

## Machine Id **176** Component **Diesel Engine** Fluid **VALVOLINE PREMIUM BLUE 2000 15W40 (--- QTS)**

| RECOMMENDATION  | Test             | UOM       | Method        | Limit/Abn | Current     | History1    | History2    |
|---|------------------|-----------|---------------|-----------|-------------|-------------|-------------|
| Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor. | Sample Number    |           | Client Info   |           | WC0811882   | WC0863930   | WC0863926   |
|   | Sample Date      |           | Client Info   |           | 06 Apr 2024 | 02 Jan 2024 | 17 Nov 2023 |
|   | Machine Age      | mls       | Client Info   |           | 0           | 0           | 0           |
|   | Oil Age          | mls       | Client Info   |           | 15000       | 15000       | 15000       |
|   | Filter Age       | mls       | Client Info   |           | 0           | 0           | 0           |
|   | Oil Changed      |           | Client Info   |           | Changed     | N/A         | N/A         |
|   | Filter Changed   |           | Client Info   |           | Changed     | N/A         | N/A         |
|   | Sample Status    |           |               |           | ABNORMAL    | NORMAL      | NORMAL      |
| WEAR  | Iron             | ppm       | ASTM D5185m   | >100      | <b>1</b> 75 | 39          | 80          |
| O d'adam annula an anna da funna an 's 'ad'actad  | Chromium         | ppm       | ASTM D5185m   | >20       | 3           | <1          | 3           |
| Cylinder, crank, or cam shaft wear is indicated.  | Nickel           | ppm       | ASTM D5185m   | >4        | 0           | 0           | 0           |
|   | Titanium         | ppm       | ASTM D5185m   |           | 0           | 0           | <1          |
|   | Silver           | ppm       | ASTM D5185m   | >3        | 0           | 0           | 0           |
|   | Aluminum         | ppm       | ASTM D5185m   | >20       | 9           | 6           | 9           |
|   | Lead             | ppm       | ASTM D5185m   | >40       | 6           | 1           | 4           |
|   | Copper           | ppm       | ASTM D5185m   | >330      | <1          | 0           | <1          |
|   | Tin              | ppm       | ASTM D5185m   | >15       | 0           | 0           | <1          |
|   | Vanadium         | ppm       | ASTM D5185m   |           | 0           | 0           | <1          |
|   | White Metal      | scalar    | *Visual       | NONE      | NONE        | NONE        | NONE        |
|   | Yellow Metal     | scalar    | *Visual       | NONE      | NONE        | NONE        | NONE        |
| CONTAMINATION   | Silicon          | ppm       | ASTM D5185m   | >25       | 11          | 7           | 10          |
|   | Potassium        | ppm       | ASTM D5185m   | >20       | 8           | 5           | 12          |
| There is no indication of any contamination in the oil.   | Fuel             | 1.1.      | WC Method     |           | <1.0        | <1.0        | <1.0        |
|   | Water            |           | WC Method     | >0.2      | NEG         | NEG         | NEG         |
|   | Glycol           |           | WC Method     |           | NEG         | NEG         | NEG         |
|   | Soot %           | %         | *ASTM D7844   | >3        | 1.8         | 0.8         | 1.6         |
|   | Nitration        | Abs/cm    |               | >20       | 14.6        | 10.4        | 12.2        |
|   | Sulfation        | Abs/.1mm  | *ASTM D7415   | >30       | 25.8        | 21.0        | 22.5        |
|   | 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       | NORM        |
|   | Odor             | scalar    | *Visual       | NORML     | NORML       | NORML       | NORM        |
|   | Emulsified Water | scalar    | *Visual       | >0.2      | NEG         | NEG         | NEG         |
| FLUID CONDITION   | Sodium           | ppm       | ASTM D5185m   |           | 3           | <1          | 3           |
|   | Boron            | ppm       | ASTM D5185m   |           | 29          | 30          | 24          |
| The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.                         | Barium           | ppm       | ASTM D5185m   |           | 0           | 0           | 0           |
|   | Molybdenum       | ppm       | ASTM D5185m   |           | 54          | 59          | 63          |
|   | Manganese        | ppm       | ASTM D5185m   |           | <1          | <1          | <1          |
|   | Magnesium        | ppm       | ASTM D5185m   |           | 674         | 727         | 710         |
|   | Calcium          | ppm       | ASTM D5185m   |           | 1317        | 1152        | 1222        |
|   | Phosphorus       | ppm       | ASTM D5185m   |           | 764         | 696         | 695         |
|   | Zinc             | ppm       | ASTM D5185m   |           | 895         | 846         | 879         |
|   | Sulfur           | ppm       | ASTM D5185m   |           | 2701        | 2162        | 2259        |
|   | Oxidation        | Abs/.1mm  | *ASTM D510311 | >25       | 2701        | 18.2        | 20.1        |
|   | Base Number (BN) |           |               |           | 6.2         | 8.4         | 4.2         |
|   |                  | nig Koniy |               | 10.0      | 0.2         | 10.4        | 10.4        |

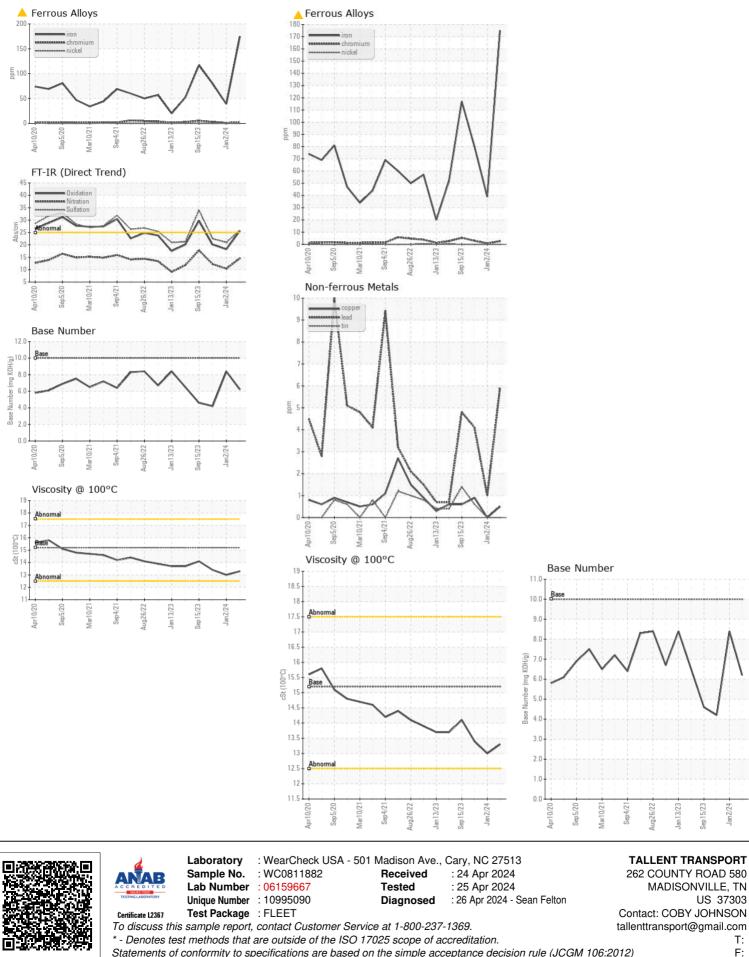
Visc @ 100°C cSt

ASTM D445 15.2

13.0

13.4

13.3



Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Contact/Location: COBY JOHNSON - TALATH Page 2 of 2