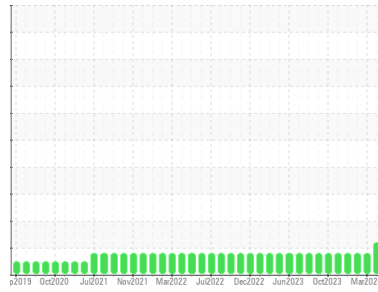




OIL ANALYSIS REPORT

Sample Rating Trend



WEAR



Area

Patoka

Machine Id

[Patoka] Oil - Starboard Reduction Gear

Component

Starboard Reduction Gear

Fluid

{not provided} (35 GAL)

DIAGNOSIS

▲ Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. (Customer Sample Comment: J. Harvey)

▲ Wear

The copper level is abnormal. All other component wear rates are normal.

▲ Contamination

Moderate concentration of visible dirt/debris present 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		WC0860081	WC0860088	WC0805574
Sample Date	Client Info		05 May 2024	09 Mar 2024	26 Feb 2024
Machine Age	hrs	Client Info	44859	43662	0
Oil Age	hrs	Client Info	11049	9852	0
Oil Changed		Client Info	N/A	N/A	N/A
Sample Status			ABNORMAL	ABNORMAL	ABNORMAL

WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >150	11	11	10
Chromium	ppm	ASTM D5185m >10	<1	0	0
Nickel	ppm	ASTM D5185m >10	0	0	0
Titanium	ppm	ASTM D5185m	0	0	0
Silver	ppm	ASTM D5185m	0	0	0
Aluminum	ppm	ASTM D5185m >25	0	1	<1
Lead	ppm	ASTM D5185m >100	0	0	1
Copper	ppm	ASTM D5185m >50	▲ 350	▲ 320	▲ 279
Tin	ppm	ASTM D5185m >10	0	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	18	17	14
Barium	ppm	ASTM D5185m	0	0	0
Molybdenum	ppm	ASTM D5185m	52	51	47
Manganese	ppm	ASTM D5185m	<1	0	0
Magnesium	ppm	ASTM D5185m	639	593	591
Calcium	ppm	ASTM D5185m	1143	1094	1123
Phosphorus	ppm	ASTM D5185m	886	820	817
Zinc	ppm	ASTM D5185m	980	944	915
Sulfur	ppm	ASTM D5185m	3341	2805	2713

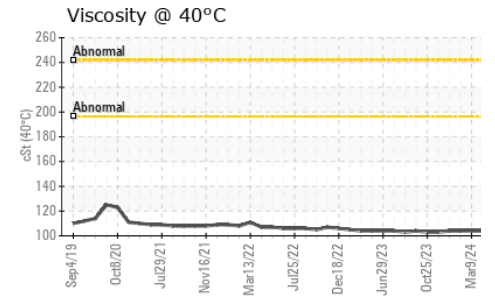
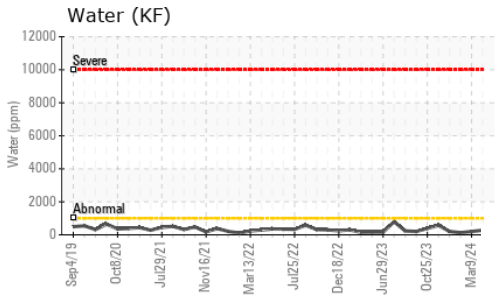
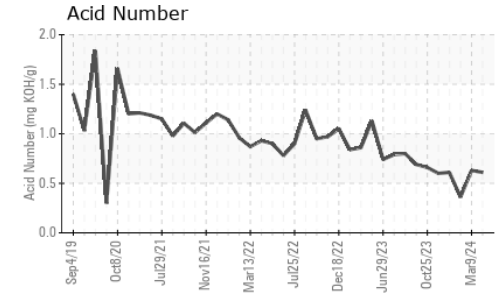
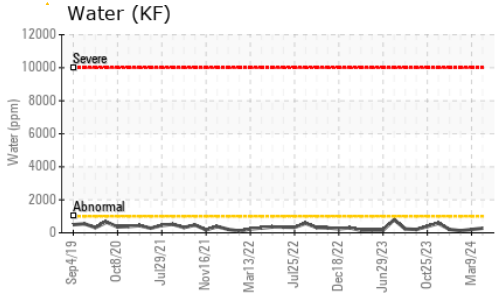
CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >50	0	3	2
Sodium	ppm	ASTM D5185m	4	3	4
Potassium	ppm	ASTM D5185m >20	0	2	0
Water	%	ASTM D6304 >0.1	0.028	0.019	0.012
ppm Water	ppm	ASTM D6304 >1000	280	200	128

FLUID DEGRADATION

	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	0.61	0.63	0.36

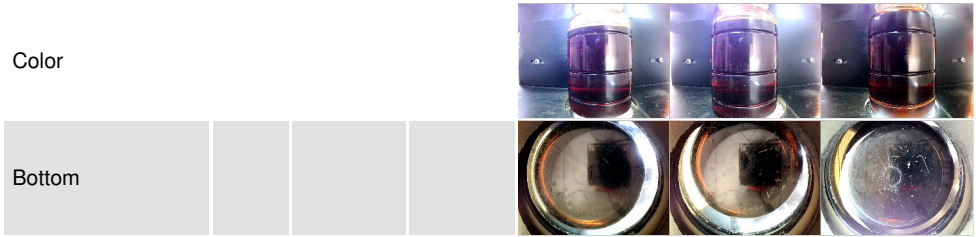
OIL ANALYSIS REPORT



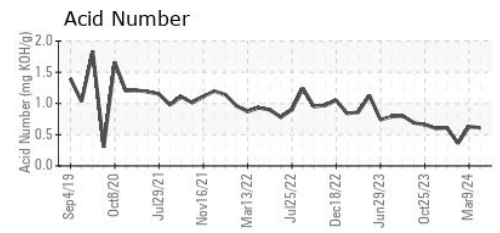
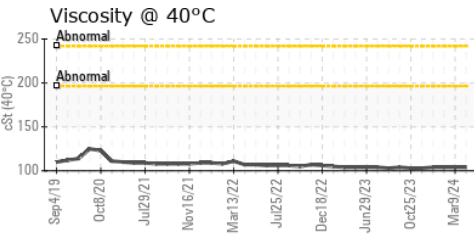
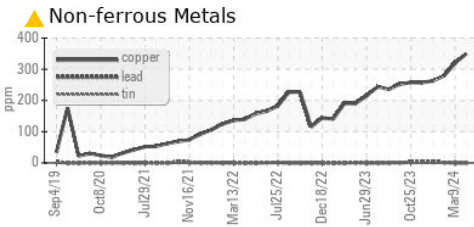
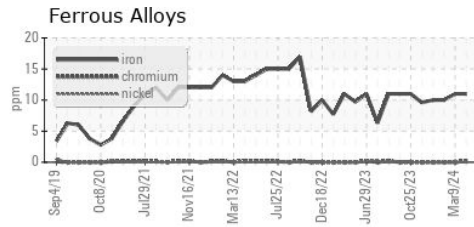
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	▲ MODER	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	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 @ 40°C	cSt	ASTM D445	104	104	104

SAMPLE IMAGES	method	limit/base	current	history1	history2
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GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0860081 **Received** : 16 May 2024
Lab Number : 06181435 **Tested** : 17 May 2024
Unique Number : 11032761 **Diagnosed** : 20 May 2024 - Angela Borella
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)