

## **FUEL REPORT**

Sample Rating Trend



Machine Id

**KIOTI XW5000264** 

#### Component Diesel Fuel Fluid RED DIESEL (--- GAL)

#### DIAGNOSIS

#### Recommendation

No corrective action is recommended at this time. All laboratory tests indicate that this sample meets specifications for No.2 ultra-low-sulfur diesel fuel.

#### Corrosion

All metal levels are normal indicating no corrosion in the system.

#### Contaminants

The water content is negligible. There is no bacteria or fungus (yeast and/or mold) indicated in the sample. There is no indication of any contamination in the fuel. The amount and size of particulates present in the system are acceptable.

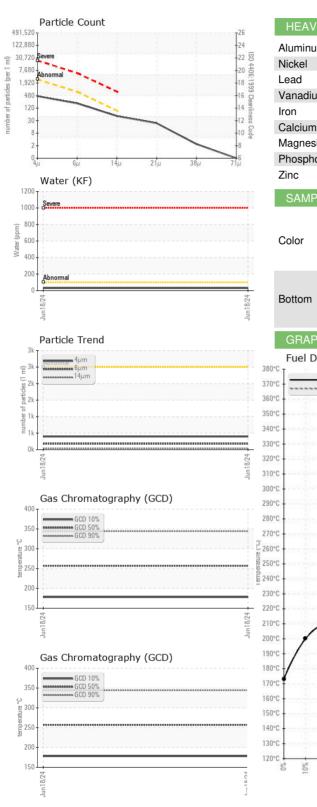
### **Fuel Condition**

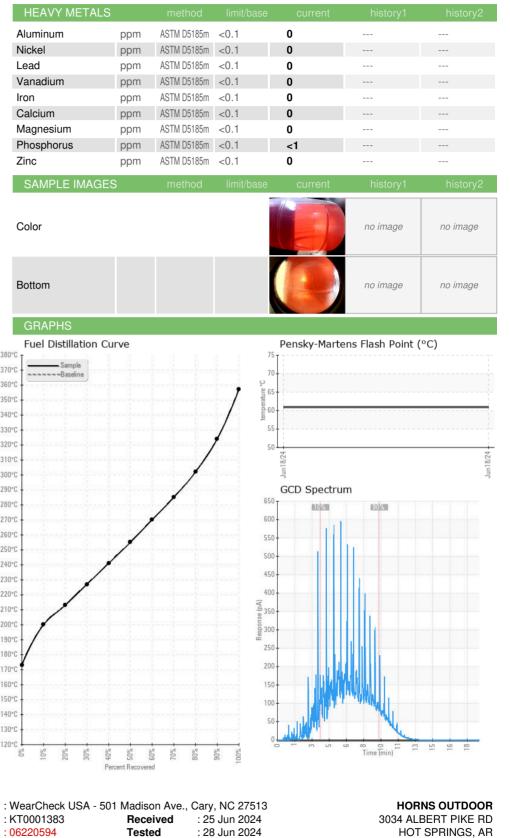
Sulfur value derived by ASTM D5453 method for ULSD validation. Sulfur level is acceptable for ULSD specification.

| ASTM Color         scalar         'ASTM D1500         L4.0             Pensky-Marens Flash Point         °C         'PICC Calcutest         60.9             SULFUR CONTENT         method         imit/base         current         history1         history1           Sulfur (UVF)         ppm         ASTM D565         27             DISTILLATION         method         Imit/base         current         history1            Distill Boling Point         °C         ASTM D66         173             10% Distillation Point         °C         ASTM D66         200             10% Distill Point         °C         ASTM D86         207             20% Distill Point         °C         ASTM D86         213             20% Distill Point         °C         ASTM D86         2255             20% Distill Point         °C         ASTM D86         302             20% Distill Point         °C         ASTM D86         324             20% Distill Point </th <th>SAMPLE INFORM</th> <th><b>1ATION</b></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>  | SAMPLE INFORM              | <b>1ATION</b> | method           | limit/base  | current     | history1        | history2   |
|--|----------------------------|---------------|------------------|-------------|-------------|-----------------|------------|
| Machine Age<br>Sample Status         Ins         Client Info         7             PHYSICAL PROPERTIES         method         Imit/base         current         history1         history1           ASTM Color         scalar         'ASTM D1500         L4.0             SUFUCION         scalar         'ASTM D1500         L4.0             SUFUCION         v         'PMCCalzates'         60.9             SUFUCION         method         Imit/base         current         history1            Suffur         ppm         ASTM D5653         8             DISTILLATION         method         Imit/base         current         history1         history1           Initial Boiling Point         °C         ASTM D66         173             10% Distillation Point         °C         ASTM D66         200             10% Distill Point         °C         ASTM D86         227             10% Distill Point         °C         ASTM D86         2285             20% Distill Point </td <td>Sample Number</td> <td></td> <td>Client Info</td> <td></td> <th>KT0001383</th> <td></td> <td></td>          | Sample Number              |               | Client Info      |             | KT0001383   |                 |            |
| Sample Status         NORMAL             PHYSICAL PROPERTIES         method         imit/base         current         history1         history1           ASTM Color         scalar         'ASTM D1500         L4.0             PenskyMatens Rash Point         'C         'PMCC Globaled         60.9             SULFUR CONTENT         method         limit/base         current         history1         history1           Sulfur         ppm         ASTM D5185m         27             DISTILLATION         method         limit/base         current         history1         history1           Distillation Point         °C         ASTM D86         173             10% Distill Point         °C         ASTM D86         200             20% Distill Point         °C         ASTM D86         213             20% Distill Point         °C         ASTM D86         227             20% Distill Point         °C         ASTM D86         2265             20% Distill Point         °C <t< td=""><td>Sample Date</td><td></td><td>Client Info</td><td></td><th>18 Jun 2024</th><td></td><td></td></t<> | Sample Date                |               | Client Info      |             | 18 Jun 2024 |                 |            |
| PHYSICAL PROPERTIES         method         limit/base         current         history1         history1           ASTM Color         scalar         'ASTM D1500         L4.0             PenskyMartens Rash Point         °C         'Pil00 Calculated         60.9             SUlFUR CONTENT         method         limit/base         current         history1         history1           Sulfur (UVF)         ppm         ASTM D565         8             DISTILLATION         method         limit/base         current         history1         history1           Initial Boiling Point         °C         ASTM D66         191             10% Distillation Point         °C         ASTM D86         207             10% Distill Point         °C         ASTM D86         213             20% Distill Point         °C         ASTM D86         227             20% Distill Point         °C         ASTM D86         221             20% Distill Point         °C         ASTM D86         2313   | Machine Age                | hrs           | Client Info      |             | 7           |                 |            |
