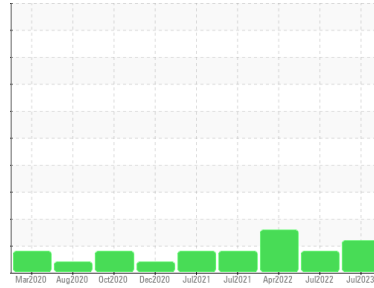




# PROBLEM SUMMARY

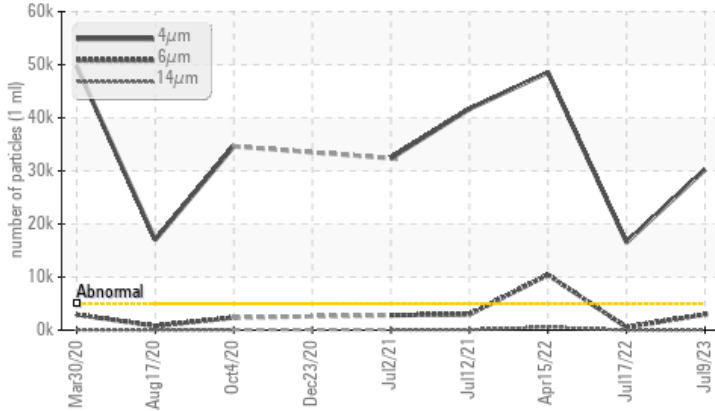
Area  
**Ohio Valley**  
 Machine Id  
**[Ohio Valley] Hydraulic - Steering**  
 Component  
**Hydraulic System**  
 Fluid  
**AW HYDRAULIC OIL ISO 46 (--- GAL)**

Sample Rating Trend



## COMPONENT CONDITION SUMMARY

▲ Particle Trend



### RECOMMENDATION

We recommend you service the filters on this component. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

### PROBLEMATIC TEST RESULTS

Sample Status			ABNORMAL	ABNORMAL	ABNORMAL
Particles >4µm	ASTM D7647	>5000	▲ 30249	▲ 16541	▲ 48545
Particles >6µm	ASTM D7647	>1300	▲ 2943	551	▲ 10420
Oil Cleanliness	ISO 4406 (c)	>19/17/14	▲ 22/19/13	▲ 21/16/10	▲ 23/21/16

Customer Id: MARCAT  
 Sample No.: WC0683583  
 Lab Number: 05900028  
 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data:  
 Wes Davis +1 905-569-8600 x223  
[wesd@wearcheck.ca](mailto:wesd@wearcheck.ca)

To change component or sample information:  
 Customer Service +1 1-800-237-1369  
[customerservice@wearcheck.com](mailto:customerservice@wearcheck.com)

## RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Filter	---	---	?	We recommend you service the filters on this component.
Resample	---	---	?	We recommend an early resample to monitor this condition.
Information Required	---	---	?	Please specify the brand, type, and viscosity of the oil on your next sample. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

## HISTORICAL DIAGNOSIS

### 17 Jul 2022 Diag: Doug Bogart

ISO



No corrective action is recommended at this time. Resample at the next service interval to monitor. All component wear rates are normal. There is a high amount of silt (particulates < 6 microns in size) present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report



### 15 Apr 2022 Diag: Don Baldrige

ISO



We recommend you service the filters on this component. Resample at the next service interval to monitor. All component wear rates are normal. There is a high amount of particulates present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report



### 12 Jul 2021 Diag: Angela Borella

ISO



The filter change at the time of sampling has been noted. Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample. All component wear rates are normal. There is a high amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

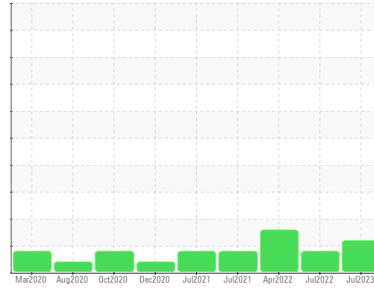
view report





# OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Area  
**Ohio Valley**  
 Machine Id  
**[Ohio Valley] Hydraulic - Steering**  
 Component  
**Hydraulic System**  
 Fluid  
**AW HYDRAULIC OIL ISO 46 (--- GAL)**

