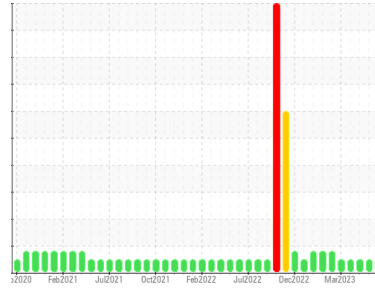




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
Findlay
Machine Id
[Findlay] Oil - Port Main Engine
Component
Port Main Engine
Fluid
MARATHON 15W40 (150 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: C.Kemper)

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		WC0769469	WC0769532	WC0769528
Sample Date	Client Info		15 Jul 2023	15 Jun 2023	23 May 2023
Machine Age	hrs	Client Info	7608	7343	6281
Oil Age	hrs	Client Info	4631	3987	3457
Oil Changed	Client Info		Not Chngd	Filtered	Not Chngd
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	9	8	9
Chromium	ppm	ASTM D5185m	>8	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	<1	<1
Titanium	ppm	ASTM D5185m	>3	<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>15	0	<1	2
Lead	ppm	ASTM D5185m	>18	10	8	8
Copper	ppm	ASTM D5185m	>80	74	68	69
Tin	ppm	ASTM D5185m	>14	1	1	1
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		0	0	<1

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		28	32	32
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		44	43	43
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		1111	1086	1065
Calcium	ppm	ASTM D5185m		1656	1621	1580
Phosphorus	ppm	ASTM D5185m		983	1025	937
Zinc	ppm	ASTM D5185m		1229	1329	1199
Sulfur	ppm	ASTM D5185m		3107	3379	2760

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>20	3	3	3
Sodium	ppm	ASTM D5185m	>75	3	3	3
Potassium	ppm	ASTM D5185m	>20	2	5	3

INFRA-RED

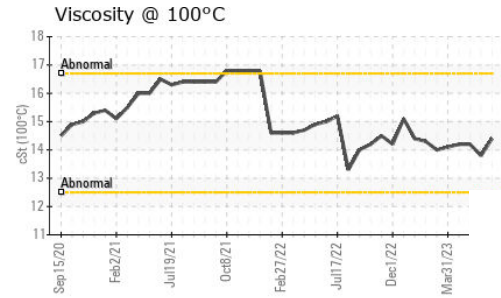
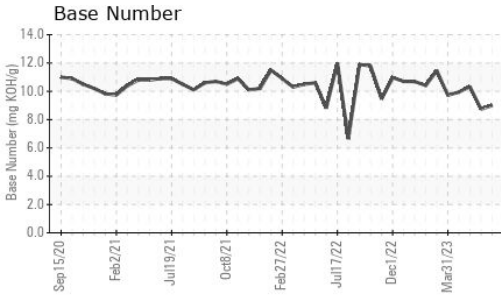
	method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844		0.1	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	11.0	10.2	10.2
Sulfation	Abs/.1mm	*ASTM D7415	>30	23.3	23.4	23.4

FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	*ASTM D7414	>25	22.8	22.9	21.8
Base Number (BN)	mg KOH/g	ASTM D2896		9.00	8.74	10.32



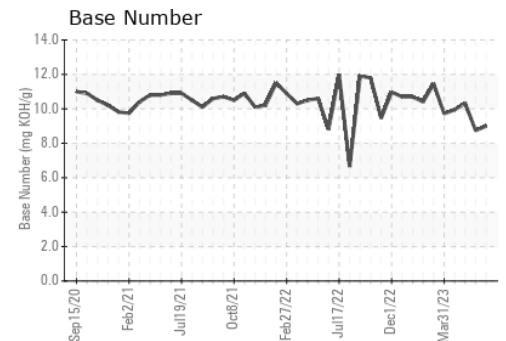
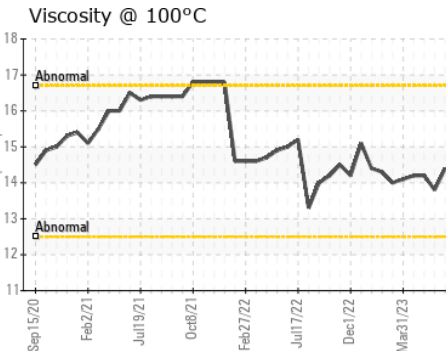
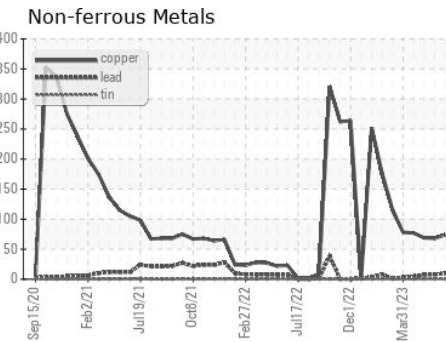
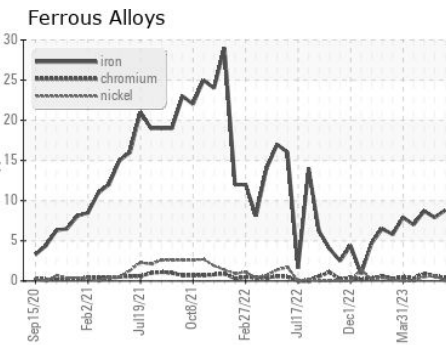
OIL ANALYSIS REPORT



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	13.8	14.2

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
 Sample No. : WC0769469
 Lab Number : 05903427
 Unique Number : 10564783
 Test Package : IND 2

Received : 20 Jul 2023
 Diagnosed : 26 Jul 2023
 Diagnostician : Doug Bogart

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)