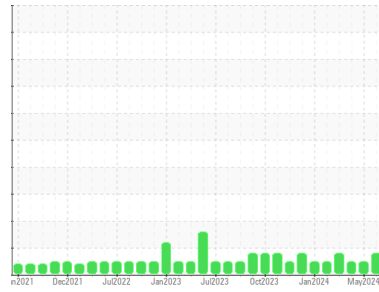




OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Area
Martinsville
 Machine Id
[Martinsville] Hydraulic - Steering
 Component
Hydraulic System
 Fluid
AW HYDRAULIC OIL ISO 46 (35 GAL)

DIAGNOSIS

Recommendation

We recommend you service the filters on this component. Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

Wear

All component wear rates are normal.

Contamination

There is a light amount of silt (particulates < 14 microns in size) present in the oil. The water content is negligible.

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			WC0845890	WC0845888	WC0845885
Sample Date	Client Info			07 Jun 2024	11 May 2024	13 Apr 2024
Machine Age	hrs	Client Info		13260	14736	41911
Oil Age	hrs	Client Info		13260	14730	12225
Oil Changed	Client Info			Filtered	Not Changd	Filtered
Sample Status				ATTENTION	NORMAL	NORMAL

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>20	6	6	4
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>20	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>20	<1	0	0
Lead	ppm	ASTM D5185m	>20	0	<1	0
Copper	ppm	ASTM D5185m	>20	19	22	21
Tin	ppm	ASTM D5185m	>20	<1	<1	<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	5	2	0	0
Barium	ppm	ASTM D5185m	5	0	0	0
Molybdenum	ppm	ASTM D5185m	5	1	1	0
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m	25	0	5	6
Calcium	ppm	ASTM D5185m	200	51	70	103
Phosphorus	ppm	ASTM D5185m	300	219	271	252
Zinc	ppm	ASTM D5185m	370	231	262	261
Sulfur	ppm	ASTM D5185m	2500	1224	1443	1386

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>15	1	1	0
Sodium	ppm	ASTM D5185m		2	2	2
Potassium	ppm	ASTM D5185m	>20	3	0	0
Water	%	ASTM D6304	>0.05	0.006	0.004	0.002
ppm Water	ppm	ASTM D6304	>500	65	41	25

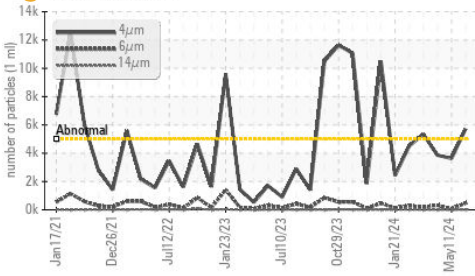
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>5000	5717	3630	3861
Particles >6µm		ASTM D7647	>1300	475	72	319
Particles >14µm		ASTM D7647	>160	13	2	12
Particles >21µm		ASTM D7647	>40	0	0	5
Particles >38µm		ASTM D7647	>10	0	0	0
Particles >71µm		ASTM D7647	>3	0	0	0
Oil Cleanliness		ISO 4406 (c)	>19/17/14	20/16/11	19/13/9	19/15/11

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	0.57	0.21	0.21	0.22

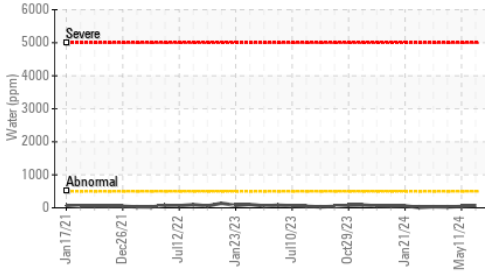


OIL ANALYSIS REPORT

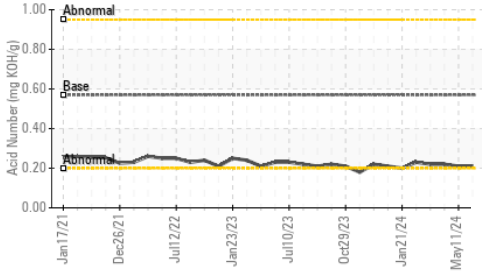
● Particle Trend



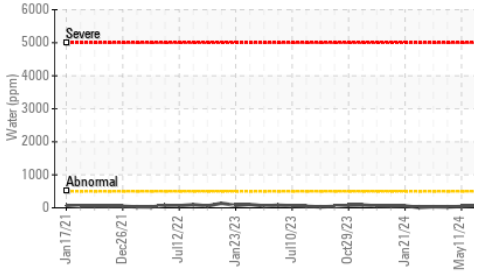
— Water (KF)



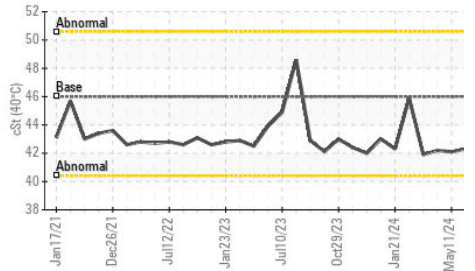
Acid Number



Water (KF)



Viscosity @ 40°C



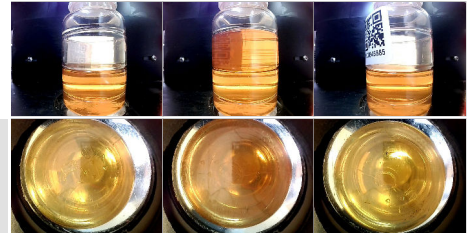
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	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	46	42.3	42.1

SAMPLE IMAGES	method	limit/base	current	history1	history2
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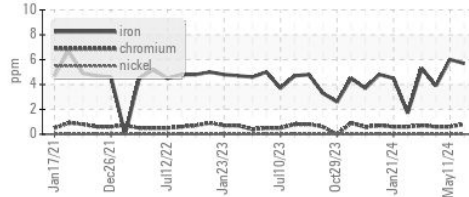
Color

Bottom

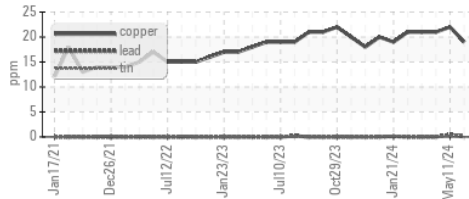


GRAPHS

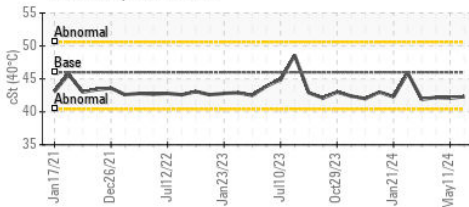
Ferrous Alloys



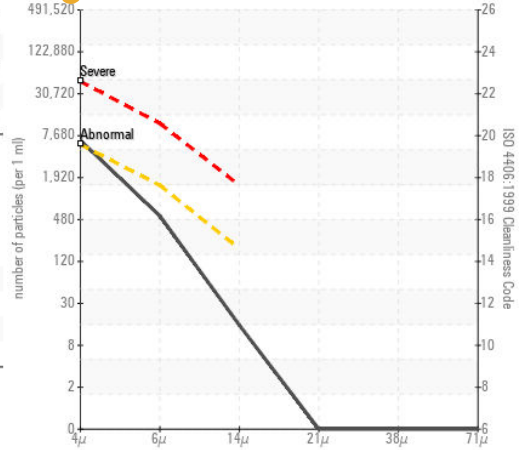
Non-ferrous Metals



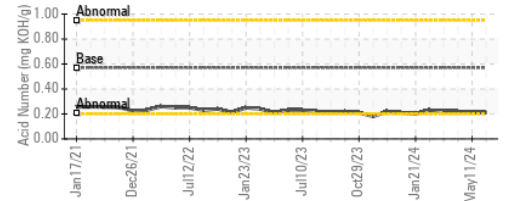
Viscosity @ 40°C



● Particle Count



Acid Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : WC0845890

Lab Number : 06210143

Unique Number : 11083007

Test Package : IND 2 (Additional Tests: KF)

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)

Received : 14 Jun 2024

Tested : 17 Jun 2024

Diagnosed : 17 Jun 2024 - Wes Davis

MARATHON PETROLEUM CO.

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CATLETTSBURG, KY

US 41169

Contact: CORY GUMBERT

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T: (606)585-3950

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