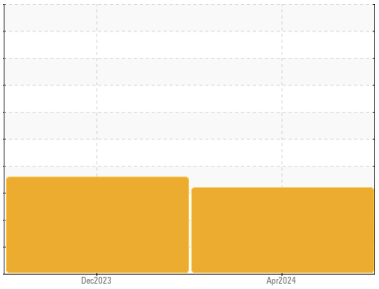
# OIL ANALYSIS REPORT

Sample Rating Trend




**FUEL**

Area
**LONGVIEW**
Machine Id
**FORD E13840**
Component
**Diesel Engine**
Fluid
**TULCO LUBSOIL CK-4 15W40 (3 GAL)**

## DIAGNOSIS

**▲ Recommendation**
We advise that you check the fuel injection system. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

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

**▲ Contamination**
There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

**▲ Fluid Condition**
The BN level is low. The oil is no longer serviceable due to the presence of contaminants.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **TO10003477** | TO50000834 | --- |
| Sample Date | | Client Info | | **01 Apr 2024** | 19 Dec 2023 | --- |
| Machine Age | hrs | Client Info | | **10500** | 9520 | --- |
| Oil Age | hrs | Client Info | | **680** | 300 | --- |
| Oil Changed | | Client Info | | **Changed** | Changed | --- |
| Sample Status | | | | **SEVERE** | SEVERE | --- |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Water | | WC Method | >0.2 | **NEG** | NEG | --- |
| Glycol | | WC Method | | **NEG** | NEG | --- |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **89** | ▲ 143 | --- |
| Chromium | ppm | ASTM D5185m | >20 | **2** | 3 | --- |
| Nickel | ppm | ASTM D5185m | >2 | **0** | <1 | --- |
| Titanium | ppm | ASTM D5185m | >2 | **0** | <1 | --- |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | --- |
| Aluminum | ppm | ASTM D5185m | >25 | **5** | 5 | --- |
| Lead | ppm | ASTM D5185m | >40 | **<1** | 0 | --- |
| Copper | ppm | ASTM D5185m | >330 | **3** | 3 | --- |
| Tin | ppm | ASTM D5185m | >15 | **<1** | 0 | --- |
| Vanadium | ppm | ASTM D5185m | | **<1** | 0 | --- |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | --- |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **<1** | 25 | --- |
| Barium | ppm | ASTM D5185m | | **0** | 0 | --- |
| Molybdenum | ppm | ASTM D5185m | 65 | **52** | 57 | --- |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | --- |
| Magnesium | ppm | ASTM D5185m | 1060 | **685** | 23 | --- |
| Calcium | ppm | ASTM D5185m | 1140 | **1057** | 1641 | --- |
| Phosphorus | ppm | ASTM D5185m | 1170 | **851** | 792 | --- |
| Zinc | ppm | ASTM D5185m | 1230 | **933** | 937 | --- |
| Sulfur | ppm | ASTM D5185m | 3130 | **3042** | 3838 | --- |

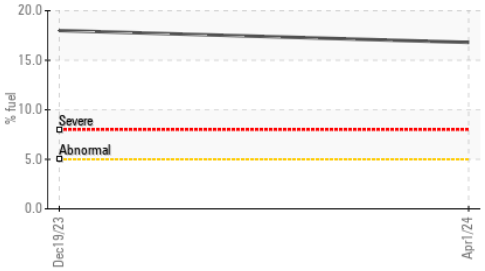
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **8** | 11 | --- |
| Sodium | ppm | ASTM D5185m | | **2** | <1 | --- |
| Potassium | ppm | ASTM D5185m | >20 | **0** | 1 | --- |
| Fuel | % | ASTM D3524 | >5 | ▲ **16.8** | ▲ 18.0 | --- |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **1.3** | 0.6 | --- |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **20.2** | 18.1 | --- |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **33.9** | 35.7 | --- |

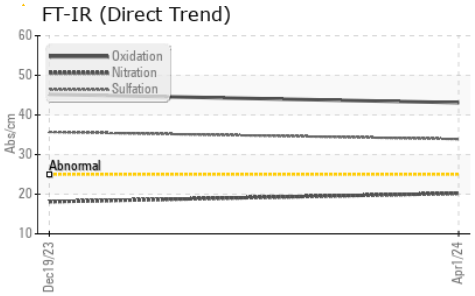
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **43.1** | 45.2 | --- |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 10.8 | ▲ **3.86** | 4.56 | --- |

