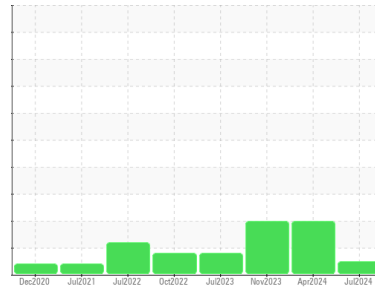




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area

Nashville

Machine Id

[Nashville] Hydraulic - Steering

Component

Hydraulic System

Fluid

AW HYDRAULIC OIL ISO 32 (110 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

The amount and size of particulates present in the system are acceptable. There is no indication of any contamination in the oil.

Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORMATION

method	limit/base	current	history1	history2	
Sample Number	Client Info	WC0683381	WC0874897	WC0805241	
Sample Date	Client Info	06 Jul 2024	15 Apr 2024	27 Nov 2023	
Machine Age	hrs	Client Info	4054	0	117
Oil Age	hrs	Client Info	4054	2724	117
Oil Changed	Client Info	Not Chngd	Filtered	Not Chngd	
Sample Status		NORMAL	ABNORMAL	ATTENTION	

WEAR METALS

method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m >20	7	9	0
Chromium	ppm	ASTM D5185m >20	<1	2	<1
Nickel	ppm	ASTM D5185m >20	0	<1	0
Titanium	ppm	ASTM D5185m	0	<1	0
Silver	ppm	ASTM D5185m	0	0	0
Aluminum	ppm	ASTM D5185m >20	0	2	0
Lead	ppm	ASTM D5185m >20	0	<1	0
Copper	ppm	ASTM D5185m >20	7	5	2
Tin	ppm	ASTM D5185m >20	0	<1	0
Vanadium	ppm	ASTM D5185m	0	<1	0
Cadmium	ppm	ASTM D5185m	0	<1	0

ADDITIVES

method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m 5	3	<1	0
Barium	ppm	ASTM D5185m 5	0	0	0
Molybdenum	ppm	ASTM D5185m 5	0	<1	0
Manganese	ppm	ASTM D5185m	0	0	<1
Magnesium	ppm	ASTM D5185m 25	0	2	<1
Calcium	ppm	ASTM D5185m 200	61	26	21
Phosphorus	ppm	ASTM D5185m 300	126	58	55
Zinc	ppm	ASTM D5185m 370	156	82	62
Sulfur	ppm	ASTM D5185m 2500	422	174	175

CONTAMINANTS

method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m >15	3	1	10
Sodium	ppm	ASTM D5185m	1	0	1
Potassium	ppm	ASTM D5185m >20	1	1	0
Water	%	ASTM D6304 >0.05	0.003	0.003	0.001
ppm Water	ppm	ASTM D6304 >500	34	36	14

FLUID CLEANLINESS

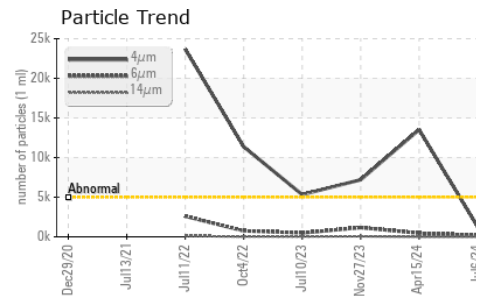
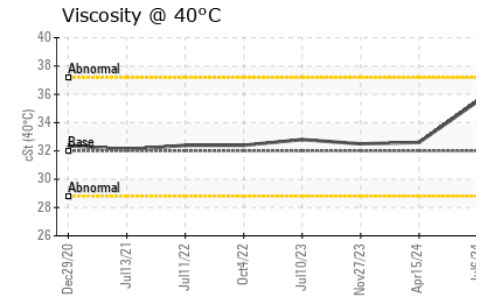
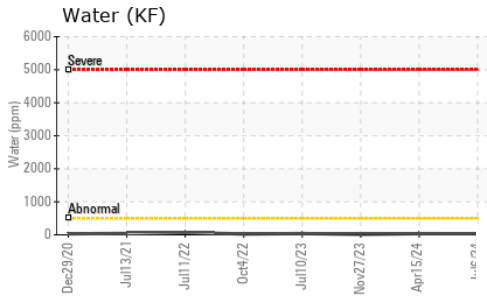
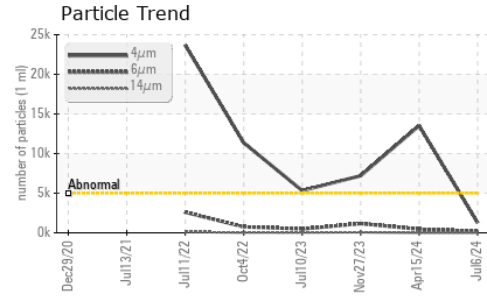
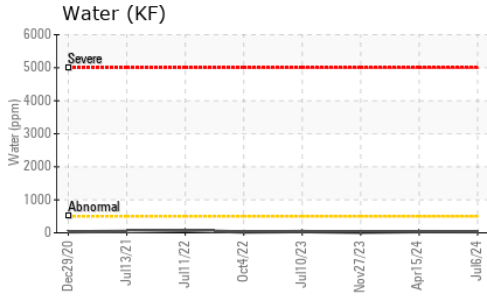
method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647 >5000	1272	▲ 13521	● 7201
Particles >6µm	ASTM D7647 >1300	190	462	1171
Particles >14µm	ASTM D7647 >160	8	8	65
Particles >21µm	ASTM D7647 >40	2	2	19
Particles >38µm	ASTM D7647 >10	0	0	1
Particles >71µm	ASTM D7647 >3	0	0	0
Oil Cleanliness	ISO 4406 (c) >19/17/14	17/15/10	▲ 21/16/10	● 20/17/13

FLUID DEGRADATION

method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D8045 0.57	0.19	0.082	0.108



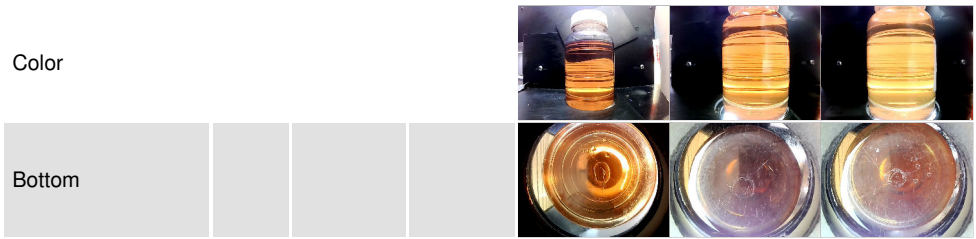
OIL ANALYSIS REPORT



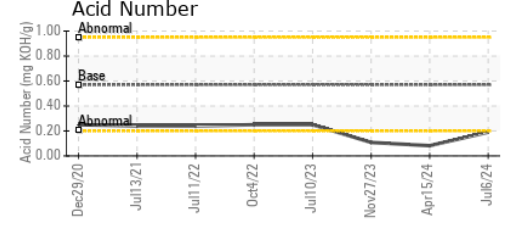
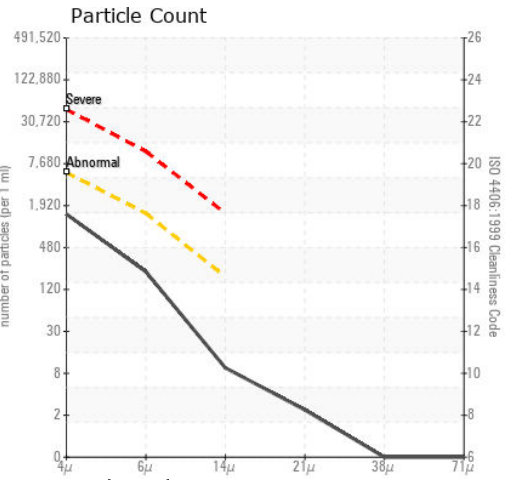
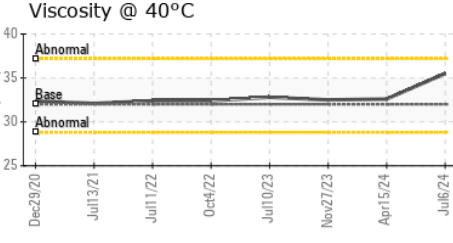
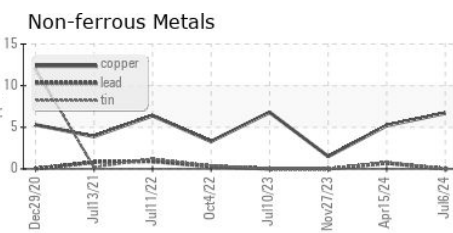
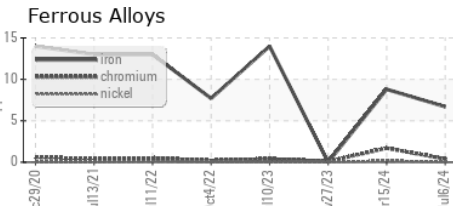
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	32	35.5	32.6

SAMPLE IMAGES	method	limit/base	current	history1	history2
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GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0683381 **Received** : 15 Jul 2024
Lab Number : 06235947 **Tested** : 16 Jul 2024
Unique Number : 11124781 **Diagnosed** : 16 Jul 2024 - Don Baldrige
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)