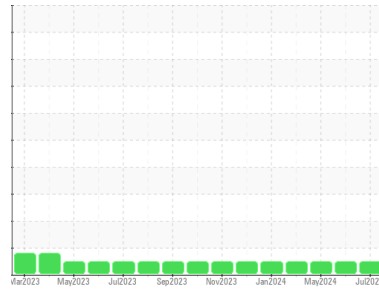




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Area

**Huntington**

Machine Id

**[Huntington] Oil - Starboard Genset**

Component

**Starboard Genset**

Fluid

**DIESEL ENGINE OIL SAE 15W40 (5 GAL)**

## DIAGNOSIS

### Recommendation

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 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>WC0874588</b>	WC0898321	WC0874556
Sample Date	Client Info		<b>02 Jul 2024</b>	09 Jun 2024	08 May 2024
Machine Age	hrs	Client Info	<b>20190</b>	19771	19602
Oil Age	hrs	Client Info	<b>0</b>	0	0
Oil Changed	Client Info		<b>Not Changed</b>	Not Changed	Not Changed
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	>50	<b>70</b>	56	65
Chromium	ppm	ASTM D5185m	>4	<b>2</b>	2	2
Nickel	ppm	ASTM D5185m	>2	<b>0</b>	1	2
Titanium	ppm	ASTM D5185m		<b>0</b>	<1	<1
Silver	ppm	ASTM D5185m	>5	<b>0</b>	0	<1
Aluminum	ppm	ASTM D5185m	>12	<b>2</b>	4	4
Lead	ppm	ASTM D5185m	>17	<b>19</b>	18	22
Copper	ppm	ASTM D5185m	>70	<b>6</b>	5	7
Tin	ppm	ASTM D5185m	>15	<b>0</b>	<1	2
Vanadium	ppm	ASTM D5185m		<b>0</b>	<1	<1
Cadmium	ppm	ASTM D5185m		<b>0</b>	<1	<1

## ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m	250	<b>10</b>	15	16
Barium	ppm	ASTM D5185m	10	<b>0</b>	0	<1
Molybdenum	ppm	ASTM D5185m	100	<b>81</b>	77	83
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	1
Magnesium	ppm	ASTM D5185m	450	<b>1506</b>	1449	1422
Calcium	ppm	ASTM D5185m	3000	<b>1465</b>	1289	1391
Phosphorus	ppm	ASTM D5185m	1150	<b>1079</b>	965	1039
Zinc	ppm	ASTM D5185m	1350	<b>1315</b>	1257	1300
Sulfur	ppm	ASTM D5185m	4250	<b>3517</b>	2942	3164

## CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>25	<b>7</b>	8	8
Sodium	ppm	ASTM D5185m	>158	<b>11</b>	9	9
Potassium	ppm	ASTM D5185m	>20	<b>&lt;1</b>	2	3
Water	%	ASTM D6304	>0.1	<b>NEG</b>	NEG	NEG

## INFRA-RED

	method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844		<b>1.1</b>	0.3	0.9
Nitration	Abs/cm	*ASTM D7624	>20	<b>14.0</b>	10.4	12.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>27.1</b>	23.2	25.6

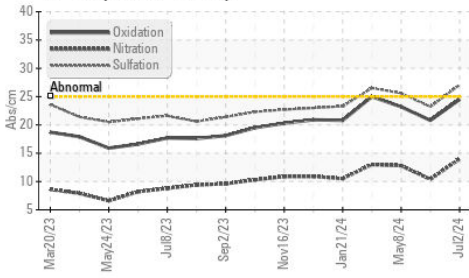
## FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>24.5</b>	20.8	23.2
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	<b>9.55</b>	9.54	9.50

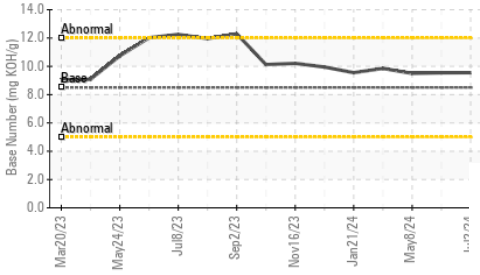


# OIL ANALYSIS REPORT

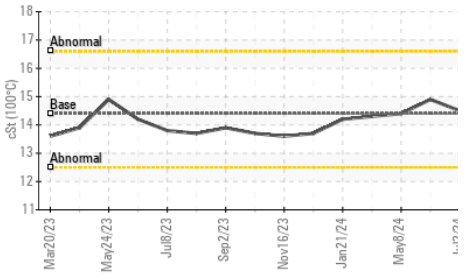
FT-IR (Direct Trend)



Base Number



Viscosity @ 100°C

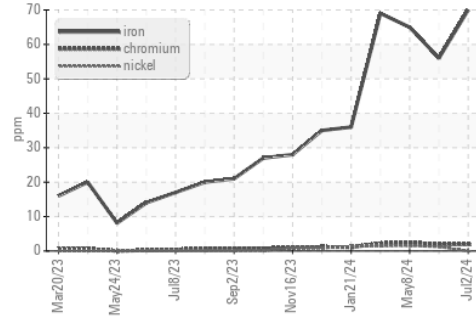


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	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

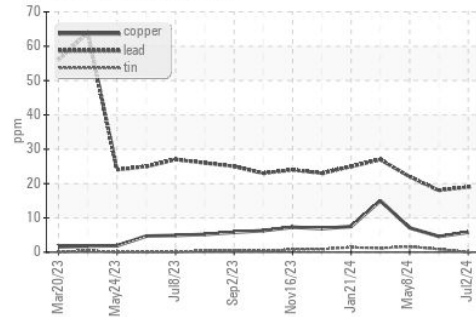
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	14.5	14.9

## GRAPHS

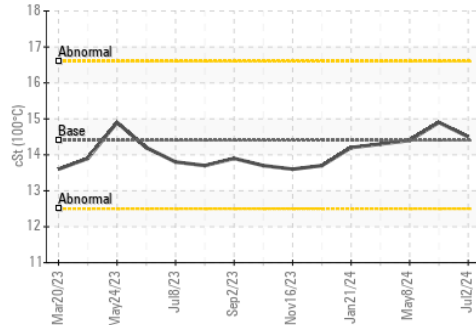
Ferrous Alloys



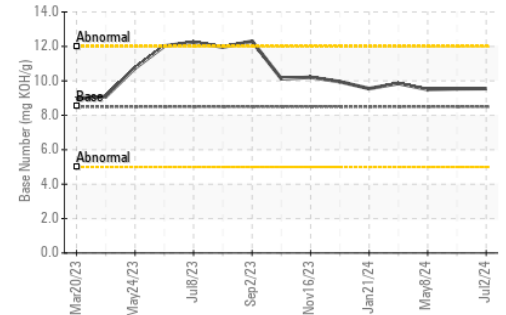
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

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

Sample No. : WC0874588

Lab Number : 06236259

Unique Number : 11125093

Test Package : IND 2 ( Additional Tests: KF )

Received : 15 Jul 2024

Tested : 16 Jul 2024

Diagnosed : 16 Jul 2024 - Sean Felton

MARATHON PETROLEUM CO.

101 12TH ST

CATLETTSBURG, KY

US 41169

Contact: CORY GUMBERT

cagumbert@marathonpetroleum.com

T: (606)585-3950

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)