

## **OIL ANALYSIS REPORT**

# OKLAHOMA CITY 2018 FREIGHTLINER 7729

Diesel Engine

SHELL Rotella T5 15W-40 (--- QTS)

### 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.

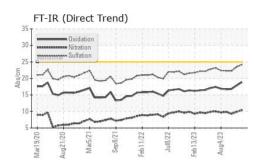


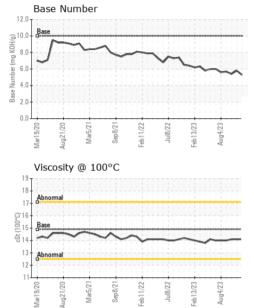
### <u>||---||||||---||||||-|||||||----</u>

| SAMPLE INFORM   | IATION   | method   | limit/base   | current   | history1  | history2   |
|---|--|--|--|---|---|--|
| Sample Number   |  | Client Info  |  | WC0857192   | WC0838590   | WC0838593  |
| Sample Date   |  | Client Info  |  | 05 Jan 2024   | 03 Nov 2023   | 05 Oct 2023  |
| Machine Age   | hrs  | Client Info  |  | 3135  | 2524  | 3474   |
| Oil Age   | hrs  | Client Info  |  | 0   | 0   | 0  |
| Oil Changed   |  | Client Info  |  | N/A   | N/A   | N/A  |
| Sample Status   |  |  |  | NORMAL  | NORMAL  | NORMAL   |
| CONTAMINATION   | N  | method   | limit/base   | current   | history1  | history2   |
| Fuel  |  | WC Method  | >3.0   | <1.0  | <1.0  | <1.0   |
| Water   |  | WC Method  | >0.2   | NEG   | NEG   | NEG  |
| Glycol  |  | WC Method  |  | NEG   | NEG   | NEG  |
| WEAR METALS   |  | method   | limit/base   | current   | history1  | history2   |
| Iron  | ppm  | ASTM D5185m  | >65  | 32  | 25  | 27   |
| Chromium  | ppm  | ASTM D5185m  | >5   | 4   | 4   | 4  |
| Nickel  | ppm  | ASTM D5185m  | >3   | 0   | 0   | <1   |
| Titanium  | ppm  | ASTM D5185m  | >5   | 0   | <1  | <1   |
| Silver  | ppm  | ASTM D5185m  |  | 0   | 0   | 0  |
| Aluminum  | ppm  | ASTM D5185m  |  | 16  | 13  | 13   |
| Lead  | ppm  | ASTM D5185m  |  | 0   | <1  | <1   |
| Copper  | ppm  | ASTM D5185m  |  | 35  | 33  | 32   |
| Tin   | ppm  | ASTM D5185m  |  | 4   | 4   | 4  |
| Vanadium  | ppm  | ASTM D5185m  |  | 0   | <1  | <1   |
| Cadmium   | ppm  | ASTM D5185m  |  | 0   | 0   | 0  |
|   |  |  |  |   |   |  |
| ADDITIVES   |  | method   | limit/base   | current   | history1  | history2   |
| ADDITIVES<br>Boron  | ppm  | method<br>ASTM D5185m  | limit/base   | current   | history1<br>73  | history2<br>76   |
|   | ppm<br>ppm   |  | limit/base   |   |   |  |
| Boron<br>Barium   | ppm  | ASTM D5185m  | limit/base   | 60  | 73  | 76   |
| Boron   |  | ASTM D5185m<br>ASTM D5185m   | limit/base   | 60<br>0   | 73<br>0   | 76<br>12   |
| Boron<br>Barium<br>Molybdenum   | ppm<br>ppm<br>ppm  | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base   | 60<br>0<br>83   | 73<br>0<br>73   | 76<br>12<br>76   |
| Boron<br>Barium<br>Molybdenum<br>Manganese  | ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | limit/base   | 60<br>0<br>83<br>1  | 73<br>0<br>73<br><1   | 76<br>12<br>76<br><1   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm                                    | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base   | 60<br>0<br>83<br>1<br>258   | 73<br>0<br>73<br><1<br>214  | 76<br>12<br>76<br><1<br>237  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium   | ppm<br>ppm<br>ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | limit/base   | 60<br>0<br>83<br>1<br>258<br>2060   | 73<br>0<br>73<br><1<br>214<br>1891  | 76<br>12<br>76<br><1<br>237<br>1781  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                             | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | limit/base   | 60<br>0<br>83<br>1<br>258<br>2060<br>1120   | 73<br>0<br>73<br><1<br>214<br>1891<br>927   | 76<br>12<br>76<br><1<br>237<br>1781<br>959   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base   | 60<br>0<br>83<br>1<br>258<br>2060<br>1120<br>1397   | 73<br>0<br>73<br><1<br>214<br>1891<br>927<br>1282   | 76<br>12<br>76<br><1<br>237<br>1781<br>959<br>1247   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  |  | 60<br>0<br>83<br>1<br>258<br>2060<br>1120<br>1397<br>3679   | 73<br>0<br>73<br><1<br>214<br>1891<br>927<br>1282<br>2895   | 76<br>12<br>76<br><1<br>237<br>1781<br>959<br>1247<br>2893   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                      | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base   | 60<br>0<br>83<br>1<br>258<br>2060<br>1120<br>1397<br>3679<br>current  | 73<br>0<br>73<br><1<br>214<br>1891<br>927<br>1282<br>2895<br>history1   | 76<br>12<br>76<br><1<br>237<br>1781<br>959<br>1247<br>2893<br>history2   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br><b>method</b><br>ASTM D5185m   | limit/base   | 60<br>0<br>83<br>1<br>258<br>2060<br>1120<br>1397<br>3679<br>current<br>5   | 73<br>0<br>73<br><1<br>214<br>1891<br>927<br>1282<br>2895<br>history1<br>5  | 76<br>12<br>76<br><1<br>237<br>1781<br>959<br>1247<br>2893<br>history2<br>5  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br><b>method</b><br>ASTM D5185m<br>ASTM D5185m  | limit/base   | 60<br>0<br>83<br>1<br>258<br>2060<br>1120<br>1397<br>3679<br><u>current</u><br>5<br>2   | 73<br>0<br>73<br><1<br>214<br>1891<br>927<br>1282<br>2895<br>history1<br>5<br>2   | 76<br>12<br>76<br><1<br>237<br>1781<br>959<br>1247<br>2893<br>history2<br>5<br>2   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185m<br>ASTM D5185m  | limit/base<br>>15<br>>20   | 60<br>0<br>83<br>1<br>258<br>2060<br>1120<br>1397<br>3679<br>current<br>5<br>2<br>2<br>25   | 73<br>0<br>73<br><1<br>214<br>1891<br>927<br>1282<br>2895<br>history1<br>5<br>2<br>2<br>20                                    | 76<br>12<br>76<br><1<br>237<br>1781<br>959<br>1247<br>2893<br>history2<br>5<br>2<br>2<br>22  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>INFRA-RED                                     | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm        | ASTM D5185m<br>ASTM D5185m   | limit/base<br>>15<br>>20<br>limit/base                                   | 60<br>0<br>83<br>1<br>258<br>2060<br>1120<br>1397<br>3679<br>current<br>5<br>2<br>2<br>25<br>current<br>0.7                               | 73<br>0<br>73<br><1<br>214<br>1891<br>927<br>1282<br>2895<br>history1<br>5<br>2<br>20<br>history1<br>0.7                      | 76<br>12<br>76<br><1<br>237<br>1781<br>959<br>1247<br>2893<br>history2<br>5<br>2<br>2<br>22<br>history2                                    |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>INFRA-RED<br>Soot %                           | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m<br>ASTM D5185m  | limit/base<br>>15<br>>20<br>limit/base<br>>3                             | 60<br>0<br>83<br>1<br>258<br>2060<br>1120<br>1397<br>3679<br>current<br>5<br>2<br>2<br>25<br>current                                      | 73<br>0<br>73<br><1<br>214<br>1891<br>927<br>1282<br>2895<br>history1<br>5<br>2<br>20<br>history1                             | 76<br>12<br>76<br><1<br>237<br>1781<br>959<br>1247<br>2893<br>history2<br>5<br>2<br>22<br>22<br>history2<br>0.6                            |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>INFRA-RED<br>Soot %<br>Nitration              | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m<br>ASTM D5185m   | limit/base<br>>15<br>>20<br>limit/base<br>>3<br>>20                      | 60<br>0<br>83<br>1<br>258<br>2060<br>1120<br>1397<br>3679<br><i>current</i><br>5<br>2<br>25<br>25<br><i>current</i><br>0.7<br>10.4        | 73<br>0<br>73<br><1<br>214<br>1891<br>927<br>1282<br>2895<br>history1<br>5<br>2<br>20<br>history1<br>0.7<br>9.9               | 76<br>12<br>76<br><1<br>237<br>1781<br>959<br>1247<br>2893<br>history2<br>5<br>2<br>2<br>22<br>history2<br>0.6<br>9.3                      |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>INFRA-RED<br>Soot %<br>Nitration<br>Sulfation | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m<br>ASTM D7844<br>*ASTM D7624<br>*ASTM D7615 | limit/base<br>>15<br>>20<br>limit/base<br>>3<br>>20<br>>30<br>limit/base | 60<br>0<br>83<br>1<br>258<br>2060<br>1120<br>1397<br>3679<br>Current<br>5<br>2<br>25<br>Current<br>0.7<br>10.4<br>24.2<br>Current         | 73<br>0<br>73<br>214<br>1891<br>927<br>1282<br>2895<br>history1<br>5<br>2<br>20<br>history1<br>0.7<br>9.9<br>23.5<br>history1 | 76<br>12<br>76<br><1<br>237<br>1781<br>959<br>1247<br>2893<br>history2<br>5<br>2<br>22<br>22<br>history2<br>0.6<br>9.3<br>22.3             |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>INFRA-RED<br>Soot %<br>Nitration<br>Sulfation | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m<br>ASTM D5185m                              | limit/base >15 >20 limit/base >3 >20 >30                                 | 60<br>0<br>83<br>1<br>258<br>2060<br>1120<br>1397<br>3679<br><b>current</b><br>5<br>2<br>2<br>25<br><b>current</b><br>0.7<br>10.4<br>24.2 | 73<br>0<br>73<br><1<br>214<br>1891<br>927<br>1282<br>2895<br>history1<br>5<br>2<br>20<br>history1<br>0.7<br>9.9<br>23.5       | 76<br>12<br>76<br><1<br>237<br>1781<br>959<br>1247<br>2893<br>history2<br>5<br>2<br>22<br>22<br>history2<br>0.6<br>9.3<br>22.3<br>history2 |



## **OIL ANALYSIS REPORT**

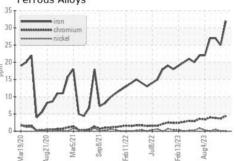


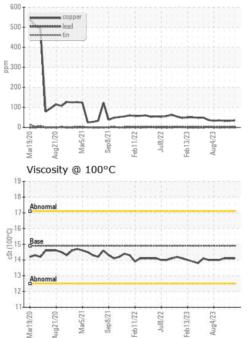


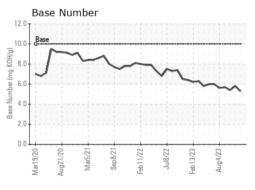
| VISUAL           |        | method    | limit/base | current | history1 | history2 |
|------------------|--------|-----------|------------|---------|----------|----------|
| White Metal      | scalar | *Visual   | NONE       | NONE    | NONE     | NONE     |
| Yellow Metal     | scalar | *Visual   | 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     |
| Appearance       | scalar | *Visual   | NORML      | NORML   | NORML    | NORML    |
| Odor             | scalar | *Visual   | NORML      | NORML   | NORML    | NORML    |
| Emulsified Water | scalar | *Visual   | >0.2       | NEG     | NEG      | NEG      |
| Free Water       | scalar | *Visual   |            | NEG     | NEG      | NEG      |
| FLUID PROPERT    | TIES   | method    | limit/base | current | history1 | history2 |
| Visc @ 100°C     | cSt    | ASTM D445 | 14.9       | 14.1    | 14.1     | 14.1     |
| CDADUS           |        |           |            |         |          |          |

Ferrous Alloys

Non-ferrous Metals







Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 LIBERTY DISPOSAL Sample No. : WC0857192 Received : 15 Apr 2024 6401 S EASTERN AVE Lab Number : 06149357 Tested : 16 Apr 2024 OKLAHOMA CITY, OK Unique Number : 10979435 Diagnosed : 17 Apr 2024 - Don Baldridge US 73149 Test Package : FLEET Contact: RICK SCHMIDT Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. r.schmidt@ldi89.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F:

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Contact/Location: RICK SCHMIDT - SEAOKL

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