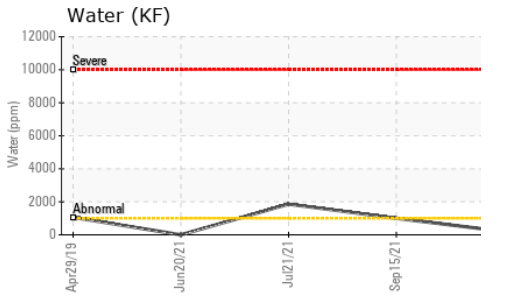
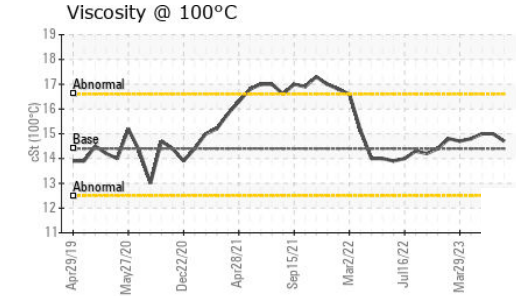
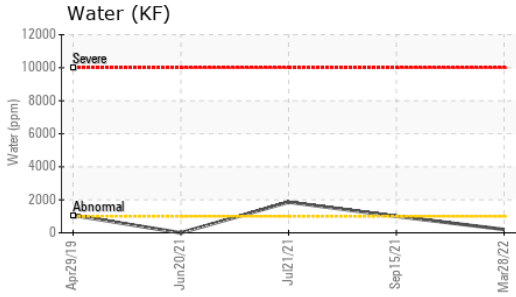
	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	<b>0.3</b>	0.3	0.3
Nitration	Abs/cm	*ASTM D7624 >20	<b>12.1</b>	11.9	11.4
Sulfation	Abs/.1mm	*ASTM D7415 >30	<b>26.0</b>	25.1	25.4

## FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414 >25	<b>25.3</b>	24.0	24.8
Base Number (BN)	mg KOH/g	ASTM D2896 8.5	<b>9.30</b>	7.81	5.20



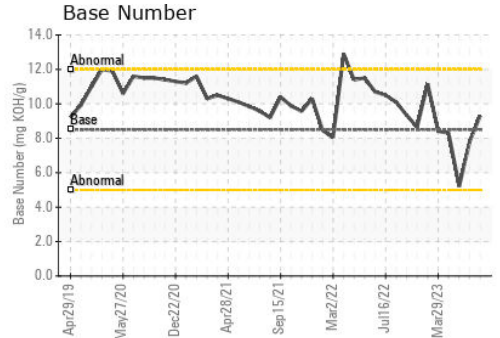
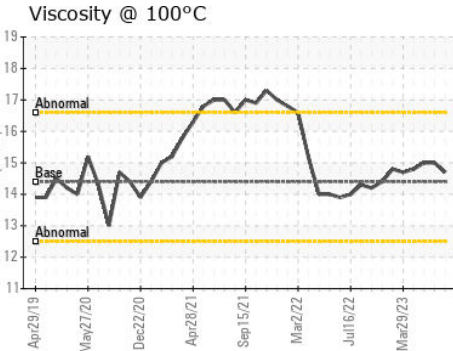
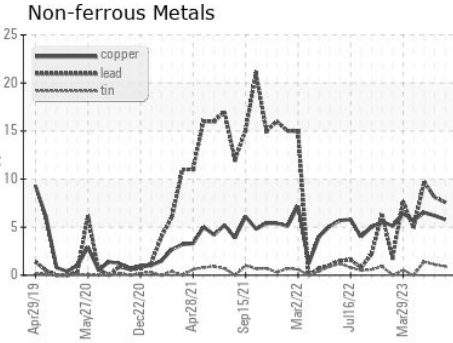
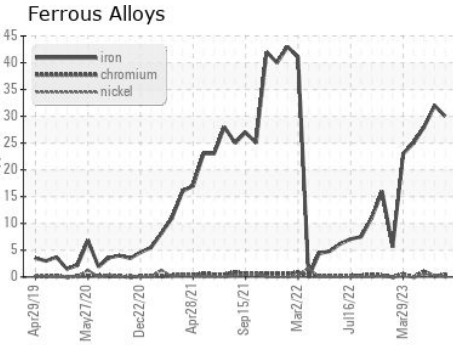
# OIL ANALYSIS REPORT



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 @ 100°C	cSt	ASTM D445	14.4	<b>14.7</b>	15.0	15.0

### GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : WC0735525 **Received** : 15 Nov 2023  
**Lab Number** : **06008547** **Diagnosed** : 17 Nov 2023  
**Unique Number** : 10742309 **Diagnostician** : Sean Felton  
**Test Package** : IND 2 ( Additional Tests: KF )

**MARATHON PETROLEUM CO.**  
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 US 41169  
 Contact: SHAWN MCCLASKEY  
 stmccclaskey@marathonpetroleum.com  
 T: (606)739-2416  
 F: x:

Certificate L2367  
 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)