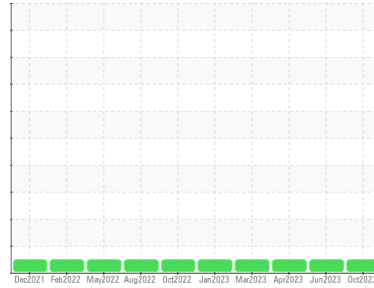




OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Machine Id

1806

Component

Diesel Engine

Fluid

DIESEL ENGINE OIL SAE 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

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 | | | WC0860379 | WC0810327 | WC0790581 |
| Sample Date | Client Info | | | 01 Oct 2023 | 05 Jun 2023 | 02 Apr 2023 |
| Machine Age | mls | Client Info | | 167783 | 156525 | 157499 |
| Oil Age | mls | Client Info | | 0 | 0 | 6000 |
| Oil Changed | Client Info | | | N/A | Changed | Changed |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---------------|-----------|--------|------------|----------------|----------|----------|
| Fuel | WC Method | >5 | | <1.0 | <1.0 | <1.0 |
| Water | WC Method | >0.2 | | NEG | NEG | NEG |
| Glycol | WC Method | | | NEG | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|-------------|-----|-------------|------------|--------------|----------|----------|
| Iron | ppm | ASTM D5185m | >100 | 4 | 6 | 8 |
| Chromium | ppm | ASTM D5185m | >20 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | <1 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | <1 | <1 | 0 |
| Silver | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | 3 | <1 | 0 |
| Lead | ppm | ASTM D5185m | >40 | <1 | 0 | 0 |
| Copper | ppm | ASTM D5185m | >330 | <1 | <1 | <1 |
| Tin | ppm | ASTM D5185m | >15 | 0 | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|------------|-----|-------------|------------|--------------|----------|----------|
| Boron | ppm | ASTM D5185m | 250 | 105 | 11 | 10 |
| Barium | ppm | ASTM D5185m | 10 | 0 | 0 | 2 |
| Molybdenum | ppm | ASTM D5185m | 100 | 75 | 73 | 67 |
| Manganese | ppm | ASTM D5185m | | <1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 450 | 281 | 409 | 345 |
| Calcium | ppm | ASTM D5185m | 3000 | 1622 | 1925 | 1773 |
| Phosphorus | ppm | ASTM D5185m | 1150 | 976 | 1090 | 1001 |
| Zinc | ppm | ASTM D5185m | 1350 | 1227 | 1344 | 1229 |
| Sulfur | ppm | ASTM D5185m | 4250 | 3211 | 4205 | 3137 |

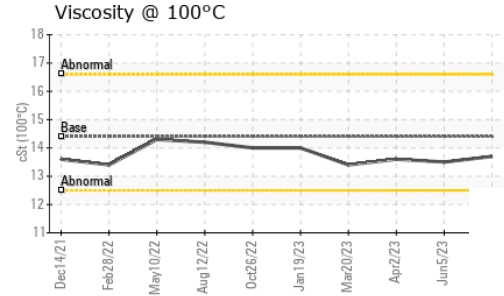
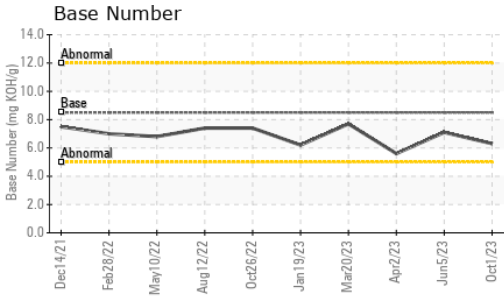
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|--------------|-----|-------------|------------|----------|----------|----------|
| Silicon | ppm | ASTM D5185m | >25 | 8 | 7 | 6 |
| Sodium | ppm | ASTM D5185m | >158 | 6 | 6 | 2 |
| Potassium | ppm | ASTM D5185m | >20 | 1 | <1 | 2 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|-----------|----------|-------------|------------|-------------|----------|----------|
| Soot % | % | *ASTM D7844 | >3 | 0.3 | 0.3 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 9.2 | 8.5 | 9.1 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 21.2 | 21.1 | 19.7 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|-------------------|----------|-------------|------------|-------------|----------|----------|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 17.5 | 18.8 | 18.6 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 8.5 | 6.3 | 7.1 | 5.6 |



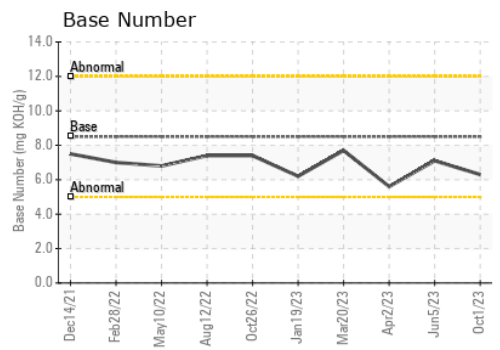
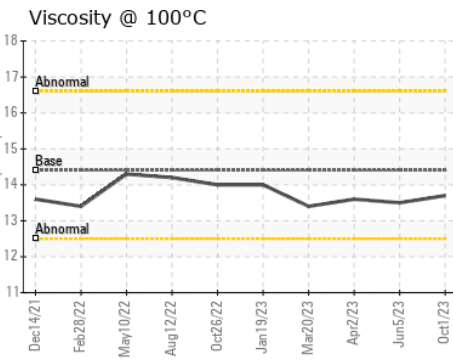
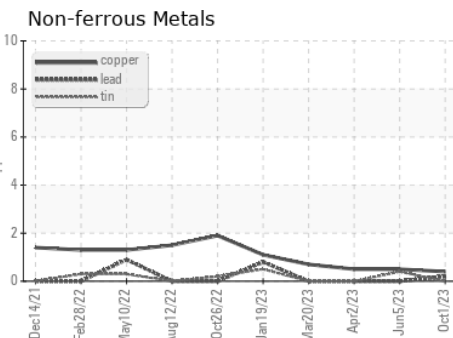
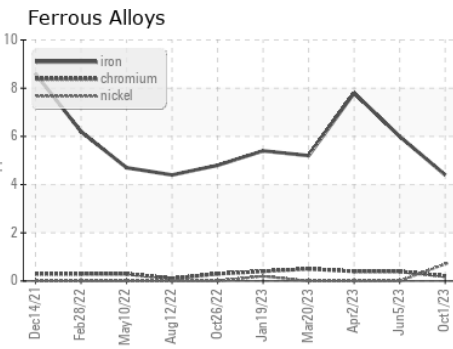
OIL ANALYSIS REPORT



| 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 | >0.2 | NEG | NEG |
| Free Water | scalar | *Visual | | NEG | NEG |

| FLUID PROPERTIES | method | limit/base | current | history1 | history2 | |
|------------------|--------|------------|---------|-------------|----------|------|
| Visc @ 100°C | cSt | ASTM D445 | 14.4 | 13.7 | 13.5 | 13.6 |

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0860379 **Received** : 21 Nov 2023
Lab Number : **06013777** **Diagnosed** : 22 Nov 2023
Unique Number : 10752921 **Diagnostician** : Wes Davis
Test Package : FLEET

TOWN OF CHAPEL HILL
 6900 MILLHOUSE RD
 CHAPEL HILL, NC
 US 27516
 Contact: Lisa DePasqua
 ldepasqua@townofchapelhill.org
 T: (919)696-4941
 F:

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)