| ASTM Color         scalar         'ASTM D1500         L4.0             Pensky-Martens Rash Point         °C         'PI000 Calculated         60.9             SULFUR CONTENT         method         imit/base         current         history1         history1           Sulfur         ppm         ASTM D5185m         27             Sulfur (UVF)         ppm         ASTM D56         173             DISTILLATION         method         imit/base         current         history1         history1           Initial Boiling Point         °C         ASTM D86         191             10% Distill Point         °C         ASTM D86         200             10% Distill Point         °C         ASTM D86         213             20% Distill Point         °C         ASTM D86         2255             20% Distill Point         °C         ASTM D86         302             20% Distill Point         °C         ASTM D86         324             20% Distill Point  | Sample Status              |               |                  |             | NORMAL      |                 |            |
| Pensky-Martens Flash Point         °C         'PMICC Catulated         60.9             SULFUR CONTENT         method         limit/base         current         history1         history1           Sulfur (UVF)         ppm         ASTM D5185m         27             DISTILLATION         method         limit/base         current         history1         history1           Initial Boiling Point         °C         ASTM D86         173             10% Distill Point         °C         ASTM D86         200             10% Distill Point         °C         ASTM D86         213             10% Distill Point         °C         ASTM D86         241             10% Distill Point         °C         ASTM D86         241             10% Distill Point         °C         ASTM D86         265             10% Distill Point         °C         ASTM D86         302             10% Distill Point         °C         ASTM D86         337             90% Distill Po   | PHYSICAL PROP              | ERTIES        | method           | limit/base  | current     | history1        | history2   |
| SULFUR CONTENT         method         imit/base         current         history1         history1           Sulfur         ppm         ASTM D5185m         27             Sulfur (UVF)         ppm         ASTM D5453         8             DISTILLATION         method         limit/base         current         history1         history1           Initial Boiling Point         °C         ASTM D86         173             10% Distill Point         °C         ASTM D86         200             10% Distill Point         °C         ASTM D86         213             20% Distill Point         °C         ASTM D86         241             30% Distill Point         °C         ASTM D86         255             60% Distill Point         °C         ASTM D86         302             80% Distill Point         °C         ASTM D86         313             80% Distill Point         °C         ASTM D86         343             80% Distill Point         °C  | ASTM Color                 | scalar        | *ASTM D1500      |             | L4.0        |                 |            |
| Sulfur         ppm         ASTM D5185m         27             Sulfur (UVF)         ppm         ASTM D5453         8             DISTILLATION         method         limit/base         current         history1         history1           Initial Boiling Point         °C         ASTM D86         191             5% Distillation Point         °C         ASTM D86         200             0% Distill Point         °C         ASTM D86         207             0% Distill Point         °C         ASTM D86         227             0% Distill Point         °C         ASTM D86         255             0% Distill Point         °C         ASTM D86         285             0% Distill Point         °C         ASTM D86         302             0% Distill Point         °C         ASTM D86         343             0% Distill Point         °C         ASTM D86         343             0% Distill Point         °C         ASTM D86   | Pensky-Martens Flash Point | °C            | *PMCC Calculated |             | 60.9        |                 |            |
| Sulfur (UVF)         ppm         ASTM D5453         8             DISTILLATION         method         limit/base         current         history1         history1           Status         ASTM D86         173             5% Distillation Point         °C         ASTM D86         191             10% Distill Point         °C         ASTM D86         200             0% Distill Point         °C         ASTM D86         207             0% Distill Point         °C         ASTM D86         213             0% Distill Point         °C         ASTM D86         227             0% Distill Point         °C         ASTM D86         255             0% Distill Point         °C         ASTM D86         302             0% Distill Point         °C         ASTM D86         324             0% Distill Point         °C         ASTM D86         324             90% Distill Point         °C         ASTM D86         327  | SULFUR CONTER              | ΝT            | method           | limit/base  | current     | history1        | history2   |
| DISTILLATION         method         limit/base         current         history1         history1           Initial Boiling Point         °C         ASTM D86         173             SW Distillation Point         °C         ASTM D86         191             10% Distill Point         °C         ASTM D86         200             15% Distillation Point         °C         ASTM D86         213             20% Distill Point         °C         ASTM D86         227             30% Distill Point         °C         ASTM D86         2270             50% Distill Point         °C         ASTM D86         285             60% Distill Point         °C         ASTM D86         285             80% Distillation Point         °C         ASTM D86         313             90% Distill Point         °C         ASTM D86         324             90% Distill Point         °C         ASTM D86         357             90% Distill Point <t< td=""><td>Sulfur</td><td>ppm</td><td>ASTM D5185m</td><td></td><th>27</th><td></td><td></td></t<>   | Sulfur                     | ppm           | ASTM D5185m      |             | 27          |                 |            |
| Initial Boiling Point       °C       ASTM D86       173           5% Distillation Point       °C       ASTM D86       191           10% Distill Point       °C       ASTM D86       200           20% Distill Point       °C       ASTM D86       207           20% Distill Point       °C       ASTM D86       213           20% Distill Point       °C       ASTM D86       241           30% Distill Point       °C       ASTM D86       241           50% Distill Point       °C       ASTM D86       285           60% Distill Point       °C       ASTM D86       302           80% Distillaton Point       °C       ASTM D86       324           90% Distill Point       °C       ASTM D86       357           90% Distillation Point       °C       ASTM D86       357           1GNITION QUALITY       method       Imit/base       current       histor1       histor         Solium       <   | Sulfur (UVF)               | ppm           | ASTM D5453       |             | 8           |                 |            |
| 5% Distillation Point       °C       ASTM D86       191           10% Distill Point       °C       ASTM D86       200           20% Distill Point       °C       ASTM D86       207           20% Distill Point       °C       ASTM D86       213           20% Distill Point       °C       ASTM D86       213           30% Distill Point       °C       ASTM D86       241           40% Distill Point       °C       ASTM D86       255           60% Distill Point       °C       ASTM D86       302           80% Distill Point       °C       ASTM D86       302           90% Distill Point       °C       ASTM D86       324           90% Distill Point       °C       ASTM D86       357           IGNITION QUALITY       method       limit/base       current       history1       history1         ASTM D86       313              IGNITION QUALITY  | DISTILLATION               |               | method           | limit/base  | current     | history1        | history2   |
| 10% Distill Point       °C       ASTM D86       200           15% Distill Point       °C       ASTM D86       207           20% Distill Point       °C       ASTM D86       213           20% Distill Point       °C       ASTM D86       213           20% Distill Point       °C       ASTM D86       211           20% Distill Point       °C       ASTM D86       241           60% Distill Point       °C       ASTM D86       270           70% Distill Point       °C       ASTM D86       302           80% Distill Point       °C       ASTM D86       313           90% Distill Point       °C       ASTM D86       343           90% Distill Point       °C       ASTM D86       357           90% Distill Point       °C       ASTM D86       357           IGNITION QUALITY       method       limit/base       current       histor1       histor         API Gravity       ASTM D7  | Initial Boiling Point      | °C            | ASTM D86         |             | 173         |                 |            |
| 15% Distillation Point       °C       ASTM D86       207           20% Distill Point       °C       ASTM D86       213           30% Distill Point       °C       ASTM D86       227           40% Distill Point       °C       ASTM D86       225           60% Distill Point       °C       ASTM D86       255           60% Distill Point       °C       ASTM D86       285           70% Distill Point       °C       ASTM D86       302           80% Distill Point       °C       ASTM D86       313           90% Distill Point       °C       ASTM D86       324           90% Distill Point       °C       ASTM D86       357           90% Distill Point       °C       ASTM D86       357           90% Distill Point       °C       ASTM D777       37           1GNITION QUALITY       method       limit/base       current       history1       history1         ASTM D7777   | -                          | °C            | ASTM D86         |             | 191         |                 |            |
| 20% Distill Point       °C       ASTM D86       213           30% Distill Point       °C       ASTM D86       227           40% Distill Point       °C       ASTM D86       255           50% Distill Point       °C       ASTM D86       255           60% Distill Point       °C       ASTM D86       285           80% Distill Point       °C       ASTM D86       302           80% Distill Point       °C       ASTM D86       302           90% Distill Point       °C       ASTM D86       324           90% Distill Point       °C       ASTM D86       343           90% Distill Point       °C       ASTM D86       357           90% Distill Point       °C       ASTM D777       37           IGNITION QUALITY       method       limit/base       current       history1       histor         API Gravity       ASTM D737       <0.0  | 10% Distill Point          | °C            | ASTM D86         |             | 200         |                 |            |
