



TRAAP

Texas Refinery Advanced Analysis Program

OIL ANALYSIS REPORT

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

Machine Id  
**1997 PETERBILT 97 PETE**  
 Component  
**Diesel Engine**  
 Fluid  
**TRC MOLY XL PRO-SPEC IV 15W40 (10 GAL)**

**RECOMMENDATION**

Resample at the next service interval to monitor.

| Test           | UOM | Method      | Limit/Abn | Current     | History1    | History2    |
|----------------|-----|-------------|-----------|-------------|-------------|-------------|
| Sample Number  |     | Client Info |           | TR04564977  | TR04155219  | TR04139948  |
| Sample Date    |     | Client Info |           | 24 Sep 2018 | 30 Jan 2017 | 23 Sep 2016 |
| Machine Age    | mls | Client Info |           | 520975      | 518141      | 517434      |
| Oil Age        | mls | Client Info |           | 3541        | 707         | 3507        |
| Filter Age     | mls | Client Info |           | 3541        | 707         | 3507        |
| Oil Changed    |     | Client Info |           | Changed     | Not Changd  | Changed     |
| Filter Changed |     | Client Info |           | Changed     | Not Changed | Changed     |
| Sample Status  |     |             |           | NORMAL      | NORMAL      | SEVERE      |

**WEAR**

All component wear rates are normal.

|              |        |             |      |      |      |       |
|--------------|--------|-------------|------|------|------|-------|
| Iron         | ppm    | ASTM D5185m | >100 | 9    | 4    | 23    |
| Chromium     | ppm    | ASTM D5185m | >20  | <1   | <1   | 1     |
| Nickel       | ppm    | ASTM D5185m | >2   | 0    | <1   | 0     |
| Titanium     | ppm    | ASTM D5185m | >2   | 0    | <1   | 0     |
| Silver       | ppm    | ASTM D5185m | >2   | 0    | 0    | <1    |
| Aluminum     | ppm    | ASTM D5185m | >25  | 4    | 4    | 4     |
| Lead         | ppm    | ASTM D5185m | >40  | 1    | <1   | ▲ 20  |
| Copper       | ppm    | ASTM D5185m | >330 | 27   | 18   | ▲ 256 |
| Tin          | ppm    | ASTM D5185m | >15  | <1   | 0    | ▲ 10  |
| Vanadium     | ppm    | ASTM D5185m |      | 0    | 0    | 0     |
| White Metal  | scalar | *Visual     | NONE | NONE | NONE | NONE  |
| Yellow Metal | scalar | *Visual     | NONE | NONE | NONE | NONE  |

**CONTAMINATION**

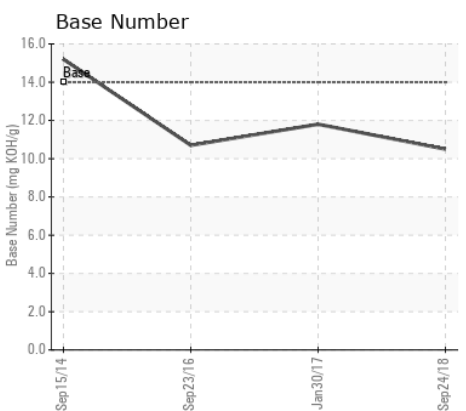
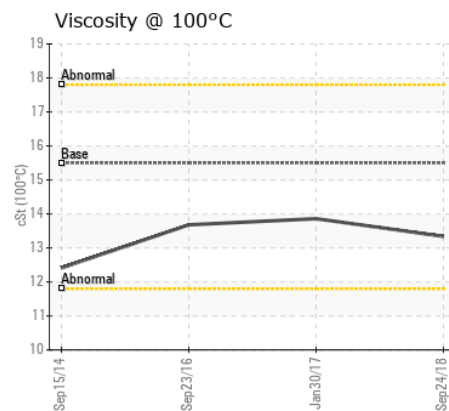
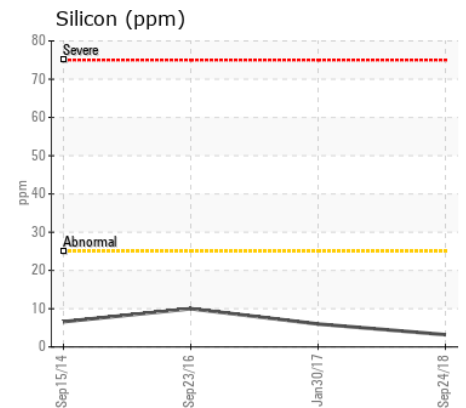
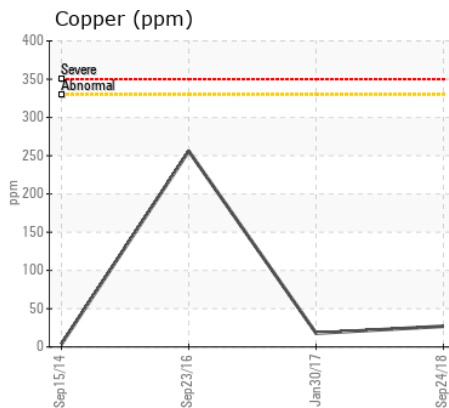
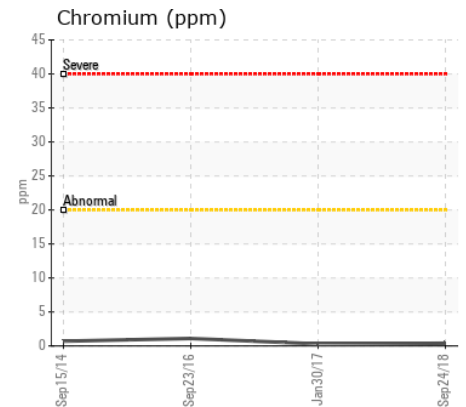
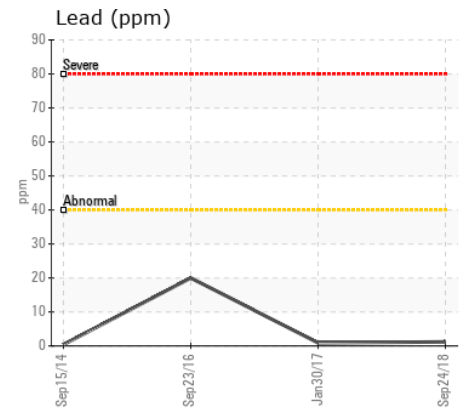
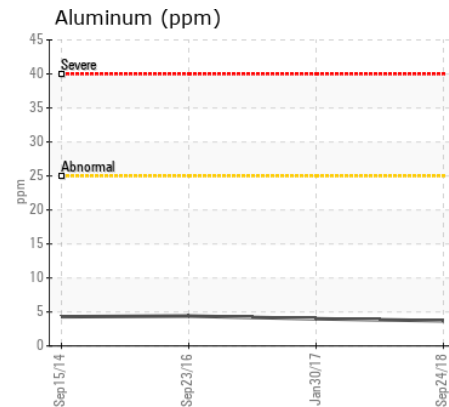
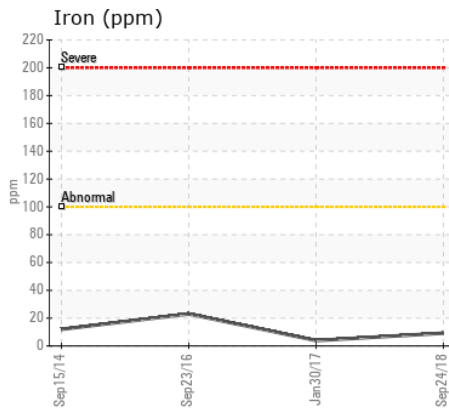
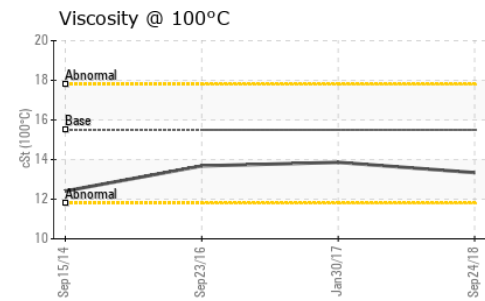
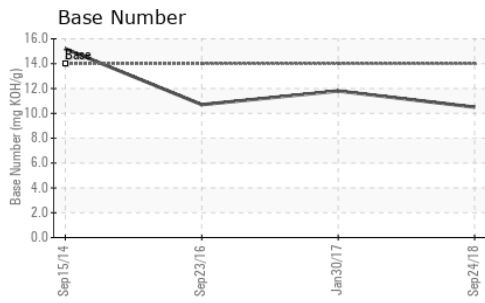
There is no indication of any contamination in the oil.

|                  |          |             |       |       |       |        |
|------------------|----------|-------------|-------|-------|-------|--------|
| Silicon          | ppm      | ASTM D5185m | >25   | 3     | 6     | 10     |
| Potassium        | ppm      | ASTM D5185m | >20   | 18    | 0     | ▲ 134  |
| Fuel             |          | WC Method   | >5    | <1.0  | <1.0  | <1.0   |
| Water            |          | WC Method   | >0.2  | NEG   | NEG   | NEG    |
| Glycol           |          | WC Method   |       | NEG   | 0.0   | ◆ 0.10 |
| Soot %           | %        | *ASTM D7844 | >3    | 0.3   | 0     | 0      |
| Nitration        | Abs/cm   | *ASTM D7624 | >20   | 8.7   | 6.    | 8.     |
| Sulfation        | Abs/.1mm | *ASTM D7415 | >30   | 18.8  | 16.   | 17.    |
| 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 |      | 43    | 37    | ▲ 497 |
| Boron            | ppm      | ASTM D5185m |      | 8     | 2     | 23    |
| Barium           | ppm      | ASTM D5185m |      | 0     | 0     | 0     |
| Molybdenum       | ppm      | ASTM D5185m |      | 166   | 171   | 230   |
| Manganese        | ppm      | ASTM D5185m |      | <1    | <1    | <1    |
| Magnesium        | ppm      | ASTM D5185m |      | 773   | 775   | 801   |
| Calcium          | ppm      | ASTM D5185m | 1300 | 1660  | 1600  | 1700  |
| Phosphorus       | ppm      | ASTM D5185m |      | 971   | 1067  | 1132  |
| Zinc             | ppm      | ASTM D5185m | 1300 | 1118  | 1197  | 1283  |
| Sulfur           | ppm      | ASTM D5185m |      | 3556  | 3465  | 3964  |
| Oxidation        | Abs/.1mm | *ASTM D7414 | >25  | 16.2  | 11.   | 13.   |
| Base Number (BN) | mg KOH/g | ASTM D2896  | 14   | 10.5  | 11.8  | 10.7  |
| Visc @ 100°C     | cSt      | ASTM D445   | 15.5 | 13.34 | 13.86 | 13.68 |



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : TR04564977  
**Lab Number** : 04564977  
**Unique Number** : 8353884  
**Test Package** : MOB 2  
**Received** : 04 Oct 2018  
**Tested** : 05 Oct 2018  
**Diagnosed** : 05 Oct 2018 - Wes Davis

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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