## DIAGNOSIS

### Recommendation

We recommend you service the filters on this component. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. 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 moderate 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 oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

## SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>WC0683583</b>	WC0621573	WC0657135
Sample Date	Client Info		<b>09 Jul 2023</b>	17 Jul 2022	15 Apr 2022
Machine Age	hrs	Client Info	<b>9823</b>	0	0
Oil Age	hrs	Client Info	<b>9823</b>	0	0
Oil Changed	Client Info		<b>Not Chngd</b>	Not Chngd	N/A
Sample Status			<b>ABNORMAL</b>	ABNORMAL	ABNORMAL

## WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >20	<b>18</b>	16	0
Chromium	ppm	ASTM D5185m >20	<b>2</b>	2	0
Nickel	ppm	ASTM D5185m >20	<b>0</b>	<1	0
Titanium	ppm	ASTM D5185m	<b>&lt;1</b>	<1	0
Silver	ppm	ASTM D5185m	<b>0</b>	<1	0
Aluminum	ppm	ASTM D5185m >20	<b>&lt;1</b>	<1	0
Lead	ppm	ASTM D5185m >20	<b>1</b>	2	0
Copper	ppm	ASTM D5185m >20	<b>13</b>	13	0
Tin	ppm	ASTM D5185m >20	<b>&lt;1</b>	2	0
Antimony	ppm	ASTM D5185m	<b>---</b>	---	---
Vanadium	ppm	ASTM D5185m	<b>&lt;1</b>	0	0
Cadmium	ppm	ASTM D5185m	<b>0</b>	<1	0

## ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m 5	<b>4</b>	3	<1
Barium	ppm	ASTM D5185m 5	<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m 5	<b>&lt;1</b>	<1	0
Manganese	ppm	ASTM D5185m	<b>&lt;1</b>	<1	0
Magnesium	ppm	ASTM D5185m 25	<b>3</b>	4	0
Calcium	ppm	ASTM D5185m 200	<b>87</b>	86	0
Phosphorus	ppm	ASTM D5185m 300	<b>292</b>	277	15
Zinc	ppm	ASTM D5185m 370	<b>388</b>	378	0
Sulfur	ppm	ASTM D5185m 2500	<b>3194</b>	2900	21

## CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >15	<b>1</b>	1	<1
Sodium	ppm	ASTM D5185m	<b>2</b>	2	0
Potassium	ppm	ASTM D5185m >20	<b>0</b>	0	<1
Water	%	ASTM D6304 >0.05	<b>0.008</b>	0.011	0.002
ppm Water	ppm	ASTM D6304 >500	<b>80.4</b>	117.0	16.3

## FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>5000	<b>▲ 30249</b>	▲ 16541	▲ 48545
Particles >6µm	ASTM D7647	>1300	<b>▲ 2943</b>	551	▲ 10420
Particles >14µm	ASTM D7647	>160	<b>46</b>	9	▲ 583
Particles >21µm	ASTM D7647	>40	<b>8</b>	1	▲ 96
Particles >38µm	ASTM D7647	>10	<b>1</b>	0	5
Particles >71µm	ASTM D7647	>3	<b>0</b>	0	0
Oil Cleanliness	ISO 4406 (c)	>19/17/14	<b>▲ 22/19/13</b>	▲ 21/16/10	▲ 23/21/16

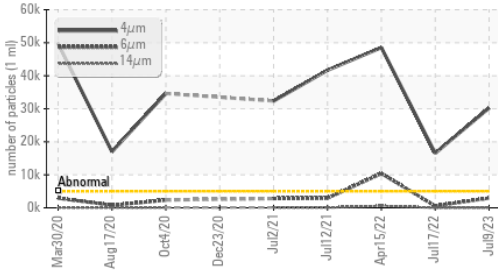
## FLUID DEGRADATION

	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045 0.57	<b>0.40</b>	0.38	0.139

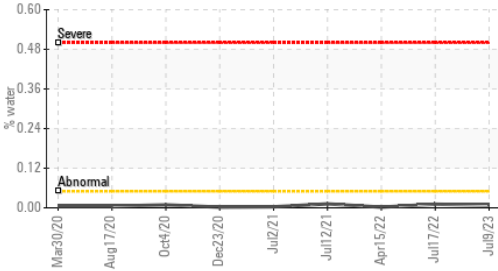


# OIL ANALYSIS REPORT

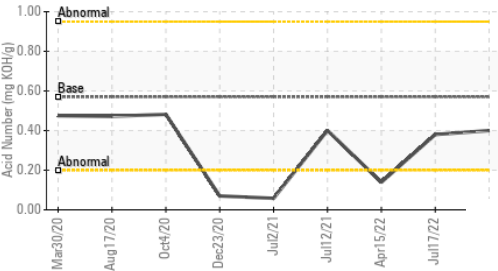
## ▲ Particle Trend



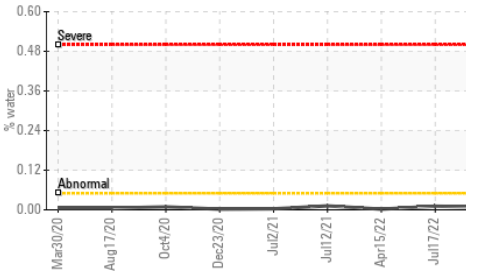
## Water



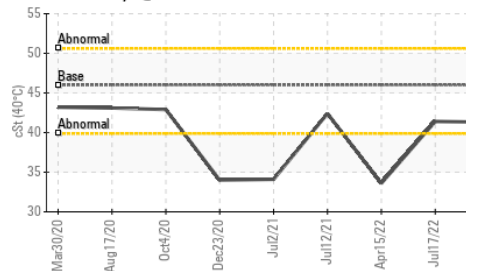
## Acid Number



## Water



## Viscosity @ 40°C



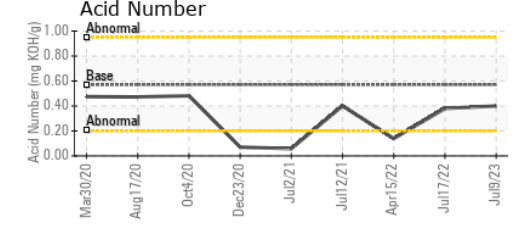
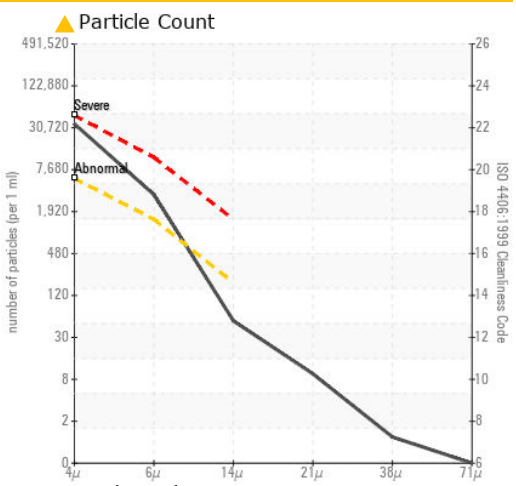
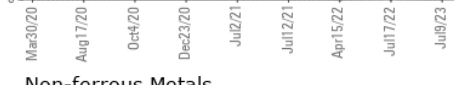
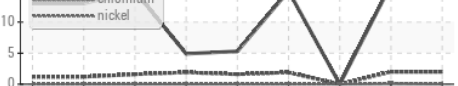
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	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	41.3	41.4	33.6

SAMPLE IMAGES	method	limit/base	current	history1	history2
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## GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : WC0683583 **Received** : 17 Jul 2023  
**Lab Number** : 05900028 **Diagnosed** : 21 Jul 2023  
**Unique Number** : 10561384 **Diagnostician** : Wes Davis  
**Test Package** : IND 2 ( Additional Tests: KF )

**MARATHON PETROLEUM CO.**  
 101 12TH ST  
 CATLETTSBURG, KY  
 US 41169  
 Contact: CORY GUMBERT  
 cagumbert@marathonpetroleum.com  
 T: (606)585-3950  
 F: x:

Certificate L2367  
 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)