



TRAAP

Texas Refinery Advanced Analysis Program

OIL ANALYSIS REPORT

| | |
|-----------------|--------|
| WEAR | NORMAL |
| CONTAMINATION | NORMAL |
| FLUID CONDITION | NORMAL |

Machine Id
TORO 5410-D FAIRWAY 2 (S/N 404534153)
 Component
Diesel Engine
 Fluid
TORO 10W30 (6 QTS)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|-------------|-------------|----------|
| Sample Number | | Client Info | | TR06196032 | TR05870477 | --- |
| Sample Date | | Client Info | | 16 May 2024 | 06 Jun 2023 | --- |
| Machine Age | hrs | Client Info | | 1168 | 920 | --- |
| Oil Age | hrs | Client Info | | 1168 | 800 | --- |
| Filter Age | hrs | Client Info | | 1168 | 800 | --- |
| Oil Changed | | Client Info | | Not Changd | Not Changd | --- |
| Filter Changed | | Client Info | | Not Changd | Not Changd | --- |
| Sample Status | | | | NORMAL | NORMAL | --- |

WEAR

All component wear rates are normal for time on oil.

| | | | | | | |
|--------------|--------|-------------|------|------|------|-----|
| Iron | ppm | ASTM D5185m | >100 | 124 | 76 | --- |
| Chromium | ppm | ASTM D5185m | >20 | 2 | 1 | --- |
| Nickel | ppm | ASTM D5185m | >4 | 0 | 0 | --- |
| Titanium | ppm | ASTM D5185m | | <1 | <1 | --- |
| Silver | ppm | ASTM D5185m | >3 | 0 | 0 | --- |
| Aluminum | ppm | ASTM D5185m | >20 | 5 | 4 | --- |
| Lead | ppm | ASTM D5185m | >40 | 13 | 4 | --- |
| Copper | ppm | ASTM D5185m | >330 | 57 | 51 | --- |
| Tin | ppm | ASTM D5185m | >15 | <1 | <1 | --- |
| Vanadium | ppm | ASTM D5185m | | <1 | 0 | --- |
| White Metal | scalar | *Visual | NONE | NONE | NONE | --- |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | --- |

CONTAMINATION

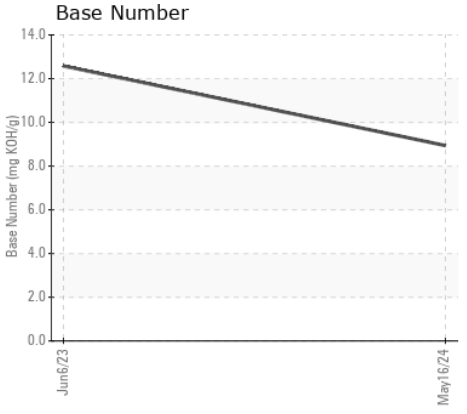
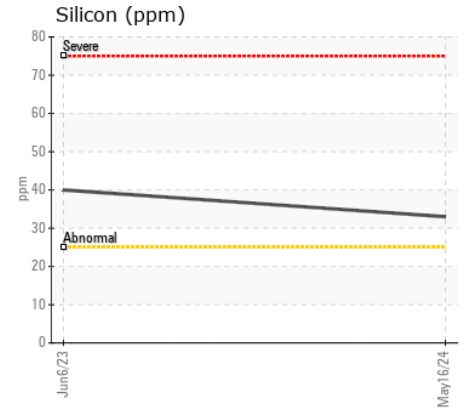
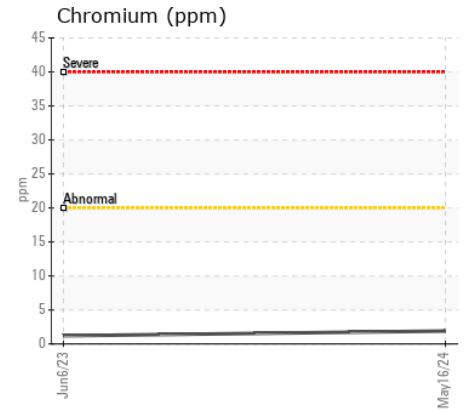
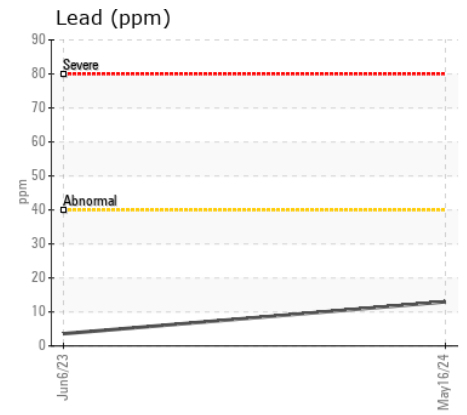
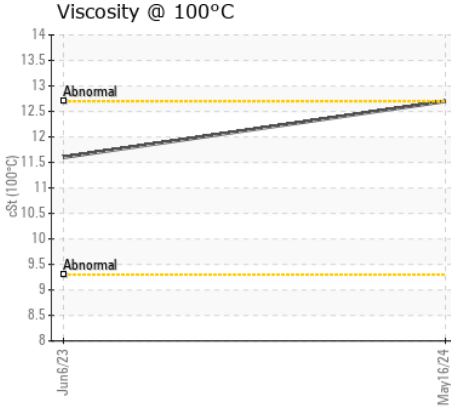
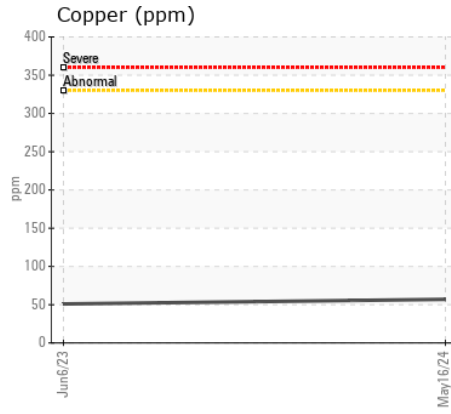
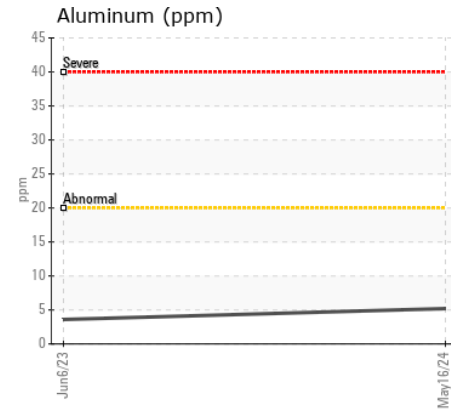
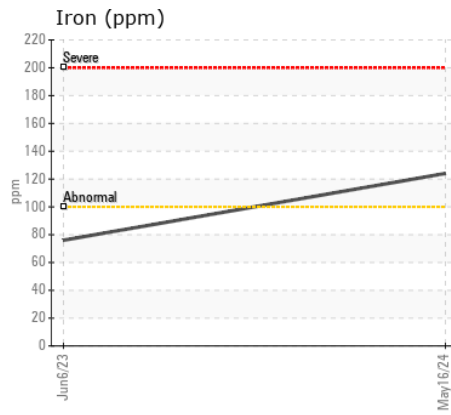
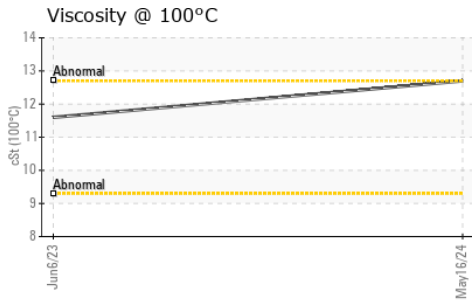
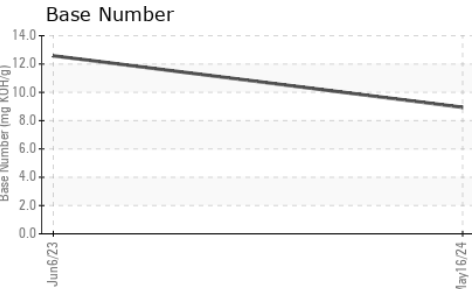
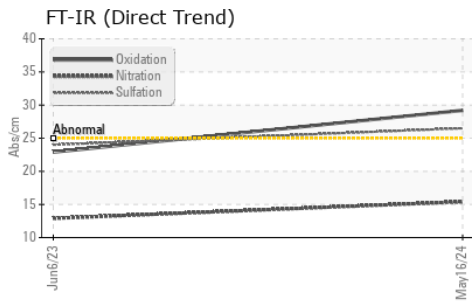
There is no indication of any contamination in the oil.

| | | | | | | |
|------------------|----------|-------------|-------|-------|-------|-----|
| Silicon | ppm | ASTM D5185m | >25 | 33 | 40 | --- |
| Potassium | ppm | ASTM D5185m | >20 | <1 | <1 | --- |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | --- |
| Water | | WC Method | >0.2 | NEG | NEG | --- |
| Glycol | | WC Method | | NEG | NEG | --- |
| Soot % | % | *ASTM D7844 | >3 | 0.7 | 0.5 | --- |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 15.4 | 12.9 | --- |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 26.5 | 24.0 | --- |
| 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 | --- |

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.

| | | | | | | |
|------------------|----------|-------------|-----|------|-------|-----|
| Sodium | ppm | ASTM D5185m | | 13 | 11 | --- |
| Boron | ppm | ASTM D5185m | | 5 | 5 | --- |
| Barium | ppm | ASTM D5185m | | 3 | 2 | --- |
| Molybdenum | ppm | ASTM D5185m | | 81 | 78 | --- |
| Manganese | ppm | ASTM D5185m | | 3 | 2 | --- |
| Magnesium | ppm | ASTM D5185m | | 1018 | 958 | --- |
| Calcium | ppm | ASTM D5185m | | 1975 | 1769 | --- |
| Phosphorus | ppm | ASTM D5185m | | 1163 | 1120 | --- |
| Zinc | ppm | ASTM D5185m | | 1569 | 1462 | --- |
| Sulfur | ppm | ASTM D5185m | | 3970 | 4162 | --- |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 29.2 | 22.9 | --- |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | 8.94 | 12.58 | --- |
| Visc @ 100°C | cSt | ASTM D445 | | 12.7 | 11.6 | --- |



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TR06196032
Lab Number : 06196032
Unique Number : 11058155
Test Package : MOB 2

Received : 30 May 2024
Tested : 02 Jun 2024
Diagnosed : 02 Jun 2024 - Don Baldrige

CITY PARK GOLF COURSE
 3201 E 23RD AVE
 DENVER, CO
 US 80205
 Contact: COLIN MURPHY
 Colin.murphy@denvergov.org

To discuss this sample report, contact Customer Service at 1-800-827-0711.

* - 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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F: