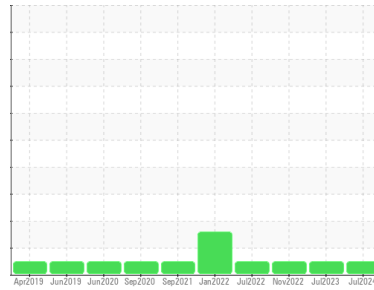




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area

Kentucky

Machine Id

[Kentucky] Hydraulic - Flanking

Component

Hydraulic System

Fluid

R&O OIL ISO 100 (35 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: Chris wray)

Wear

All component wear rates are normal.

Contamination

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

Fluid Condition

Confirm oil type. 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 | WC0898643 | WC0769168 | WC0731786 | |
| Sample Date | Client Info | 09 Jul 2024 | 06 Jul 2023 | 04 Nov 2022 | |
| Machine Age | hrs | Client Info | 15470 | 15655 | 0 |
| Oil Age | hrs | Client Info | 15470 | 8788 | 4190 |
| Oil Changed | Client Info | Not Chngd | N/A | N/A | |
| Sample Status | | NORMAL | NORMAL | NORMAL | |

WEAR METALS

| method | limit/base | current | history1 | history2 | |
|----------|------------|-----------------|--------------|----------|----|
| Iron | ppm | ASTM D5185m >30 | 2 | 2 | 2 |
| Chromium | ppm | ASTM D5185m >2 | <1 | 0 | <1 |
| Nickel | ppm | ASTM D5185m >2 | <1 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | <1 | 0 | 0 |
| Silver | ppm | ASTM D5185m | 0 | 0 | 2 |
| Aluminum | ppm | ASTM D5185m >2 | 2 | <1 | 0 |
| Lead | ppm | ASTM D5185m >10 | <1 | <1 | <1 |
| Copper | ppm | ASTM D5185m >25 | 5 | 5 | 12 |
| Tin | ppm | ASTM D5185m >20 | <1 | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | <1 | 0 | 0 |

ADDITIVES

| method | limit/base | current | history1 | history2 | |
|------------|------------|------------------|--------------|----------|------|
| Boron | ppm | ASTM D5185m 5 | 0 | 0 | <1 |
| Barium | ppm | ASTM D5185m 5 | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m 5 | <1 | <1 | <1 |
| Manganese | ppm | ASTM D5185m | 0 | 0 | 0 |
| Magnesium | ppm | ASTM D5185m 5 | 4 | 4 | 4 |
| Calcium | ppm | ASTM D5185m 5 | 59 | 75 | 75 |
| Phosphorus | ppm | ASTM D5185m 100 | 287 | 295 | 307 |
| Zinc | ppm | ASTM D5185m 25 | 420 | 422 | 442 |
| Sulfur | ppm | ASTM D5185m 1500 | 2633 | 3164 | 3597 |

CONTAMINANTS

| method | limit/base | current | history1 | history2 | |
|-----------|------------|------------------|--------------|----------|-------|
| Silicon | ppm | ASTM D5185m >25 | <1 | 4 | <1 |
| Sodium | ppm | ASTM D5185m | 0 | 0 | <1 |
| Potassium | ppm | ASTM D5185m >20 | <1 | <1 | 1 |
| Water | % | ASTM D6304 >0.05 | 0.007 | 0.005 | 0.013 |
| ppm Water | ppm | ASTM D6304 >500 | 77 | 59.4 | 134.2 |

FLUID CLEANLINESS

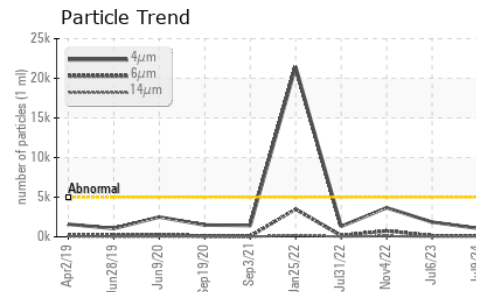
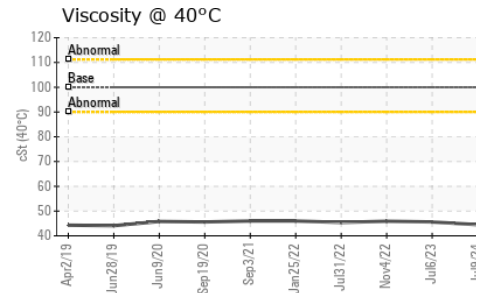
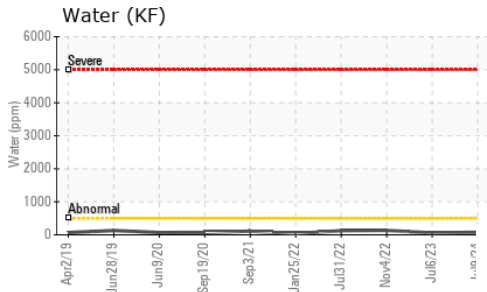
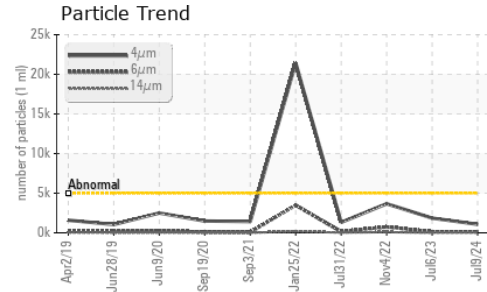
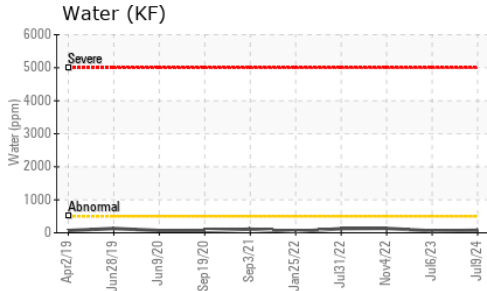
| method | limit/base | current | history1 | history2 |
|-----------------|------------------------|-----------------|----------|----------|
| Particles >4µm | ASTM D7647 >5000 | 1077 | 1854 | 3672 |
| Particles >6µm | ASTM D7647 >1300 | 143 | 138 | 745 |
| Particles >14µm | ASTM D7647 >160 | 9 | 8 | 87 |
| Particles >21µm | ASTM D7647 >40 | 3 | 1 | 25 |
| Particles >38µm | ASTM D7647 >10 | 0 | 0 | 1 |
| Particles >71µm | ASTM D7647 >3 | 0 | 0 | 0 |
| Oil Cleanliness | ISO 4406 (c) >19/17/14 | 17/14/10 | 18/14/10 | 19/17/14 |

