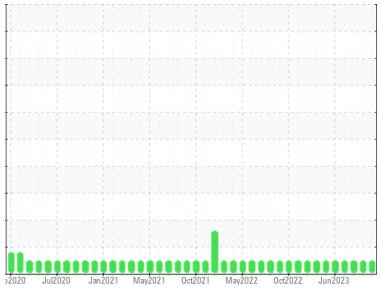
# OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Area
## Map Runner
Machine Id
## [Map Runner] Oil - Forward Genset
Component
**Forward Genset**
Fluid
**DIESEL ENGINE OIL SAE 15W40 (5 GAL)**

## DIAGNOSIS

**Recommendation**
Resample at the next service interval to monitor.

**Wear**
All component wear rates are normal.

**Contamination**
There is no indication of any contamination in the oil.

**Fluid Condition**
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0846097** | WC0719209 | WC0769259 |
| Sample Date | | Client Info | | **24 Oct 2023** | 27 Sep 2023 | 30 Aug 2023 |
| Machine Age | hrs | Client Info | | **8931** | 8602 | 8263 |
| Oil Age | hrs | Client Info | | **298** | 345 | 408 |
| Oil Changed | | Client Info | | **Changed** | Not Changd | Changed |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >4.0 | **<1.0** | <1.0 | <1.0 |
| Glycol | | WC Method | | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >50 | **5** | 4 | 6 |
| Chromium | ppm | ASTM D5185m | >4 | **<1** | 0 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | **<1** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Silver | ppm | ASTM D5185m | >5 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >12 | **2** | <1 | <1 |
| Lead | ppm | ASTM D5185m | >17 | **3** | 3 | 4 |
| Copper | ppm | ASTM D5185m | >70 | **2** | 1 | 3 |
| Tin | ppm | ASTM D5185m | >15 | **<1** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **<1** | 0 | <1 |
| Cadmium | ppm | ASTM D5185m | | **<1** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 250 | **2** | 2 | 5 |
| Barium | ppm | ASTM D5185m | 10 | **<1** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 100 | **68** | 63 | 64 |
| Manganese | ppm | ASTM D5185m | | **0** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 450 | **1509** | 1525 | 1537 |
| Calcium | ppm | ASTM D5185m | 3000 | **1130** | 1188 | 1205 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1106** | 1073 | 1062 |
| Zinc | ppm | ASTM D5185m | 1350 | **1340** | 1391 | 1339 |
| Sulfur | ppm | ASTM D5185m | 4250 | **3787** | 3637 | 4149 |

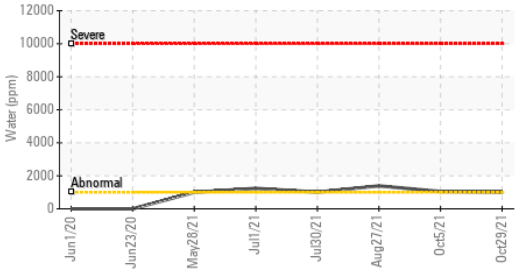
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **3** | 3 | 3 |
| Sodium | ppm | ASTM D5185m | >158 | **2** | <1 | 1 |
| Potassium | ppm | ASTM D5185m | >20 | **2** | <1 | <1 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | | **0.1** | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **9.6** | 9.4 | 10.2 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **21.3** | 20.9 | 21.2 |

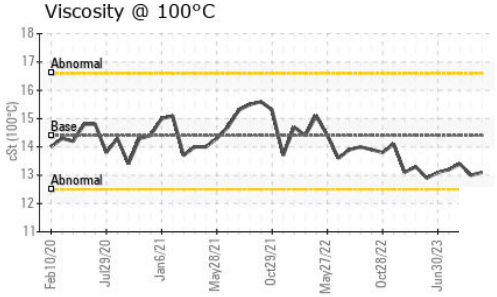
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **20.1** | 19.4 | 20.2 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 8.5 | **15.25** | 12.86 | 12.41 |

# OIL ANALYSIS REPORT

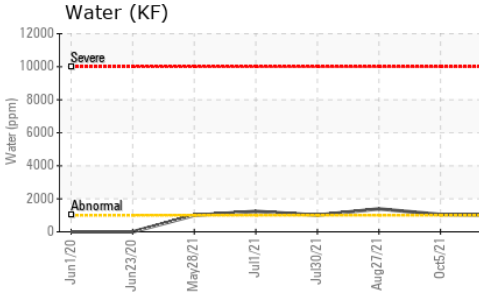
Water (KF)




Viscosity @ 100°C




Water (KF)

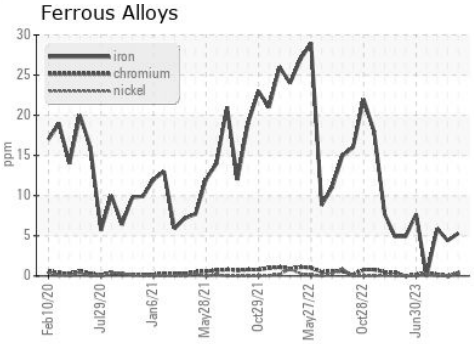



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Silt | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Debris | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Sand/Dirt | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Appearance | scalar | *Visual | NORML | **NORML** | NORML | NORML |
| Odor | scalar | *Visual | NORML | **NORML** | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.1 | **NEG** | NEG | NEG |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

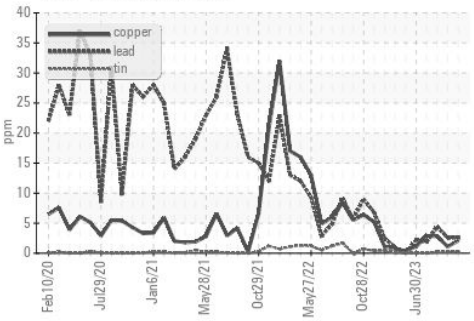
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 14.4 | **13.1** | 13.0 | 13.4 |

## GRAPHS

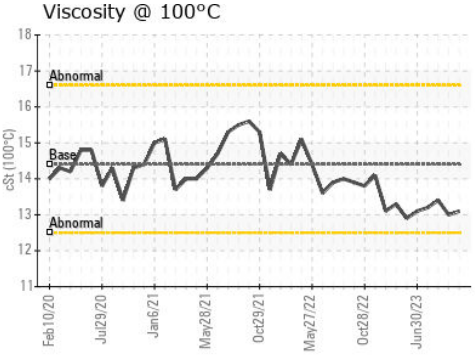
Ferrous Alloys



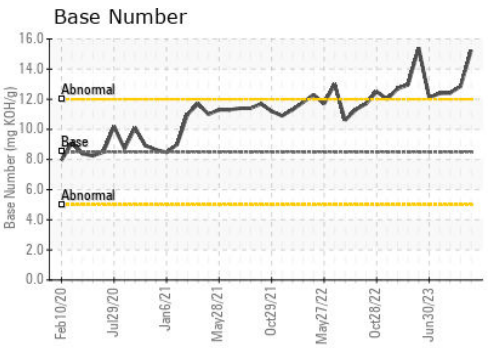

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0846097 **Received** : 01 Nov 2023
**Lab Number** : 05995904 **Diagnosed** : 02 Nov 2023
**Unique Number** : 10724264 **Diagnostician** : Sean Felton
**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)*

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