# OIL ANALYSIS REPORT

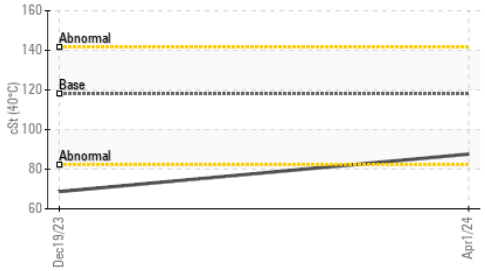
Fuel Dilution



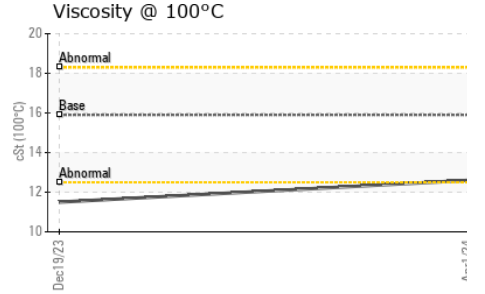

FT-IR (Direct Trend)



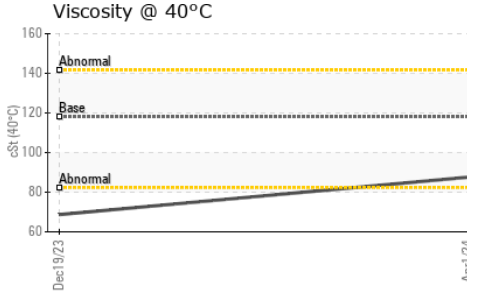

Viscosity @ 40°C




Viscosity @ 100°C




Viscosity @ 40°C

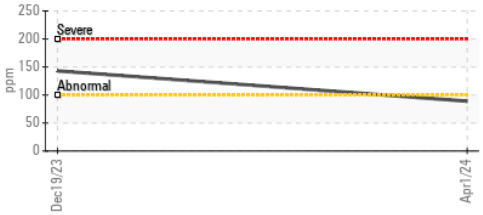



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **LIGHT** | NONE | --- |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Silt | 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 | >0.2 | **NEG** | NEG | --- |
| Free Water | scalar | *Visual | | **NEG** | NEG | --- |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D445 | 118 | **87.6** | ▲ 68.7 | --- |
| Visc @ 100°C | cSt | ASTM D445 | 15.9 | **12.6** | ▲ 11.5 | --- |
| Viscosity Index (VI) | Scale | ASTM D2270 | 143 | **140** | 162 | --- |

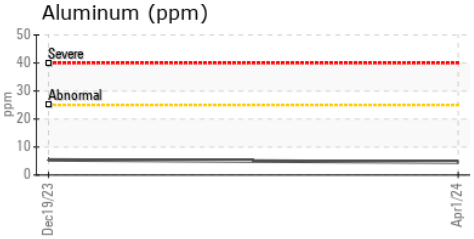
## GRAPHS

Iron (ppm)

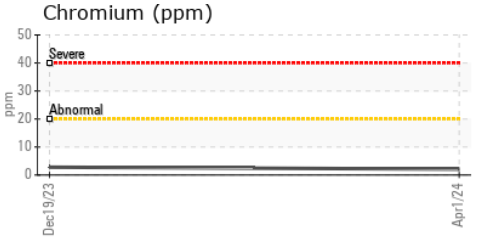



Lead (ppm)

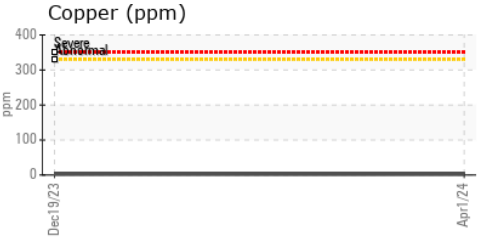

Aluminum (ppm)



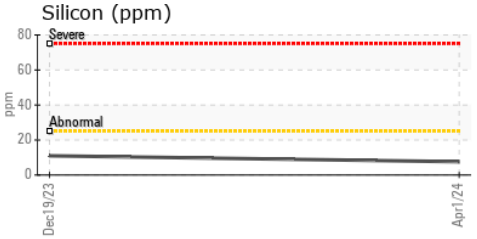

Chromium (ppm)



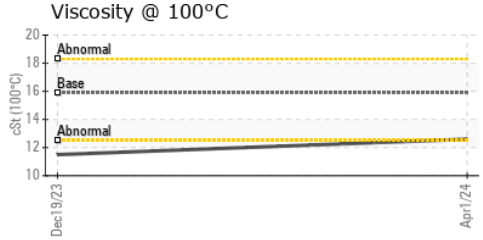

Copper (ppm)



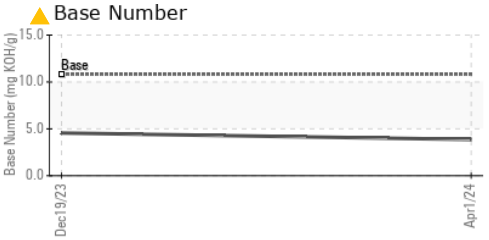

Silicon (ppm)




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : TO10003477
**Lab Number** : 06154667
**Unique Number** : 10990090
**Test Package** : MOB 2 ( Additional Tests: KV40, PercentFuel, VI )

**Received** : 19 Apr 2024
**Tested** : 23 Apr 2024
**Diagnosed** : 23 Apr 2024 - Don Baldridge

*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)*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