FLUID DEGRADATION

| method | limit/base | current | history1 | history2 | |
|------------------|------------|-----------------|-------------|----------|------|
| Acid Number (AN) | mg KOH/g | ASTM D8045 0.08 | 0.44 | 0.43 | 0.47 |



OIL ANALYSIS REPORT



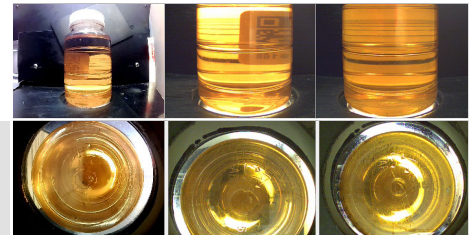
| VISUAL | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | NONE | 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 | 100 | 44.5 | 45.6 |

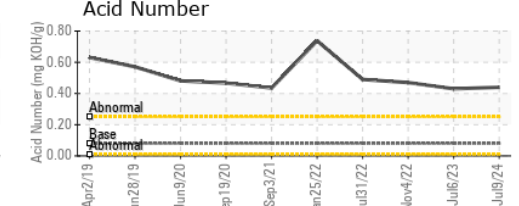
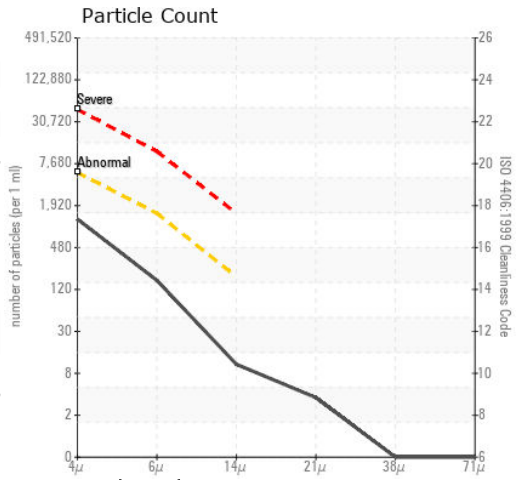
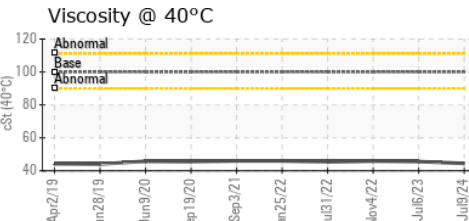
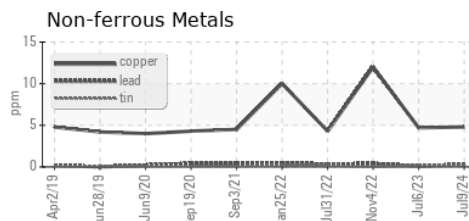
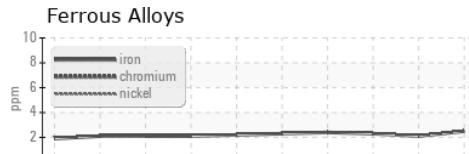
| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---------------|--------|------------|---------|----------|----------|
|---------------|--------|------------|---------|----------|----------|

Color

Bottom



GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
 Sample No. : WC0898643 Received : 15 Jul 2024
 Lab Number : 06235937 Tested : 16 Jul 2024
 Unique Number : 11124771 Diagnosed : 16 Jul 2024 - Don Baldrige
 Test Package : IND 2 (Additional Tests: KF)

MARATHON PETROLEUM CO.
 101 12TH ST
 CATLETTSBURG, KY
 US 41169

To discuss this sample report, contact Customer Service at 1-800-237-1369.

Contact: CORY GUMBERT
 cagumbert@marathonpetroleum.com

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

T: (606)585-3950

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

F: x: