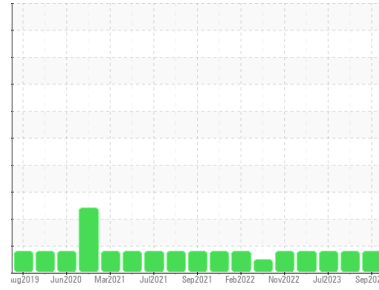




PROBLEM SUMMARY

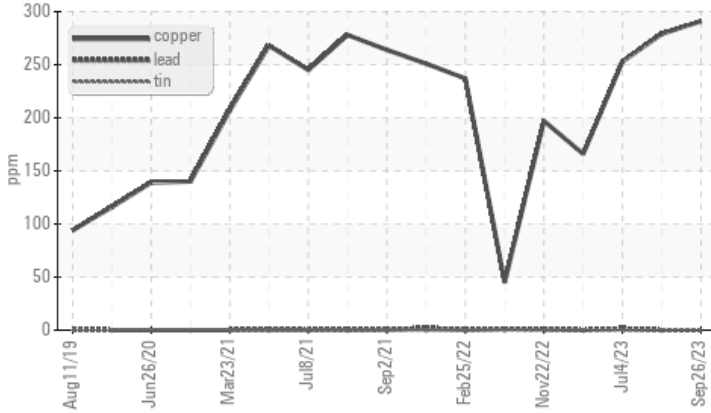
Sample Rating Trend



Area
Garyville
 Machine Id
[Garyville] Oil - Port Reduction Gear
 Component
Port Reduction Gear
 Fluid
SAE 40W (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.

PROBLEMATIC TEST RESULTS

| Sample Status | | | | ABNORMAL | ABNORMAL | ABNORMAL |
|---------------|-----|-------------|-----|-----------------|----------|----------|
| Copper | ppm | ASTM D5185m | >50 | ▲ 291 | ▲ 279 | ▲ 253 |

Customer Id: MARCAT
 Sample No.: WC0769482
 Lab Number: 05967869
 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

29 Aug 2023 Diag: Don Baldrige

WEAR



No corrective action is recommended at this time. Resample at the next service interval to monitor. The copper level is abnormal. All other component wear rates are normal. There is no indication of any contamination in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report



04 Jul 2023 Diag: Don Baldrige

WEAR



No corrective action is recommended at this time. Resample at the next service interval to monitor. The copper level is abnormal. All other component wear rates are normal. There is no indication of any contamination in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report



19 Dec 2022 Diag: Angela Borella

WEAR



No corrective action is recommended at this time. Resample at the next service interval to monitor. The copper level is abnormal. All other component wear rates are normal. There is no indication of any contamination in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

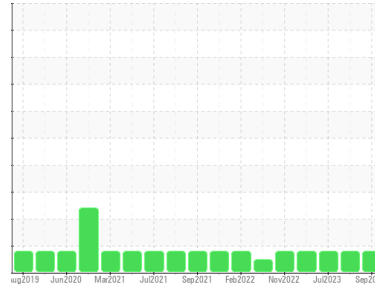
view report





OIL ANALYSIS REPORT

Sample Rating Trend



WEAR



Area
Garyville
 Machine Id
[Garyville] Oil - Port Reduction Gear
 Component
Port Reduction Gear
 Fluid
SAE 40W (35 GAL)

DIAGNOSIS

▲ Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

▲ Wear

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

Contamination

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 | | WC0769482 | WC0805383 | WC0683219 |
| Sample Date | Client Info | | 26 Sep 2023 | 29 Aug 2023 | 04 Jul 2023 |
| Machine Age | hrs | Client Info | 26566 | 20490 | 20490 |
| Oil Age | hrs | Client Info | 9705 | 4222 | 4222 |
| Oil Changed | Client Info | | Filtered | Filtered | Filtered |
| Sample Status | | | ABNORMAL | ABNORMAL | ABNORMAL |