| 30% Distill Point       °C       ASTM D86       227           40% Distill Point       °C       ASTM D86       241           50% Distill Point       °C       ASTM D86       255           60% Distill Point       °C       ASTM D86       270           60% Distill Point       °C       ASTM D86       285           80% Distill Point       °C       ASTM D86       302           80% Distill Point       °C       ASTM D86       313           90% Distill Point       °C       ASTM D86       343           90% Distillation Point       °C       ASTM D86       357           90% Distillation Point       °C       ASTM D86       357           IGNITION QUALITY       method       limit/base       current       history1       histor         API Gravity       ASTM D777       37            CONTAMINANTS       method       limit/base       current       history1       histor         Silicon  | 15% Distillation Point     | °C            | ASTM D86         |             | 207         |                 |            |
| 40% Distill Point       °C       ASTM D86       241           50% Distill Point       °C       ASTM D86       255           60% Distill Point       °C       ASTM D86       270           60% Distill Point       °C       ASTM D86       285           70% Distill Point       °C       ASTM D86       302           85% Distillation Point       °C       ASTM D86       324           90% Distill Point       °C       ASTM D86       343           90% Distill Point       °C       ASTM D86       357           IGNITION QUALITY       method       limit/base       current       history1       history1         ASTM D5185m       <1.0   | 20% Distill Point          | °C            | ASTM D86         |             | 213         |                 |            |
| 40% Distill Point       °C       ASTM D86       241           50% Distill Point       °C       ASTM D86       255           60% Distill Point       °C       ASTM D86       270           70% Distill Point       °C       ASTM D86       285           80% Distill Point       °C       ASTM D86       302           80% Distill Point       °C       ASTM D86       313           90% Distill Point       °C       ASTM D86       324           90% Distill Point       °C       ASTM D86       357           95% Distillation Point       °C       ASTM D86       357           IGNITION QUALITY       method       limit/base       current       history1       history1         ASTM D777       37              Golam       ppm       ASTM D5185m       <1.0   | 30% Distill Point          | °C            | ASTM D86         |             | 227         |                 |            |
| 50% Distill Point       °C       ASTM D86       255           60% Distill Point       °C       ASTM D86       270           70% Distill Point       °C       ASTM D86       285           80% Distill Point       °C       ASTM D86       302           85% Distill Point       °C       ASTM D86       313           90% Distill Point       °C       ASTM D86       324           90% Distill Point       °C       ASTM D86       343           90% Distill Point       °C       ASTM D86       357           1GNITION QUALITY       method       limit/base       current       history1       history1         ASTM D5185m       <1.0  |                            | °C            |                  |             | 241         |                 |            |
| 60% Distill Point       °C       ASTM D86       270           70% Distill Point       °C       ASTM D86       285           80% Distill Point       °C       ASTM D86       302           80% Distill Point       °C       ASTM D86       313           90% Distill Point       °C       ASTM D86       324           90% Distill Point       °C       ASTM D86       343           90% Distill Point       °C       ASTM D86       343           90% Distillation Point       °C       ASTM D86       357           IGNITION QUALITY       method       limit/base       current       history1       histor         API Gravity       ASTM D777       37            CONTAMINANTS       method       limit/base       current       history1       histor         Silicon       ppm       ASTM D5185m<  | 50% Distill Point          | °C            | ASTM D86         |             | 255         |                 |            |
| 70% Distill Point       °C       ASTM D86       285           80% Distill Point       °C       ASTM D86       302           80% Distill Point       °C       ASTM D86       313           90% Distill Point       °C       ASTM D86       324           90% Distill Point       °C       ASTM D86       343           95% Distillation Point       °C       ASTM D86       357           IGNITION QUALITY       method       limit/base       current       history1       histor         API Gravity       ASTM D7777       37            CONTAMINANTS       method       limit/base       current       history1       histor         Silicon       ppm       ASTM D5185m<   |                            |               |                  |             |             |                 |            |
| Bow Distill Point         °C         ASTM D86         302             80% Distillation Point         °C         ASTM D86         313             90% Distill Point         °C         ASTM D86         324             90% Distillation Point         °C         ASTM D86         343             95% Distillation Point         °C         ASTM D86         357             IGNITION QUALITY         method         limit/base         current         history1         histor           API Gravity         ASTM D4737         <40.0   |                            |               |                  |             |             |                 |            |
| 85% Distillation Point       °C       ASTM D86       313           90% Distill Point       °C       ASTM D86       324           95% Distillation Point       °C       ASTM D86       343           95% Distillation Point       °C       ASTM D86       357           IGNITION QUALITY       method       limit/base       current       history1       histor         API Gravity       ASTM D777       37            Cetane Index       ASTM D4737       <40.0  |                            | -             |                  |             |             |                 |            |
| 90% Distill Point         °C         ASTM D86         324             95% Distillation Point         °C         ASTM D86         343             95% Distillation Point         °C         ASTM D86         357             IGNITION QUALITY         method         limit/base         current         history1         history1           API Gravity         ASTM D7777         37              Cetane Index         ASTM D7777         37             Solicon         ppm         ASTM D5185m         <1.0  |                            |               |                  |             |             |                 |            |
| 95% Distillation Point         °C         ASTM D86         343             Final Boiling Point         °C         ASTM D86         357             IGNITION QUALITY         method         limit/base         current         history1         history1           API Gravity         ASTM D7777         37              Cetane Index         ASTM D4737         <40.0   |                            |               |                  |             |             |                 |            |
| Final Boiling Point°CASTM D86357IGNITION QUALITYmethodlimit/basecurrenthistory1history1history1API GravityASTM D777737Cetane IndexASTM D4737<40.0  |                            |               |                  |             |             |                 |            |
| IGNITION QUALITY         method         limit/base         current         history1         history1           API Gravity         ASTM D7777         37              Cetane Index         ASTM D4737         <40.0  |                            | -             |                  |             |             |                 |            |
| API Gravity       ASTM D7777       37           Cetane Index       ASTM D4737       <40.0  | -                          | -             |                  | limit/base  |             |                 |            |
| Cetane Index         ASTM D4737         <40.0         48             CONTAMINANTS         method         limit/base         current         history1         histor           Silicon         ppm         ASTM D5185m         <1.0   |                            |               |                  | IIIIII/Dase |             |                 |            |
| CONTAMINANTS         method         limit/base         current         history1         histor           Silicon         ppm         ASTM D5185m         <1.0  |                            |               |                  | -10.0       | -           |                 |            |
| Silicon         ppm         ASTM D5185m         <1.0         <1             Sodium         ppm         ASTM D5185m         <0.1  |                            |               |                  |             | 40          | _               |            |
| Sodium         ppm         ASTM D5185m         <0.1         <1             Potassium         ppm         ASTM D5185m         <0.1  | CONTAMINANTS               |               | method           | limit/base  | current     | history1        | history2   |
| Potassium         ppm         ASTM D5185m         <0.1         0             Water         %         ASTM D6304         <0.05         0.003             ppm Water         ppm         ASTM D6304         <500         29             % Gasoline         %         *In-House         <0.50         0.0             % Biodiesel         %         *In-House         <20.0         0.0             FLUID CLEANLINESS         method         limit/base         current         history1         histor           Particles >4µm         ASTM D7647         >2500         395             Particles >6µm         ASTM D7647         >640         178             Particles >14µm         ASTM D7647         >20         20             Particles >21µm         ASTM D7647         >20         20             Particles >38µm         ASTM D7647         >4         2             Particles >71µm         ASTM D7647         33         0   |                            | ppm           |                  |             | <1          |                 |            |
