



TRAAP

Texas Refinery Advanced Analysis Program

OIL ANALYSIS REPORT

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

Machine Id  
**PETERBILT 02**

Component  
**Diesel Engine**

Fluid  
**TRC PRO-SPEC III SYNTHETIC BLEND 15W40 (--- QTS)**

**RECOMMENDATION**

Resample at the next service interval to monitor.

| Test           | UOM | Method      | Limit/Abn | Current     | History1    | History2    |
|----------------|-----|-------------|-----------|-------------|-------------|-------------|
| Sample Number  |     | Client Info |           | TR06229310  | TR06176278  | TR06079289  |
| Sample Date    |     | Client Info |           | 29 Jun 2024 | 17 Apr 2024 | 24 Jan 2024 |
| Machine Age    | mls | Client Info |           | 472927      | 2443878     | 241343      |
| Oil Age        | mls | Client Info |           | 29192       | 29953       | 31980       |
| Filter Age     | mls | Client Info |           | 29192       | 29953       | 31980       |
| Oil Changed    |     | Client Info |           | N/A         | Changed     | Changed     |
| Filter Changed |     | Client Info |           | Changed     | Changed     | Changed     |
| Sample Status  |     |             |           | NORMAL      | NORMAL      | NORMAL      |

**WEAR**

All component wear rates are normal.

|              |        |             |      |      |      |      |
|--------------|--------|-------------|------|------|------|------|
| Iron         | ppm    | ASTM D5185m | >100 | 52   | 64   | 47   |
| Chromium     | ppm    | ASTM D5185m | >20  | 3    | 2    | 2    |
| Nickel       | ppm    | ASTM D5185m | >2   | 3    | 2    | 4    |
| Titanium     | ppm    | ASTM D5185m | >2   | 1    | <1   | <1   |
| Silver       | ppm    | ASTM D5185m | >2   | <1   | 0    | 0    |
| Aluminum     | ppm    | ASTM D5185m | >25  | 5    | 6    | 3    |
| Lead         | ppm    | ASTM D5185m | >40  | 2    | 4    | 2    |
| Copper       | ppm    | ASTM D5185m | >330 | 12   | 12   | 6    |
| Tin          | ppm    | ASTM D5185m | >15  | 2    | 2    | 2    |
| Vanadium     | ppm    | ASTM D5185m |      | <1   | 0    | <1   |
| White Metal  | scalar | *Visual     | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual     | NONE | NONE | NONE | NONE |

