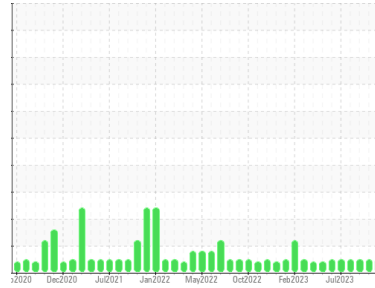




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
Detroit
 Machine Id
[Detroit] Oil - Starboard Genset
 Component
Starboard Genset
 Fluid
MOBIL 15W40 (35 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		WC0804851	WC0769346	WC0769338
Sample Date	Client Info		06 Nov 2023	09 Oct 2023	11 Sep 2023
Machine Age	hrs	Client Info	7612	7351	7023
Oil Age	hrs	Client Info	92	332	4
Oil Changed	Client Info		N/A	Not Changd	N/A
Sample Status			NORMAL	NORMAL	NORMAL

CONTAMINATION

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

WEAR METALS

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

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		80	76	105
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		19	25	23
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		245	276	283
Calcium	ppm	ASTM D5185m		2154	2355	2377
Phosphorus	ppm	ASTM D5185m		351	452	487
Zinc	ppm	ASTM D5185m		493	588	569
Sulfur	ppm	ASTM D5185m		3647	4637	4243

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>25	4	3	6
Sodium	ppm	ASTM D5185m	>118	2	0	1
Potassium	ppm	ASTM D5185m	>20	0	2	<1

INFRA-RED

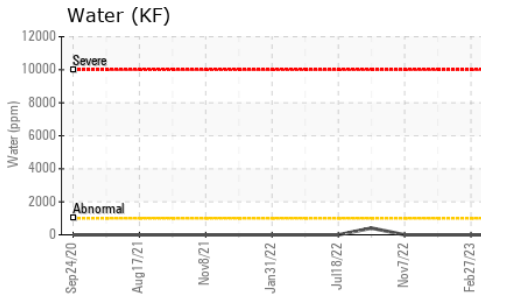
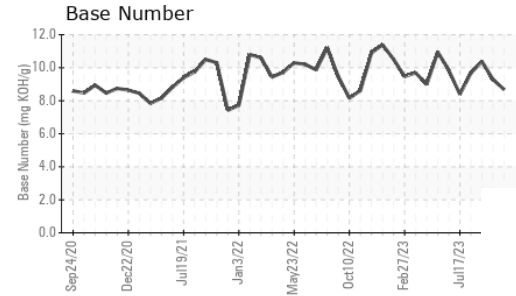
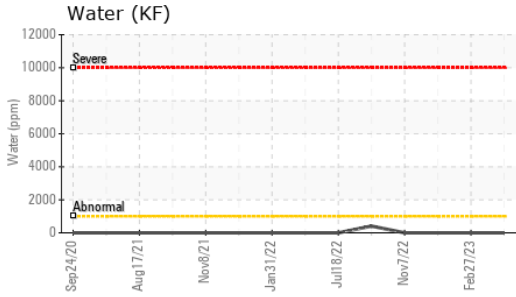
	method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844		0.1	0.2	0.1
Nitration	Abs/cm	*ASTM D7624	>20	7.1	8.9	7.4
Sulfation	Abs/.1mm	*ASTM D7415	>30	20.6	20.3	20.2

FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	*ASTM D7414	>25	14.1	15.9	14.5
Base Number (BN)	mg KOH/g	ASTM D2896		8.68	9.28	10.38



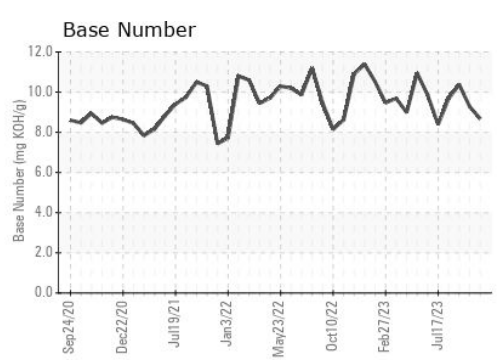
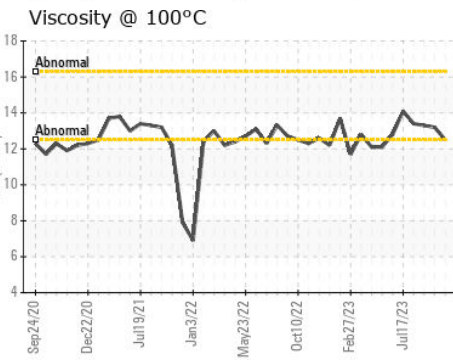
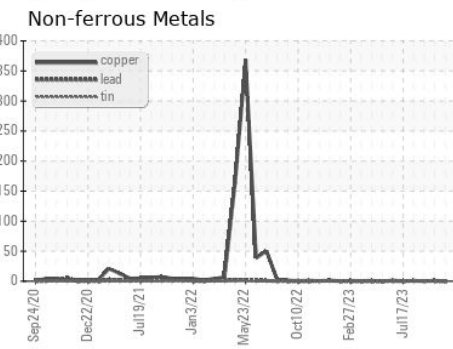
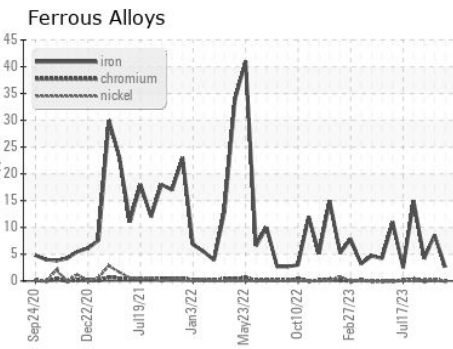
OIL ANALYSIS REPORT



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	12.5	13.2	13.3

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0804851 **Received** : 15 Nov 2023
Lab Number : **06008541** **Diagnosed** : 17 Nov 2023
Unique Number : 10742303 **Diagnostician** : Sean Felton
Test Package : IND 2 (Additional Tests: KF)

MARATHON PETROLEUM CO.
 101 12TH ST
 CATLETTSBURG, KY
 US 41169
 Contact: SHAWN MCCLASKEY
 stmcclasskey@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)