| Water         %         ASTM D6304         <0.05         0.003             ppm Water         ppm         ASTM D6304         <500   | Sodium                     | ppm           | ASTM D5185m      | <0.1        | <1          |                 |            |
| ppm Water         ppm         ASTM D6304         <500         29             % Gasoline         %         *In-House         <0.50  | Potassium                  | ppm           | ASTM D5185m      |             | 0           |                 |            |
| % Gasoline       %       *In-House       <0.50       0.0           % Biodiesel       %       *In-House       <20.0   | Water                      | %             | ASTM D6304       | < 0.05      | 0.003       |                 |            |
| % Biodiesel       %       *In-House       <20.0       0.0           FLUID CLEANLINESS       method       limit/base       current       history1       histor         Particles >4µm       ASTM D7647       >2500       395           Particles >6µm       ASTM D7647       >640       178           Particles >14µm       ASTM D7647       >80       44           Particles >21µm       ASTM D7647       >20       20           Particles >38µm       ASTM D7647       >4       2           Particles >71µm       ASTM D7647       >3       0   | ppm Water                  | ppm           | ASTM D6304       | <500        | 29          |                 |            |
| FLUID CLEANLINESS         method         limit/base         current         history1         history1           Particles >4µm         ASTM D7647         >2500         395  | % Gasoline                 | %             | *In-House        | <0.50       | 0.0         |                 |            |
| Particles >4μm         ASTM D7647         >2500 <b>395</b> Particles >6μm         ASTM D7647         >640 <b>178</b> Particles >14μm         ASTM D7647         >80 <b>44</b> Particles >14μm         ASTM D7647         >20 <b>20</b> Particles >21μm         ASTM D7647         >4 <b>2</b> Particles >38μm         ASTM D7647         >4 <b>2</b> Particles >71μm         ASTM D7647         >3 <b>0</b>  | % Biodiesel                | %             | *In-House        | <20.0       | 0.0         |                 |            |
| Particles >6μm         ASTM D7647         >640         178             Particles >14μm         ASTM D7647         >80         44             Particles >21μm         ASTM D7647         >20         20             Particles >21μm         ASTM D7647         >20         20             Particles >38μm         ASTM D7647         >4         2             Particles >71μm         ASTM D7647         >3         0   | FLUID CLEANLIN             | ESS           | method           | limit/base  | current     | history1        | history2   |
| Particles >14μm         ASTM D7647         >80         44             Particles >21μm         ASTM D7647         >20         20             Particles >38μm         ASTM D7647         >4         2             Particles >71μm         ASTM D7647         >3         0  | Particles >4µm             |               | ASTM D7647       | >2500       | 395         |                 |            |
| Particles >21μm         ASTM D7647         >20         20             Particles >38μm         ASTM D7647         >4         2             Particles >71μm         ASTM D7647         >3         0  | Particles >6µm             |               | ASTM D7647       | >640        | 178         |                 |            |
| Particles >38μm         ASTM D7647         >4         2             Particles >71μm         ASTM D7647         >3         0  | Particles >14µm            |               | ASTM D7647       | >80         | 44          |                 |            |
| Particles >71μm         ASTM D7647         >3         0  | Particles >21µm            |               | ASTM D7647       | >20         | 20          |                 |            |
|  | Particles >38µm            |               | ASTM D7647       | >4          | 2           |                 |            |
| Oil Cleanliness ISO 4406 (c) >18/16/13 16/15/13 In: Service Manager-HOR  | Particles >71µm            |               | ASTM D7647       | >3          | 0           |                 |            |
| (,   | Oil Cleanliness            |               | ISO 4406 (c)     | >18/16/13   | 16/15/13    | n: Service Mana | ager-HORHO |



# FUEL REPORT





Laboratory Sample No. Lab Number : 06220594 Certificate 12367

Unique Number : 11098791 Diagnosed : 28 Jun 2024 - Doug Bogart Test Package : DF-2 (Additional Tests: Fuel, Screen) To discuss this sample report, contact Customer Service at 1-800-237-1369. \* - 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: (501)767-9000 E:

Contact: Service Manager

US 71913

Report Id: HORHOT [WUSCAR] 06220594 (Generated: 06/28/2024 12:10:24) Rev: 1

Contact/Location: Service Manager - HORHOT Page 2 of 2