**CONTAMINATION**

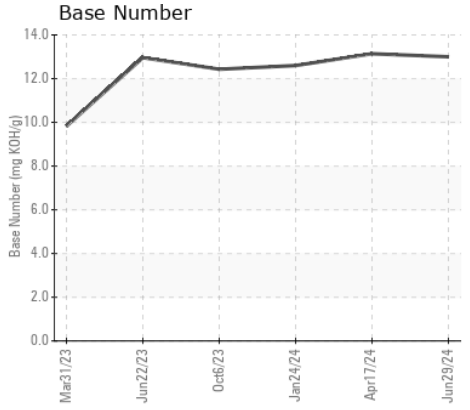
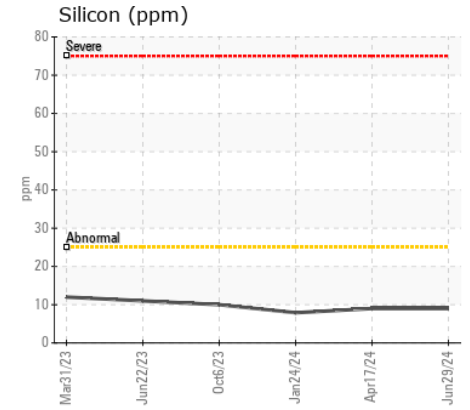
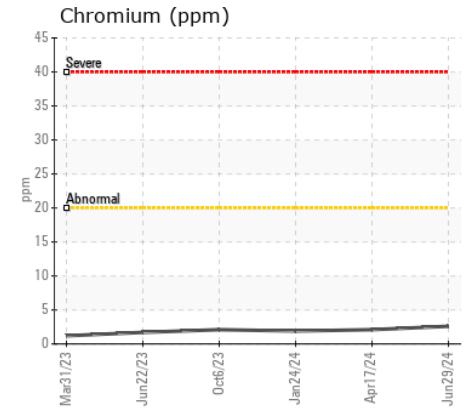
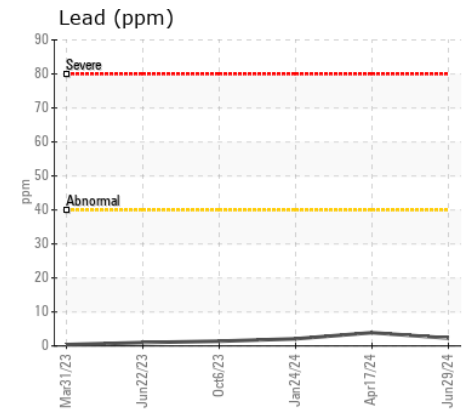
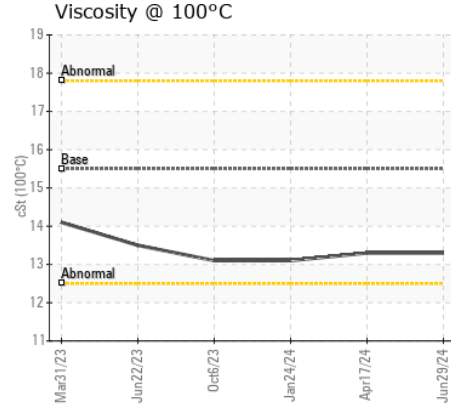
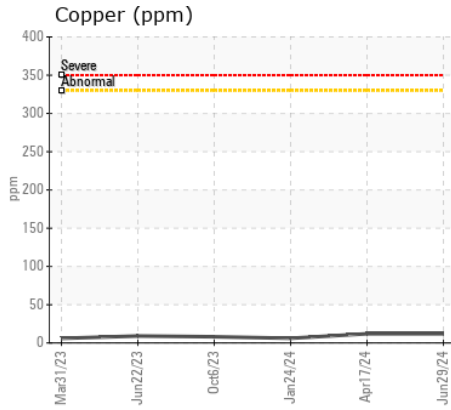
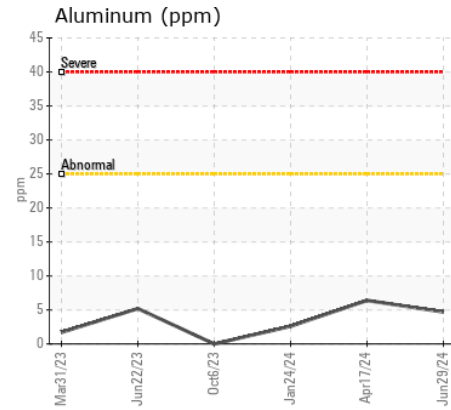
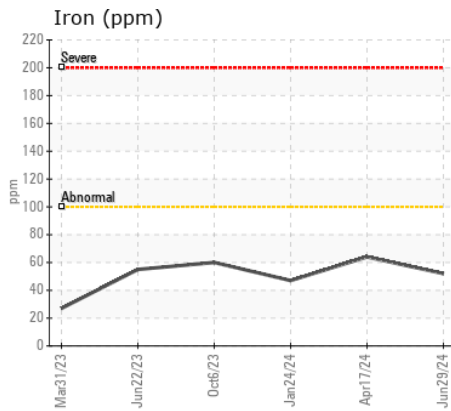
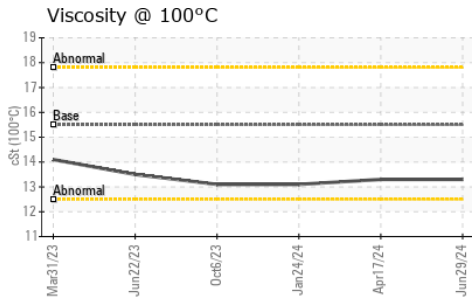
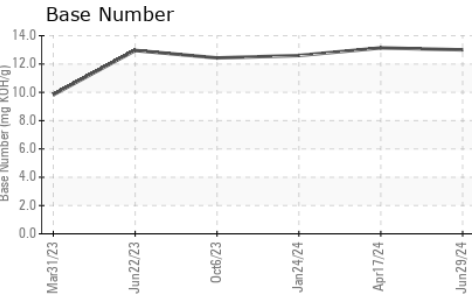
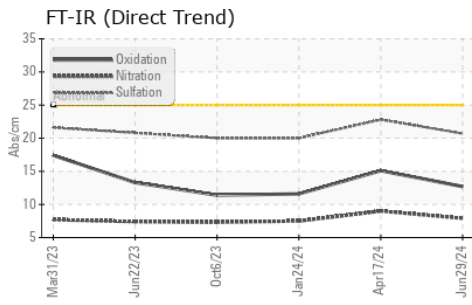
There is no indication of any contamination in the oil.

|                  |          |             |       |       |       |       |
|------------------|----------|-------------|-------|-------|-------|-------|
| Silicon          | ppm      | ASTM D5185m | >25   | 9     | 9     | 8     |
| Potassium        | ppm      | ASTM D5185m | >20   | 4     | 1     | 1     |
| Fuel             |          | WC Method   | >5    | <1.0  | <1.0  | <1.0  |
| Water            |          | WC Method   | >0.2  | NEG   | NEG   | NEG   |
| Glycol           |          | WC Method   |       | NEG   | NEG   | NEG   |
| Soot %           | %        | *ASTM D7844 | >3    | 0.6   | 0.6   | 0.5   |
| Nitration        | Abs/cm   | *ASTM D7624 | >20   | 7.9   | 9.0   | 7.5   |
| Sulfation        | Abs/.1mm | *ASTM D7415 | >30   | 20.7  | 22.8  | 20.0  |
| 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     | >0.2  | NEG   | 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 |      | 3     | 4     | 3     |
| Boron            | ppm      | ASTM D5185m |      | 2     | 10    | 0     |
| Barium           | ppm      | ASTM D5185m |      | 0     | <1    | 0     |
| Molybdenum       | ppm      | ASTM D5185m |      | 8     | 6     | 2     |
| Manganese        | ppm      | ASTM D5185m |      | 1     | <1    | <1    |
| Magnesium        | ppm      | ASTM D5185m |      | 36    | 40    | 26    |
| Calcium          | ppm      | ASTM D5185m |      | 4884  | 5020  | 4835  |
| Phosphorus       | ppm      | ASTM D5185m |      | 888   | 933   | 901   |
| Zinc             | ppm      | ASTM D5185m |      | 1097  | 1070  | 1033  |
| Sulfur           | ppm      | ASTM D5185m |      | 3726  | 4289  | 3577  |
| Oxidation        | Abs/.1mm | *ASTM D7414 | >25  | 12.7  | 15.1  | 11.6  |
| Base Number (BN) | mg KOH/g | ASTM D2896  |      | 13.00 | 13.14 | 12.60 |
| Visc @ 100°C     | cSt      | ASTM D445   | 15.5 | 13.3  | 13.3  | 13.1  |



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : TR06229310  
**Lab Number** : 06229310  
**Unique Number** : 11112803  
**Test Package** : MOB 2

**Received** : 05 Jul 2024  
**Tested** : 08 Jul 2024  
**Diagnosed** : 08 Jul 2024 - Wes Davis

**CIRCLE S TRANSPORTATION**  
 1055 CUMMINS LN  
 TEXLINE, TX  
 US 79087  
 Contact: MIKE LEWIS

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)

T:  
F: