

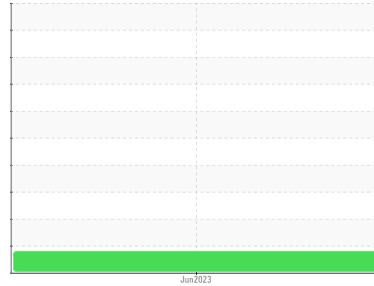


PROBLEM SUMMARY

Sample Rating Trend

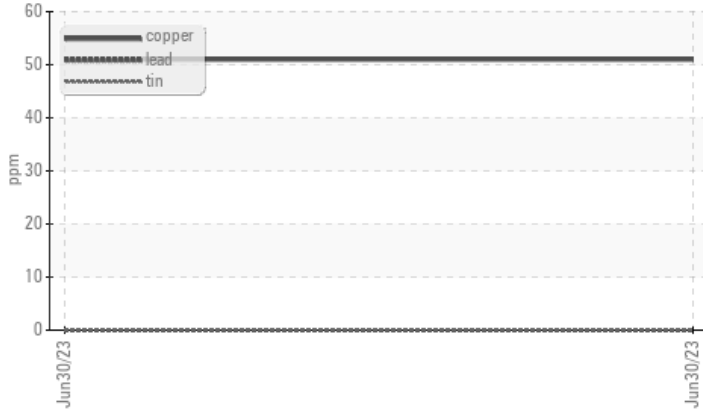
WEAR

Area
West Virginia
 Machine Id
[West Virginia] Hydraulic - Auxiliary
 Component
Hydraulic System
 Fluid
AW HYDRAULIC OIL ISO 46 (35 GAL)



COMPONENT CONDITION SUMMARY

▲ Non-ferrous Metals



RECOMMENDATION

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

PROBLEMATIC TEST RESULTS

| Sample Status | ABNORMAL | | | --- | --- |
|---------------|----------|-------------|-----|------|-----|
| Copper | ppm | ASTM D5185m | >20 | ▲ 51 | --- |

Customer Id: MARCAT
 Sample No.: WC0769147
 Lab Number: 05899897
 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data:
 Don Baldrige +1
don.b505@comcast.net

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

RECOMMENDED ACTIONS

There are no recommended actions for this sample.

HISTORICAL DIAGNOSIS



OIL ANALYSIS REPORT

Sample Rating Trend

WEAR

Area
West Virginia
 Machine Id
[West Virginia] Hydraulic - Auxiliary
 Component
Hydraulic System
 Fluid
AW HYDRAULIC OIL ISO 46 (35 GAL)



DIAGNOSIS

Recommendation

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

Wear

The copper level is abnormal. All other 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 | WC0769147 | --- | --- |
| Sample Date | Client Info | 30 Jun 2023 | --- | --- |
| Machine Age | hrs Client Info | 0 | --- | --- |
| Oil Age | hrs Client Info | 0 | --- | --- |
| Oil Changed | Client Info | N/A | --- | --- |
| Sample Status | | ABNORMAL | --- | --- |

WEAR METALS

| method | limit/base | current | history1 | history2 |
|--------------------------|------------|-------------|----------|----------|
| Iron ppm ASTM D5185m | >20 | <1 | --- | --- |
| Chromium ppm ASTM D5185m | >20 | 0 | --- | --- |
| Nickel ppm ASTM D5185m | >20 | 0 | --- | --- |
| Titanium ppm ASTM D5185m | | 0 | --- | --- |
| Silver ppm ASTM D5185m | | 0 | --- | --- |
| Aluminum ppm ASTM D5185m | >20 | 0 | --- | --- |
| Lead ppm ASTM D5185m | >20 | 0 | --- | --- |
| Copper ppm ASTM D5185m | >20 | ▲ 51 | --- | --- |
| Tin ppm ASTM D5185m | >20 | 0 | --- | --- |
| Vanadium ppm ASTM D5185m | | 0 | --- | --- |
| Cadmium ppm ASTM D5185m | | 0 | --- | --- |

ADDITIVES

| method | limit/base | current | history1 | history2 |
|----------------------------|------------|---------|----------|----------|
| Boron ppm ASTM D5185m | 5 | 0 | --- | --- |
| Barium ppm ASTM D5185m | 5 | 0 | --- | --- |
| Molybdenum ppm ASTM D5185m | 5 | <1 | --- | --- |
| Manganese ppm ASTM D5185m | | 0 | --- | --- |
| Magnesium ppm ASTM D5185m | 25 | 0 | --- | --- |
| Calcium ppm ASTM D5185m | 200 | 51 | --- | --- |
| Phosphorus ppm ASTM D5185m | 300 | 285 | --- | --- |
| Zinc ppm ASTM D5185m | 370 | 348 | --- | --- |
| Sulfur ppm ASTM D5185m | 2500 | 893 | --- | --- |

CONTAMINANTS

| method | limit/base | current | history1 | history2 |
|---------------------------|------------|---------|----------|----------|
| Silicon ppm ASTM D5185m | >15 | <1 | --- | --- |
| Sodium ppm ASTM D5185m | | <1 | --- | --- |
| Potassium ppm ASTM D5185m | >20 | 0 | --- | --- |
| Water % ASTM D6304 | >0.05 | 0.002 | --- | --- |
| ppm Water ppm ASTM D6304 | >500 | 20.6 | --- | --- |

FLUID CLEANLINESS

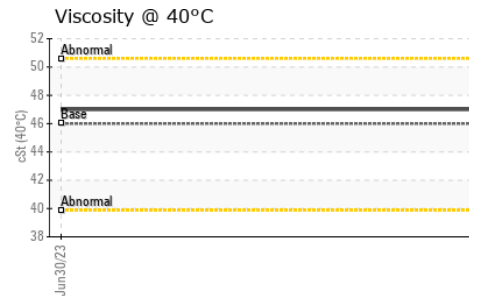
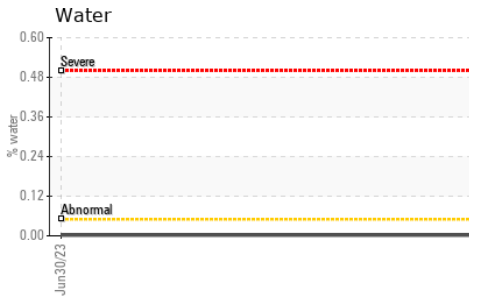
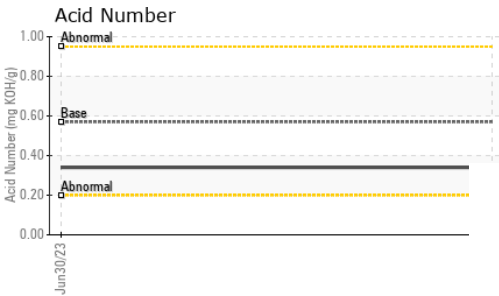
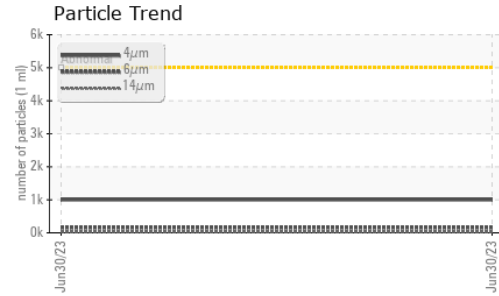
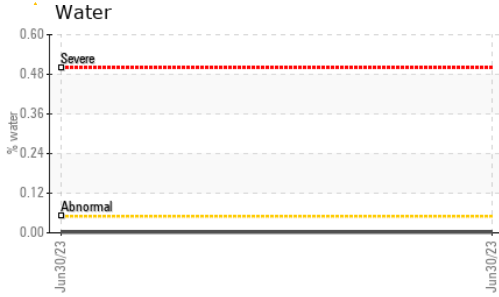
| method | limit/base | current | history1 | history2 |
|------------------------------|------------|----------|----------|----------|
| Particles >4µm ASTM D7647 | >5000 | 1002 | --- | --- |
| Particles >6µm ASTM D7647 | >1300 | 158 | --- | --- |
| Particles >14µm ASTM D7647 | >160 | 25 | --- | --- |
| Particles >21µm ASTM D7647 | >40 | 8 | --- | --- |
| Particles >38µm ASTM D7647 | >10 | 0 | --- | --- |
| Particles >71µm ASTM D7647 | >3 | 0 | --- | --- |
| Oil Cleanliness ISO 4406 (c) | >19/17/14 | 17/14/12 | --- | --- |

FLUID DEGRADATION

| method | limit/base | current | history1 | history2 |
|--------------------------------------|------------|---------|----------|----------|
| Acid Number (AN) mg KOH/g ASTM D8045 | 0.57 | 0.34 | --- | --- |



OIL ANALYSIS REPORT



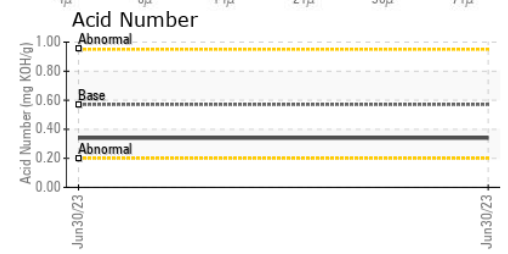
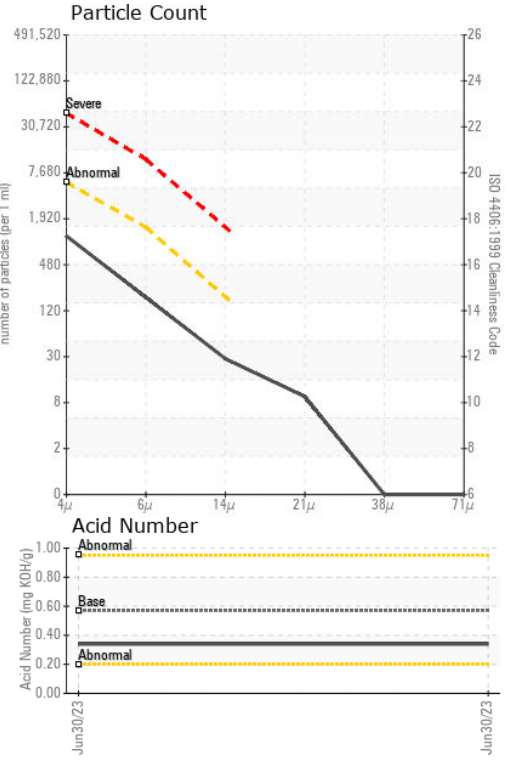
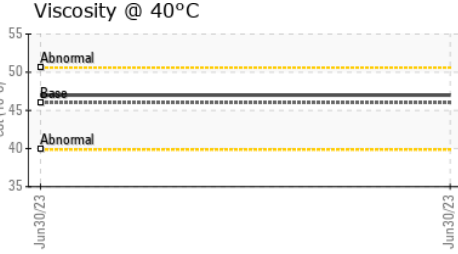
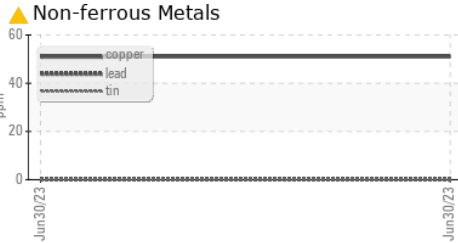
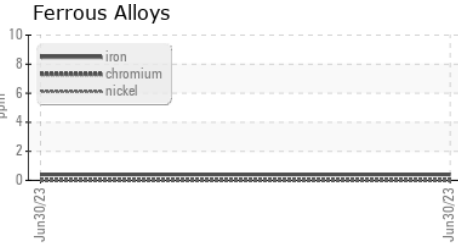
| VISUAL | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | --- |
| Yellow Metal | scalar | *Visual | NONE | NONE | --- |
| Precipitate | scalar | *Visual | NONE | NONE | ---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

| FLUID PROPERTIES | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| Visc @ 40°C | cSt | ASTM D445 | 46 | 47.0 | --- |

| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---------------|--------|------------|---------|----------|----------|
|---------------|--------|------------|---------|----------|----------|

| | | | |
|--------|--|----------|----------|
| Color | | no image | no image |
| Bottom | | no image | no image |

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0769147 **Received** : 17 Jul 2023
Lab Number : 05899897 **Diagnosed** : 18 Jul 2023
Unique Number : 10561253 **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:

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)