

# **OIL ANALYSIS REPORT**



# Machine Id PETERBILT 435

#### Component Diesel Engine

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

### DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

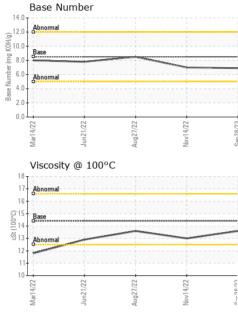
## Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| Sample NumberClient InfoPCA0082945PCA0069497PCA0069333Sample DateClient Info28 Sep 202314 Nov 202227 Aug 2022Machine AgemlsClient Info181394126568104548Oil AgemlsClient Info02201914804Oil ChangedClient InfoN/AChangedChangedSample StatusIINORMALNORMALNORMALCONTAMINATIONmethodlimit/basecurrenthistory1history2FuelWC Method>5<1.0<1.0<1.0WaterWC Method>0.2NEGNEGNEGGlycolWC Method>0.2NEGNEGNEGWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>100311715ChromiumppmASTM D5185m>2021<1NickelppmASTM D5185m>3000SilverppmASTM D5185m>201157LeadppmASTM D5185m>3302<1<12CopperppmASTM D5185m>152<1<10TinppmASTM D5185m>152<1<10ADDITIVESmethodIimit/basecurrenthistory1history2  |
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| Machine AgemlsClient Info181394126568104548Oil AgemlsClient Info02201914804Oil ChangedClient InfoN/AChangedChangedSample StatusIImit/basecurrenthistory1history2FuelWC Method>5<1.0<1.0<1.0WaterWC Method>0.2NEGNEGNEGGlycolWC Method>0.2NEGNEGNEGWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>100311715ChromiumppmASTM D5185m>2021<1NickelppmASTM D5185m>4<100SilverppmASTM D5185m>201157LeadppmASTM D5185m>3302<1<1CopperppmASTM D5185m>152<1<1VanadiumppmASTM D5185m>152<1<1VanadiumppmASTM D5185m<1000  |
| Oil AgemlsClient Info02201914804Oil ChangedClient InfoN/AChangedChangedSample StatusImageNORMALNORMALNORMALOCNTAMINATIONmethodlimit/basecurrenthistory1history2FuelWC Method>5<1.0<1.0<1.0WaterWC Method>0.2NEGNEGNEGGlycolWC Method>0.2NEGNEGNEGWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>100311715ChromiumppmASTM D5185m>2021<1NickelppmASTM D5185m>4<100SilverppmASTM D5185m>201157LeadppmASTM D5185m>201157LeadppmASTM D5185m>3302<1<1TinppmASTM D5185m>152<1<1VanadiumppmASTM D5185m>152<1<1VanadiumppmASTM D5185m<1000   |
| Oil ChangedClient InfoN/AChangedChangedSample StatusIIINORMALNORMALNORMALCONTAMINATIONmethodlimit/basecurrenthistory1history2FuelWC Method>5<1.0<1.0<1.0WaterWC Method>0.2NEGNEGNEGGlycolWC Method>0.2NEGNEGNEGWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>100311715ChromiumppmASTM D5185m>2021<1NickelppmASTM D5185m>4<100SilverppmASTM D5185m>201157LeadppmASTM D5185m>201157LeadppmASTM D5185m>3302<1<1TinppmASTM D5185m>152<1<1VanadiumppmASTM D5185m>152<1<1ppmASTM D5185m>152<1<1<1VanadiumppmASTM D5185m<100<1PoperppmASTM D5185m<100<1NormappmASTM D5185m<100<1PoperppmASTM D5185m<100<1PoperppmASTM D5185m<1  |
| Sample StatusNOR MethodNOR MALNOR MALNOR MALCONTAMINATIONmethodlimit/basecurrenthistory1history2FuelWC Method>5<1.0<1.0<1.0WaterWC Method>0.2NEGNEGNEGGlycolWC Method>0.2NEGNEGNEGWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>100311715ChromiumppmASTM D5185m>2021<1NickelppmASTM D5185m>4<10<1TitaniumppmASTM D5185m>3000SilverppmASTM D5185m>201157LeadppmASTM D5185m>201122CopperppmASTM D5185m>3302<1<1TinppmASTM D5185m>152<1<1VanadiumppmASTM D5185m>152<1<1VanadiumppmASTM D5185m<100ComperppmASTM D5185m<100VanadiumppmASTM D5185m<100Image: Normal Mathematical Mathematica |
| CONTAMINATIONmethodlimit/basecurrenthistory1history2FuelWC Method>5<1.0<1.0<1.0WaterWC Method>0.2NEGNEGNEGGlycolWC Method>0.2NEGNEGNEGWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>100311715ChromiumppmASTM D5185m>2021<1NickelppmASTM D5185m>4<100SilverppmASTM D5185m>201157LeadppmASTM D5185m>201157LeadppmASTM D5185m>404<12CopperppmASTM D5185m>3302<1<1TinppmASTM D5185m>152<1<1VanadiumppmASTM D5185m>152<1<1VanadiumppmASTM D5185m<1000CopperppmASTM D5185m>152<1<1VanadiumppmASTM D5185m<1000CadmiumppmASTM D5185m<1000  |
| FuelWC Method>5<1.0   |
| WaterWC Method>0.2NEGNEGNEGGlycolWC MethodNEGNEGNEGWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>100311715ChromiumppmASTM D5185m>2021<1NickelppmASTM D5185m>4<10<1TitaniumppmASTM D5185m>3000SilverppmASTM D5185m>201157LeadppmASTM D5185m>404<12CopperppmASTM D5185m>3302<1<1TinppmASTM D5185m>152<1<1VanadiumppmASTM D5185m>152<1<1VanadiumppmASTM D5185m<100  |
| GlycolWC MethodNEGNEGNEGWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>100311715ChromiumppmASTM D5185m>2021<1NickelppmASTM D5185m>4<10<1TitaniumppmASTM D5185m>3000SilverppmASTM D5185m>3000AluminumppmASTM D5185m>201157LeadppmASTM D5185m>3302<1<1TinppmASTM D5185m>152<1<1VanadiumppmASTM D5185m>152<1<1VanadiumppmASTM D5185m<1000CadmiumppmASTM D5185m<1000  |
| WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >100     31     17     15       Chromium     ppm     ASTM D5185m     >20     2     1     <1       Nickel     ppm     ASTM D5185m     >20     2     1     <1       Nickel     ppm     ASTM D5185m     >4     <1     0     <1       Titanium     ppm     ASTM D5185m     >4     <1     0     0       Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >20     11     5     7       Lead     ppm     ASTM D5185m     >40     4     <1     2       Copper     ppm     ASTM D5185m     >330     2     <1     <1       Tin     ppm     ASTM D5185m     >15     2     <1     <1       Vanadium     ppm     ASTM D5185m     <1     0     0                       |
| Iron     ppm     ASTM D5185m     >100     31     17     15       Chromium     ppm     ASTM D5185m     >20     2     1     <1  |
| Chromium     ppm     ASTM D5185m     >20     2     1     <1   |
| Nickel     ppm     ASTM D5185m     >4     <1  |
| Titanium     ppm     ASTM D5185m     <1   |
| Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >20     11     5     7       Lead     ppm     ASTM D5185m     >40     4     <1   |
| Aluminum     ppm     ASTM D5185m     >20     11     5     7       Lead     ppm     ASTM D5185m     >40     4     <1   |
| Lead     ppm     ASTM D5185m     >40     4     <1   |
| Copper     ppm     ASTM D5185m     >330     2     <1  |
| Tin     ppm     ASTM D5185m     >15     2     <1  |
| Vanadium     ppm     ASTM D5185m     <1   |
| Cadmium ppm ASTM D5185m <1 0 0  |
|   |
| ADDITIVES method limit/base current history1 history2   |
|   |
| Boron ppm ASTM D5185m 250 19 3 2  |
| Barium ppm ASTM D5185m 10 2 0 0   |
| Molybdenum ppm ASTM D5185m 100 104 61 58  |
| Manganese     ppm     ASTM D5185m     1     <1  |
| Magnesium     ppm     ASTM D5185m     450     1454     962     996  |
| Calcium     ppm     ASTM D5185m     3000     1795     1097     1097   |
| Phosphorus     ppm     ASTM D5185m     1150     1672     1024     1035  |
| Zinc ppm ASTM D5185m 1350 <b>1982</b> 1258 1286   |
| Sulfur     ppm     ASTM D5185m     4250     5128     3527     3221  |
| CONTAMINANTS method limit/base current history1 history2  |
| Silicon     ppm     ASTM D5185m     >25     9     7     10  |
| Sodium     ppm     ASTM D5185m     >158     6     2     2   |
| Potassium     ppm     ASTM D5185m     >20     23     11     17  |
| INFRA-RED method limit/base current history1 history2   |
| Soot % *ASTM D7844 >3 0.5 0.5 0.4   |
| Nitration     Abs/cm     *ASTM D7624     >20     9.4     9.6     9.2  |
| Sulfation     Abs/.1mm     *ASTM D7415     >30     22.7     22.3     22.7   |
|   |
| FLUID DEGRADATION method limit/base current history1 history2   |
| FLUID DEGRADATION method limit/base current history1 history2   Oxidation Abs/.1mm *ASTM D7414 >25 18.5 18.5 18.5   |



# **OIL ANALYSIS REPORT**



|                      | VISUAL   |  | method                              | limit/base   | current                | history1   | history2             |  |  |
|----------------------|--|--|-------------------------------------|--|------------------------|--|----------------------|--|--|
|                      | White Metal  | scalar   | *Visual                             | NONE   | NONE                   | NONE   | NONE                 |  |  |
|                      | Yellow Metal                                       | scalar   | *Visual                             | NONE   | NONE                   | NONE   | NONE                 |  |  |
|                      | Precipitate  | scalar   | *Visual                             | NONE   | NONE                   | NONE   | NONE                 |  |  |
|                      | Silt   | scalar   | *Visual                             | NONE   | NONE                   | NONE   | NONE                 |  |  |
|                      | Debris   | scalar   | *Visual                             | NONE   | NONE                   | NONE   | NONE                 |  |  |
|                      | Sand/Dirt  | scalar   | *Visual                             | NONE   | NONE                   | NONE   | NONE                 |  |  |
| Nov14/22<br>Sep28/23 | Appearance   | scalar   | *Visual                             | NORML  | NORML                  | NORML  | NORML                |  |  |
| Nov                  | Odor   | scalar   | *Visual                             | NORML  | NORML                  | NORML  | NORML                |  |  |
|                      | Emulsified Water                                   | scalar   | *Visual                             | >0.2   | NEG                    | NEG  | NEG                  |  |  |
|                      | Free Water   | scalar   | *Visual                             |  | NEG                    | NEG  | NEG                  |  |  |
|                      | FLUID PROPE  | RTIES  | method                              | limit/base   | current                | history1   | history2             |  |  |
|                      | Visc @ 100°C                                       | cSt  | ASTM D445                           | 14.4   | 13.6                   | 13.0   | 13.6                 |  |  |
|                      | GRAPHS   |  |                                     |  |                        |  |                      |  |  |
|                      | Ferrous Alloys                                     |  |                                     |  |                        |  |                      |  |  |
| cc.sc.               | 30 - iron  |  |                                     | 1  |                        |  |                      |  |  |
| ۲/4/22 Nov           | 25 - nickel  |  | /                                   |  |                        |  |                      |  |  |
|                      | E 15   |  | /                                   |  |                        |  |                      |  |  |
|                      | <sup>읍</sup> 15 -                                  | 1  |                                     |  |                        |  |                      |  |  |
|                      | 10   |  |                                     |  |                        |  |                      |  |  |
|                      | 5 -  |  |                                     |  |                        |  |                      |  |  |
|                      | 0  |  |                                     | and a second   |                        |  |                      |  |  |
|                      | Mar14/22<br>Jun21/22                               | Aug27/22   | Nov14/22                            | Sep28/23   |                        |  |                      |  |  |
|                      |  |  | Nov                                 | Sep  |                        |  |                      |  |  |
|                      | Non-ferrous Metal                                  | S  |                                     |  |                        |  |                      |  |  |
|                      | copper   |  |                                     |  |                        |  |                      |  |  |
|                      | 8 - tin  |  |                                     |  |                        |  |                      |  |  |
|                      | 6 -  |  |                                     |  |                        |  |                      |  |  |
|                      | шdd  |  |                                     |  |                        |  |                      |  |  |
|                      | 4  |  |                                     | And the state of t   |                        |  |                      |  |  |
|                      | 2-   | the age of the local division of the local d |                                     |  |                        |  |                      |  |  |
|                      |  | Station of the local division of the local d |                                     |  |                        |  |                      |  |  |
|                      | 4/22 + 0   | 1/22   | 4/22 -                              | 8/23   |                        |  |                      |  |  |
|                      | Mar14/22<br>Jun21/22                               | Aug27/22   | Nov14/22                            | Sep28/23   |                        |  |                      |  |  |
|                      | Viscosity @ 100°C                                  |  |                                     |  | Base Number            |  |                      |  |  |
|                      | 17 Abnormal  |  |                                     | 14.  | Abnormal               |  |                      |  |  |
|                      | 16   |  |                                     | 12.<br>©   |                        |  |                      |  |  |
|                      | G <sup>15</sup> Bare                               |  |                                     | Hoy 10.  | 0 -<br>Base            |  |                      |  |  |
|                      | 20014<br>314<br>313<br>Abnormal                    |  |                                     | er (mg   | 0                      |  | <u> </u>             |  |  |
|                      | dbnormal   |  |                                     | (b)H01<br>Buy source (b)<br>Buy source (c)<br>Buy source (c) | Abnormal               |  |                      |  |  |
|                      | 12   |  |                                     | ase 4.   | 0                      |  |                      |  |  |
|                      | 11   |  |                                     | 2.   | 0                      |  |                      |  |  |
|                      |  |  |                                     | .0 +   |                        | 22   | 22                   |  |  |
|                      | Mar14/22<br>Jun21/22                               | Aug27/22   | Nov14/22                            | Sep28/23   | Mar14/22<br>Jun21/22   | Aug27/22   | Nov14/22<br>Sep28/23 |  |  |
|                      | : WearCheck USA - 50<br>: PCA0082945<br>: 06128555 | n Ave., Cary, NC 27513<br>ved : 25 Mar 2024<br>d : 27 Mar 2024   |                                     |  | <b>LEFEBV</b><br>10895 | LEFEBVRE AND SONS<br>10895 171ST AVE NW<br>ELK RIVER, MN |                      |  |  |
| Unique Number        |  | Diagn  | nosed : 28 Mar 2024 - Don Baldridge |  |                        | Contact  | US 55330             |  |  |



Unique N Test Package : FLEET Contact: JAY LEFEBVRE Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. jay.lefebvre@leftruck.com \* - 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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