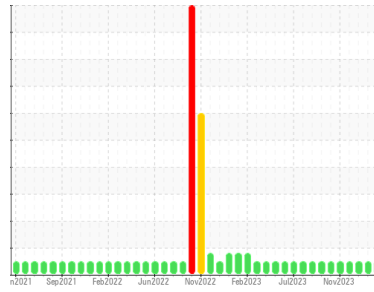




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area

Findlay

Machine Id

[Findlay] Oil - Port Main Engine

Component

Port Main Engine

Fluid

MARATHON 15W40 (220 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	WC0845864	WC0845865	WC0859882	
Sample Date	Client Info	19 Mar 2024	23 Feb 2024	24 Jan 2024	
Machine Age	hrs	Client Info	12609	12040	11389
Oil Age	hrs	Client Info	9422	9053	8391
Oil Changed	Client Info	Filtered	Not Changd	Filtered	
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 >75	13	10	11
Chromium	ppm ASTM D5185m >8	<1	0	<1
Nickel	ppm ASTM D5185m >2	0	0	0
Titanium	ppm ASTM D5185m >3	0	0	<1
Silver	ppm ASTM D5185m >2	0	0	0
Aluminum	ppm ASTM D5185m >15	2	0	1
Lead	ppm ASTM D5185m >18	14	10	12
Copper	ppm ASTM D5185m >80	61	56	53
Tin	ppm ASTM D5185m >14	<1	0	<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	24	29	24
Barium	ppm ASTM D5185m	0	0	0
Molybdenum	ppm ASTM D5185m	48	44	56
Manganese	ppm ASTM D5185m	<1	0	<1
Magnesium	ppm ASTM D5185m	1231	1193	1140
Calcium	ppm ASTM D5185m	1568	1573	1536
Phosphorus	ppm ASTM D5185m	1094	921	1020
Zinc	ppm ASTM D5185m	1349	1242	1276
Sulfur	ppm ASTM D5185m	3240	2911	2788

CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >20	2	2	3
Sodium	ppm ASTM D5185m >75	3	<1	2
Potassium	ppm ASTM D5185m >20	3	<1	2
Water	% ASTM D6304 >0.1	NEG	NEG	NEG

INFRA-RED

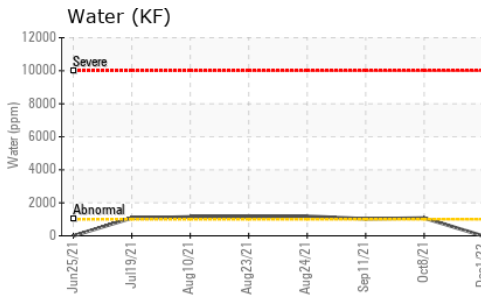
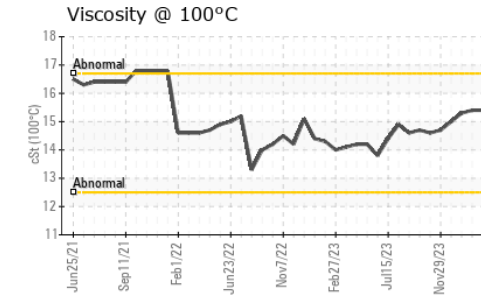
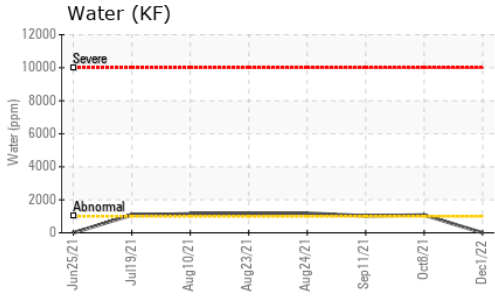
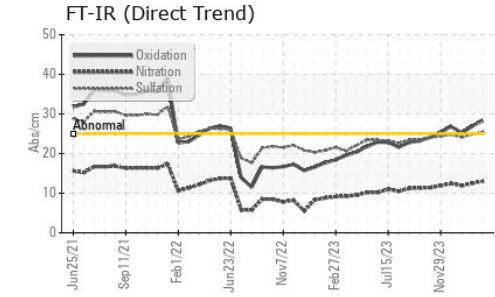
method	limit/base	current	history1	history2
Soot %	% *ASTM D7844	0.1	0.1	0.1
Nitration	Abs/cm *ASTM D7624 >20	13.0	12.5	11.9
Sulfation	Abs/.1mm *ASTM D7415 >30	25.4	24.8	24.1

FLUID DEGRADATION

method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414 >25	28.3	26.9	25.2
Base Number (BN)	mg KOH/g ASTM D2896	7.89	8.53	8.45



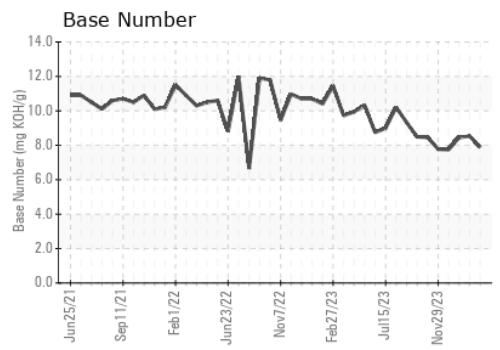
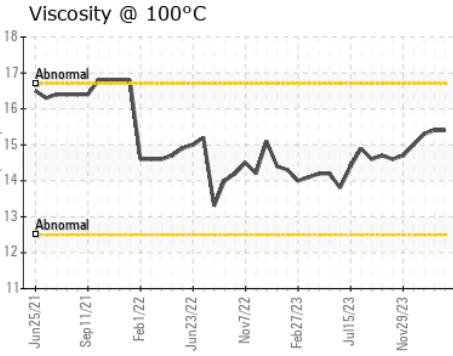
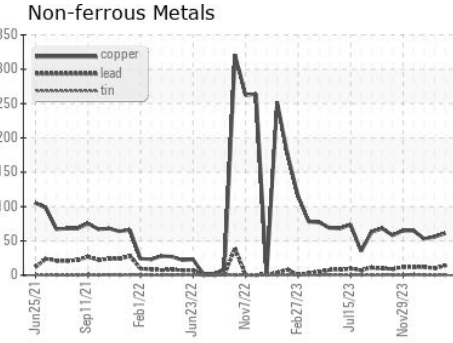
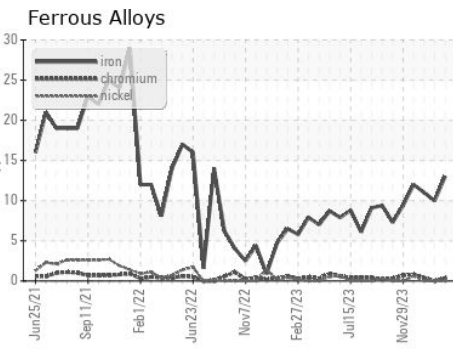
OIL ANALYSIS REPORT



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	15.4	15.4	15.3

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0845864 **Received** : 05 Apr 2024
Lab Number : 06140121 **Tested** : 09 Apr 2024
Unique Number : 10964929 **Diagnosed** : 09 Apr 2024 - Sean Felton
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)