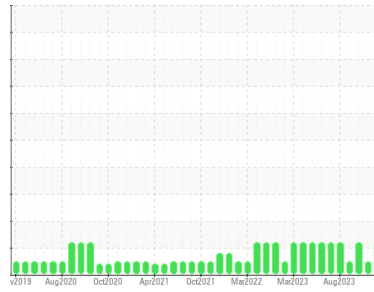




OIL ANALYSIS REPORT

Sample Rating Trend



FUEL



Area

Canton

Machine Id

[Canton] Oil - Starboard Genset

Component

Starboard Genset

Fluid

MARATHON 15W40 (35 GAL)

DIAGNOSIS

Recommendation

We advise that you check the fuel injection system. Resample at the next service interval to monitor. (Customer Sample Comment: Top Up Amount: 4 GAL)

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of fuel present in the oil.

Fluid Condition

Fuel is present in the oil and is lowering the viscosity. 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		WC0805422	WC0805434	WC0769506
Sample Date	Client Info		28 Mar 2024	27 Feb 2024	01 Feb 2024
Machine Age	hrs	Client Info	17688	0	17013
Oil Age	hrs	Client Info	2242	0	1567
Oil Changed	Client Info		Oil Added	N/A	Oil Added
Sample Status			ABNORMAL	NORMAL	ABNORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
Glycol	WC Method		NEG	NEG	NEG

WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >50	4	6	12
Chromium	ppm	ASTM D5185m >4	<1	0	<1
Nickel	ppm	ASTM D5185m >2	0	0	0
Titanium	ppm	ASTM D5185m	0	0	<1
Silver	ppm	ASTM D5185m >5	0	0	0
Aluminum	ppm	ASTM D5185m >12	3	1	2
Lead	ppm	ASTM D5185m >17	0	0	<1
Copper	ppm	ASTM D5185m >70	0	0	<1
Tin	ppm	ASTM D5185m >15	<1	0	0
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	153	149	135
Barium	ppm	ASTM D5185m	0	0	0
Molybdenum	ppm	ASTM D5185m	104	101	115
Manganese	ppm	ASTM D5185m	<1	0	<1
Magnesium	ppm	ASTM D5185m	637	710	715
Calcium	ppm	ASTM D5185m	1325	1388	1462
Phosphorus	ppm	ASTM D5185m	688	676	772
Zinc	ppm	ASTM D5185m	830	861	918
Sulfur	ppm	ASTM D5185m	2934	3285	2850

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >25	5	5	5
Sodium	ppm	ASTM D5185m	4	2	8
Potassium	ppm	ASTM D5185m >20	2	0	0
Fuel	%	ASTM D3524 >4.0	▲ 5.1	1.6	▲ 5.0
Water	%	ASTM D6304 >0.1	NEG	NEG	NEG

INFRA-RED

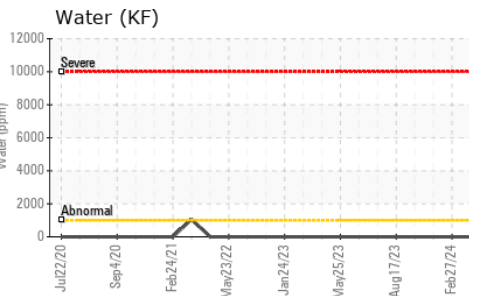
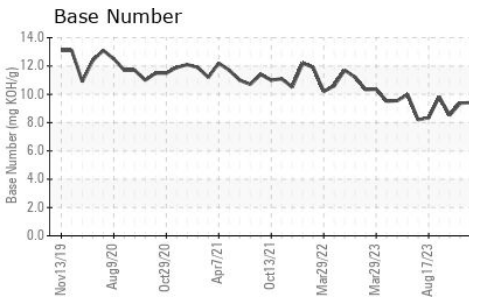
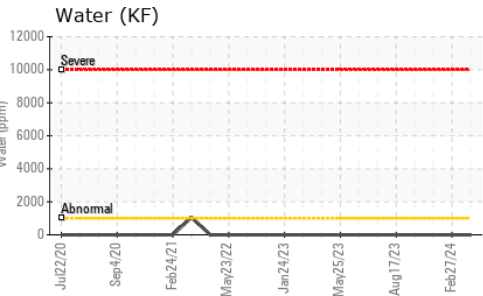
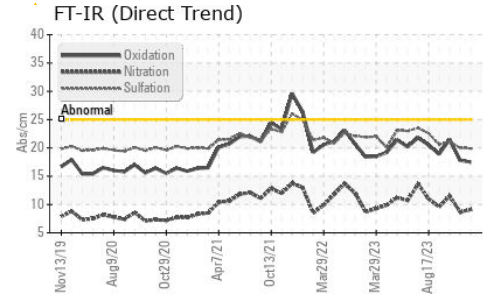
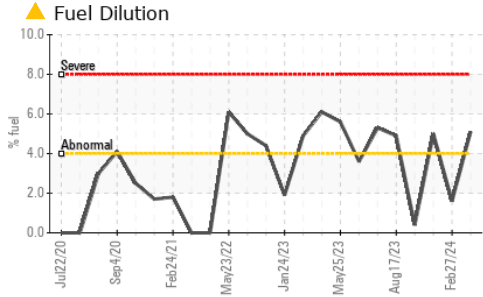
	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	0.1	0.1	0.2
Nitration	Abs/cm	*ASTM D7624 >20	9.1	8.7	11.5
Sulfation	Abs/.1mm	*ASTM D7415 >30	19.9	20.0	21.1

FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414 >25	17.5	17.8	21.5
Base Number (BN)	mg KOH/g	ASTM D2896	9.41	9.37	8.52



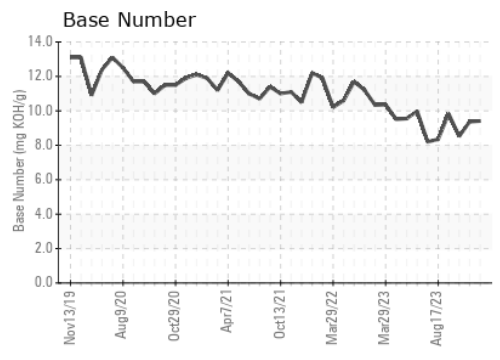
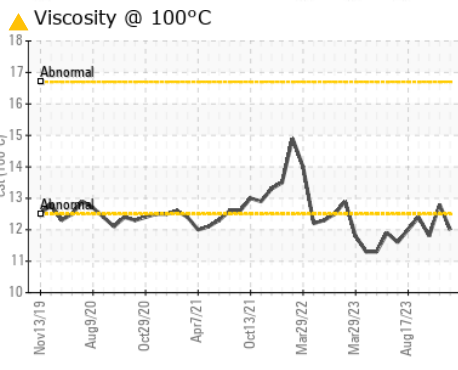
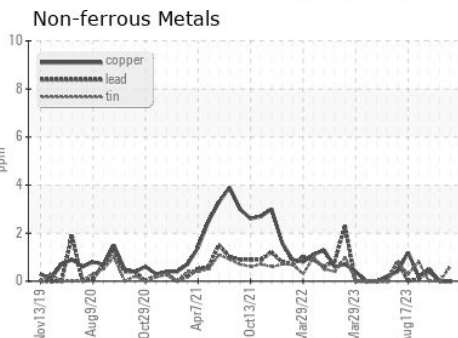
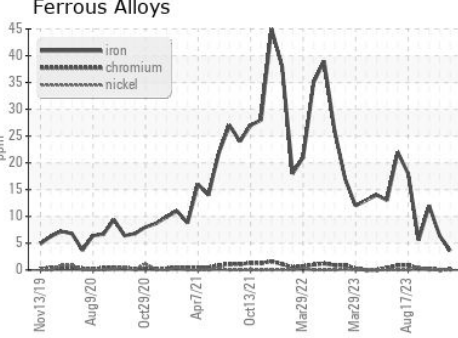
OIL ANALYSIS REPORT



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	▲ 12.0	12.8	▲ 11.8

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0805422 **Received** : 23 Apr 2024
Lab Number : 06157856 **Tested** : 25 Apr 2024
Unique Number : 10993279 **Diagnosed** : 25 Apr 2024 - Sean Felton
Test Package : IND 2 (Additional Tests: FuelDilution, KF, PercentFuel)

MARATHON PETROLEUM CO.
 101 12TH ST
 CATLETTSBURG, KY
 US 41169
 Contact: M/V CANTON
 mvcanton@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)