WEAR METALS

| | method | limit/base | current | history1 | history2 |
|----------|--------|------------------|--------------|----------|----------|
| Iron | ppm | ASTM D5185m >150 | 9 | 10 | 9 |
| Chromium | ppm | ASTM D5185m >10 | <1 | <1 | 0 |
| Nickel | ppm | ASTM D5185m >10 | 0 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | 0 | 0 | <1 |
| Silver | ppm | ASTM D5185m | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m >25 | <1 | 1 | 2 |
| Lead | ppm | ASTM D5185m >100 | 0 | 0 | 2 |
| Copper | ppm | ASTM D5185m >50 | ▲ 291 | ▲ 279 | ▲ 253 |
| Tin | ppm | ASTM D5185m >10 | <1 | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | 0 | 0 | <1 |
| Cadmium | ppm | ASTM D5185m | 0 | 0 | <1 |

ADDITIVES

| | method | limit/base | current | history1 | history2 |
|------------|--------|-------------|--------------|----------|----------|
| Boron | ppm | ASTM D5185m | 96 | 102 | 93 |
| Barium | ppm | ASTM D5185m | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 45 | 46 | 45 |
| Manganese | ppm | ASTM D5185m | <1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 507 | 526 | 433 |
| Calcium | ppm | ASTM D5185m | 1694 | 1783 | 1784 |
| Phosphorus | ppm | ASTM D5185m | 704 | 724 | 637 |
| Zinc | ppm | ASTM D5185m | 778 | 804 | 701 |
| Sulfur | ppm | ASTM D5185m | 3382 | 4153 | 3766 |

CONTAMINANTS

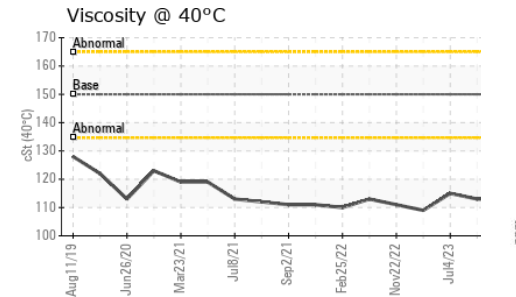
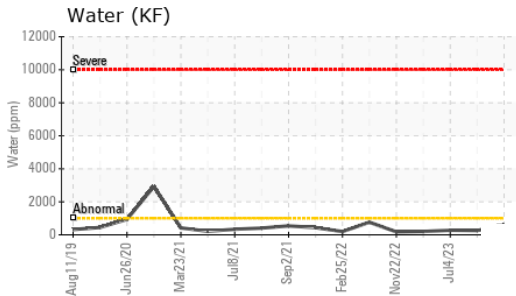
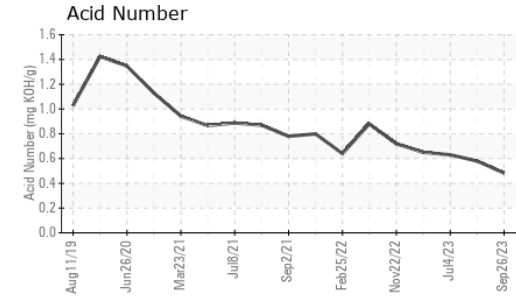
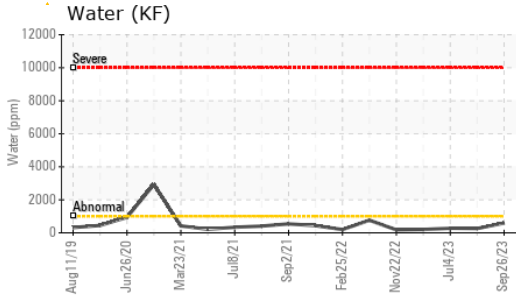
| | method | limit/base | current | history1 | history2 |
|-----------|--------|------------------|--------------|----------|----------|
| Silicon | ppm | ASTM D5185m >50 | 2 | 2 | 2 |
| Sodium | ppm | ASTM D5185m | 7 | 9 | 8 |
| Potassium | ppm | ASTM D5185m >20 | 1 | 1 | 0 |
| Water | % | ASTM D6304 >0.1 | 0.059 | 0.026 | 0.027 |
| ppm Water | ppm | ASTM D6304 >1000 | 593.0 | 260.3 | 277.3 |

