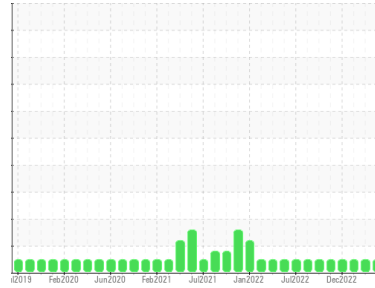




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
Garyville
 Machine Id
[Garyville] Oil - Port Main Engine
 Component
Port Main Engine
 Fluid
SHELL ROTELLA T 15W40 (150 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			WC0805375	WC0805382	WC0683222
Sample Date	Client Info			26 Sep 2023	29 Aug 2023	04 Jul 2023
Machine Age	hrs	Client Info		10732	4665	4665
Oil Age	hrs	Client Info		713	4210	4210
Oil Changed	Client Info			Filtered	Filtered	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	12	12	38
Chromium	ppm	ASTM D5185m	>8	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m	>3	<1	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>15	<1	<1	<1
Lead	ppm	ASTM D5185m	>18	5	5	20
Copper	ppm	ASTM D5185m	>80	8	9	37
Tin	ppm	ASTM D5185m	>14	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	316	75	106	57
Barium	ppm	ASTM D5185m	0.0	0	0	0
Molybdenum	ppm	ASTM D5185m	1.2	20	20	24
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m	24	534	513	526
Calcium	ppm	ASTM D5185m	2292	1653	1745	1620
Phosphorus	ppm	ASTM D5185m	1064	866	865	756
Zinc	ppm	ASTM D5185m	1160	1066	1043	968
Sulfur	ppm	ASTM D5185m	4996	3184	3743	2967

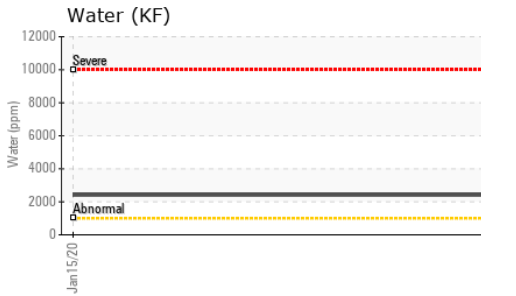
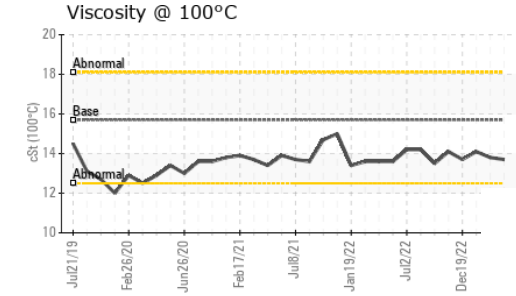
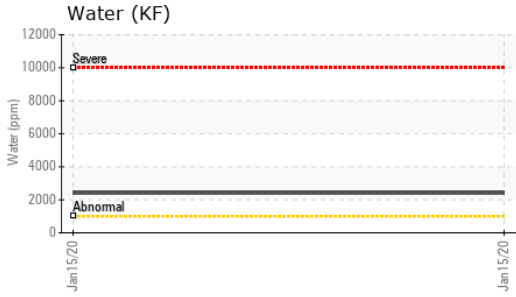
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>20	3	3	4
Sodium	ppm	ASTM D5185m	>75	<1	2	3
Potassium	ppm	ASTM D5185m	>20	2	2	1

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		0.4	0.3	0.8
Nitration	Abs/cm	*ASTM D7624	>20	8.0	7.8	10.3
Sulfation	Abs/.1mm	*ASTM D7415	>30	19.7	20.2	23.5

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	15.0	15.3	20.3
Base Number (BN)	mg KOH/g	ASTM D2896	10.1	9.77	9.29	9.14



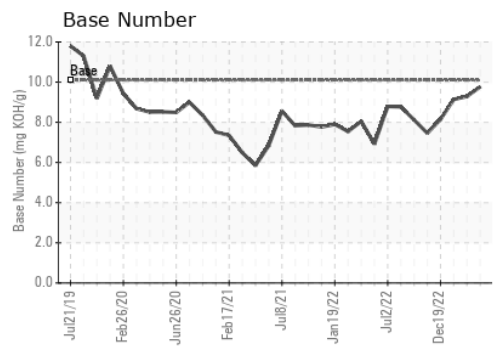
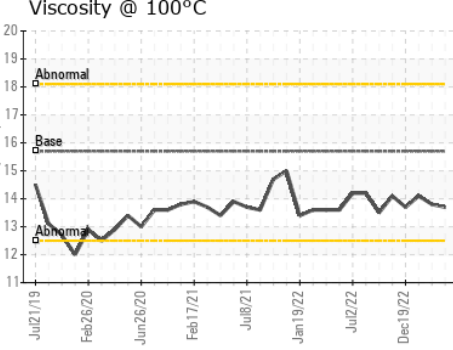
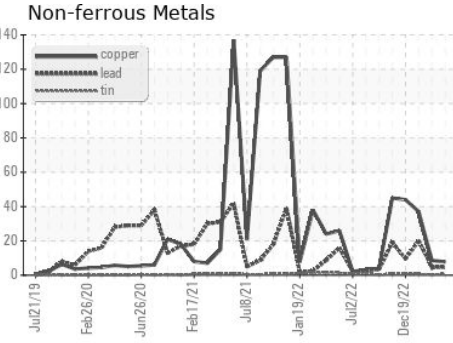
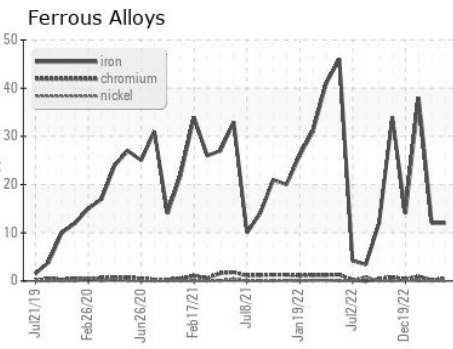
OIL ANALYSIS REPORT



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	15.7	13.7	13.8	14.1

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0805375 **Received** : 03 Oct 2023
Lab Number : **05967936** **Diagnosed** : 05 Oct 2023
Unique Number : 10674487 **Diagnostician** : Don Baldrige
Test Package : IND 2 (Additional Tests: KF)

MARATHON PETROLEUM CO.
 101 12TH ST
 CATLETTSBURG, KY
 US 41169
 Contact: SHAWN MCCLASKEY
 stmccclaskey@marathonpetroleum.com
 T: (606)739-2416
 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)