FLUID DEGRADATION

| | method | limit/base | current | history1 | history2 |
|------------------|----------|------------|--------------|----------|----------|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 0.482 | 0.58 | 0.63 |



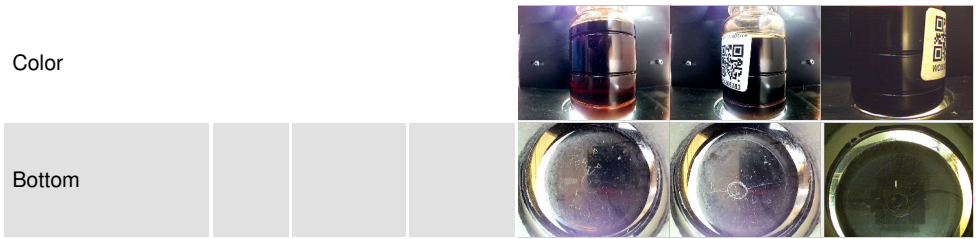
OIL ANALYSIS REPORT



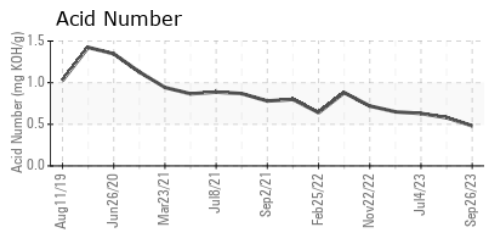
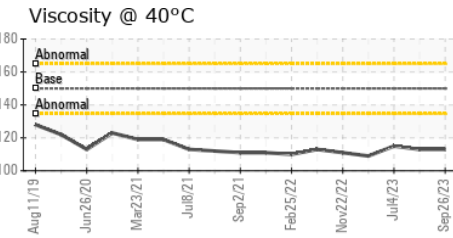
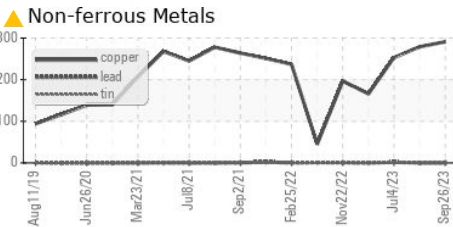
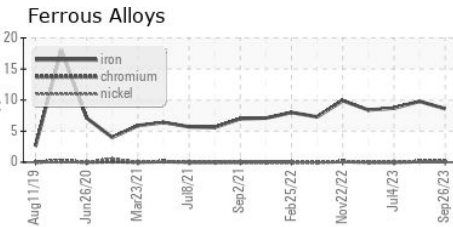
| VISUAL | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | NONE | 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 | >0.1 | NEG | NEG |
| Free Water | scalar | *Visual | | NEG | NEG |

| FLUID PROPERTIES | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| Visc @ 40°C | cSt | ASTM D445 | 150 | 113 | 115 |

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



GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0769482 **Received** : 03 Oct 2023
Lab Number : 05967869 **Diagnosed** : 05 Oct 2023
Unique Number : 10674420 **Diagnostician** : Don Baldrige
Test Package : IND 2 (Additional Tests: KF)

MARATHON PETROLEUM CO.
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 CATLETTSBURG, KY
 US 41169
 Contact: SHAWN MCCLASKEY
 stmccclaskey@marathonpetroleum.com
 T: (606)739-2416
 F: x:

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)