

# **PROBLEM SUMMARY**





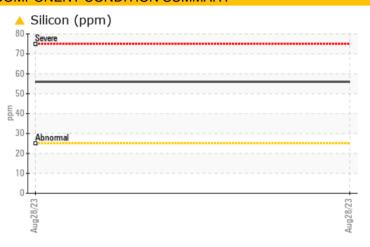


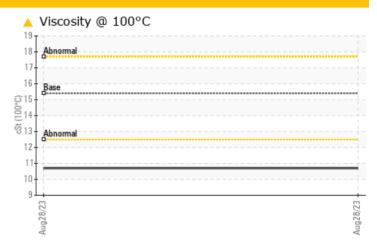


Machine Id 913125 Component Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)

# **COMPONENT CONDITION SUMMARY**





## RECOMMENDATION

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

### PROBLEMATIC TEST RESULTS

| Sample Status |     |             |      | ABNORMAL    | <br> |
|---------------|-----|-------------|------|-------------|------|
| Silicon       | ppm | ASTM D5185m | >25  | <b>△</b> 56 | <br> |
| Visc @ 100°C  | cSt | ASTM D445   | 15.4 | <b>10.7</b> | <br> |

Customer Id: GFL401 Sample No.: GFL0091719 Lab Number: 05948676 Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data:

Don Baldridge +1 don.b505@comcast.net

To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

| RECOMMEND     | ED ACTIONS |      |         |   |
|---------------|------------|------|---------|---|
| Action        | Status     | Date | Done By | Description   |
| Change Fluid  |            |      | ?       | Oil and filter change at the time of sampling has been noted. |
| Change Filter |            |      | ?       | Oil and filter change at the time of sampling has been noted. |

# HISTORICAL DIAGNOSIS







Machine Id 913125 Component **Diesel Engine** PETRO CANADA DURO Sample Rating Trend



## **DIAGNOSIS**

#### Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

#### Wear

Metal levels are typical for a new component breaking in.

#### Contamination

Fuel content negligible. Elemental level of silicon (Si) above normal indicating ingress of seal material.

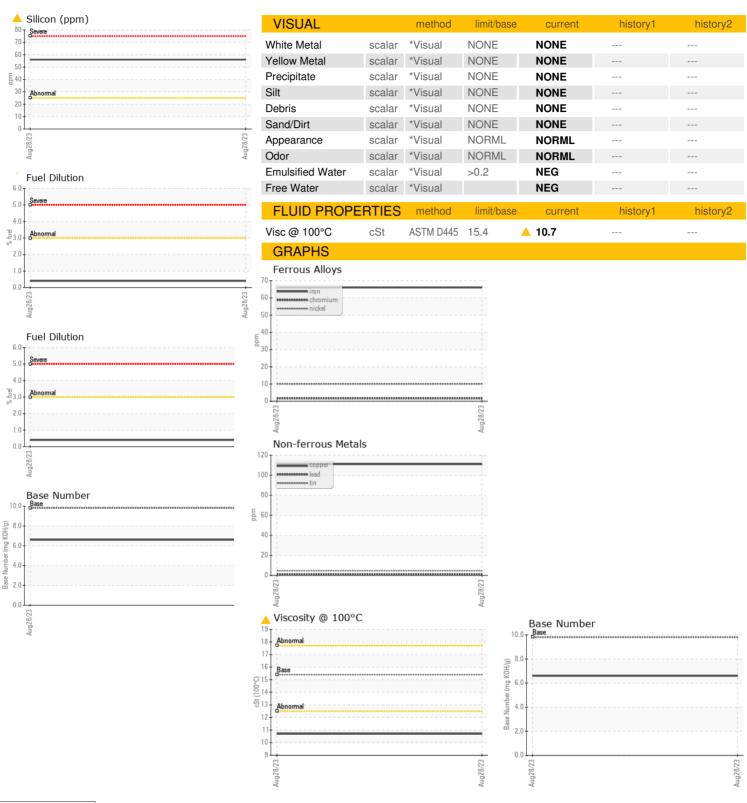
#### ▲ Fluid Condition

The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

| SAMPLE INFORMATION         method         limit/base         current         history1         history2           Sample Number         Client Info         GFL0091719            Sample Date         Client Info         685            Machine Age         hrs         Client Info         665            Oil Age         hrs         Client Info         665            Oil Changed         Client Info         Changed            Sample Status         ABNORMAL             CONTAMINATION         method         limit/base         current         history1         history2           Glycol         WC Method         NEG              CONTAMINATION         method         limit/base         current         history1         history2           Glycol         WC Method         NEG              CONTAMINATION         method         limit/base         current         history1         history2           Iron         ppm         ASTMO5185n         >20         2             Iron         ppm         ASTMO5185n <th>N SHP 15W40 (</th> <th>- GAL)</th> <th></th> <th></th> <th></th> <th></th> <th></th>   | N SHP 15W40 (  | - GAL)   |   |  |  |                                     |                                     |
|--|--|--|---|--|--|-------------------------------------|-------------------------------------|
| Sample Number         Client Info         GFL0091719            Sample Date         Client Info         28 Aug 2023            Machine Age         hrs         Client Info         665            Oil Age         hrs         Client Info         665            Oil Changed         Client Info         Changed            Sample Status         ABNORMAL             CONTAMINATION         method         Imit/base         current         history1         history2           Glycol         WC Method         NEG              WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM 05185m         >20         2            Nikel         ppm         ASTM 05185m         >20         2            Nikel         ppm         ASTM 05185m         >2         -1            Aluminum         ppm         ASTM 05185m         >2         -1            Lead         ppm         ASTM 05185m         >0         1 <th>CAMPLE INCODE</th> <th>NANTION</th> <th>l and a standard</th> <th></th> <th>Aug2023</th> <th>for the term of the</th> <th>la la kassa O</th>   | CAMPLE INCODE  | NANTION  | l and a standard  |  | Aug2023  | for the term of the                 | la la kassa O                       |
| Sample Date  | SAMPLE INFOR   | MATION   | method  | limit/base   | current  | history1                            | history2                            |
| Machine Age         hrs         Client Info         665  | Sample Number  |  | Client Info   |  |  |                                     |                                     |
| Oil Age         hrs         Client Info         665             Oil Changed         Client Info         Changed             Sample Status         ABNORMAL             CONTAMINATION         method         limit/base         current         history1         history2           Glycol         WC Method         NEG             WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         66             Chromium         ppm         ASTM D5185m         >20         2            Chromium         ppm         ASTM D5185m         >2         -1            Silver         ppm         ASTM D5185m         >2         -1            All Limitum         ppm         ASTM D5185m         >2         -1            Lead         ppm         ASTM D5185m         >330         111             Copper         ppm         ASTM D5185m         >15         5   | Sample Date  |  | Client Info   |  | 28 Aug 2023  |                                     |                                     |
| Contaged   Client Info   Changed   Client Info   ABNORMAL   CONTAMINATION   Method   Imil/base   current   history1   history2   | Machine Age  | hrs  | Client Info   |  | 665  |                                     |                                     |
| ABNORMAL   Sample Status   CONTAMINATION   method   limit/base   current   history1   history2   | Oil Age  | hrs  | Client Info   |  | 665  |                                     |                                     |
| CONTAMINATION  | Oil Changed  |  | Client Info   |  | Changed  |                                     |                                     |
| WEAR METALS  | Sample Status  |  |   |  | ABNORMAL   |                                     |                                     |
| WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         66             Chromium         ppm         ASTM D5185m         >20         2             Nickel         ppm         ASTM D5185m         >5         10             Silver         ppm         ASTM D5185m         >2         <1  | CONTAMINAT   | ION  | method  | limit/base   | current  | history1                            | history2                            |
| ASTM D5185m   STM D5185m   ST | Glycol   |  | WC Method   |  | NEG  |                                     |                                     |
| Description  | WEAR METAL   | S  | method  | limit/base   | current  | history1                            | history2                            |
| Nickel   | Iron   | ppm  | ASTM D5185m   | >120   | 66   |                                     |                                     |
| Nicke    ppm   | Chromium   | ppm  | ASTM D5185m   | >20  | 2  |                                     |                                     |
| Silver   | Nickel   |  | ASTM D5185m   | >5   | 10   |                                     |                                     |
| ASTM D5185m   >2   | Titanium   |  | ASTM D5185m   | >2   | <1   |                                     |                                     |
| Aluminum   |  |  |   |  |  |                                     |                                     |
| Lead         ppm         ASTM D5185m         >40         1             Copper         ppm         ASTM D5185m         >330         1111             Tin         ppm         ASTM D5185m         >15         5             Vanadium         ppm         ASTM D5185m         0              ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         110             Barium         ppm         ASTM D5185m         0         0             Molybdenum         ppm         ASTM D5185m         0         0             Magnesium         ppm         ASTM D5185m         0         5             Magnesium         ppm         ASTM D5185m         1010         798             Calcium         ppm         ASTM D5185m         1270         985             Flustrum         ppm         ASTM D5185m         2060  |  |  |   |  |  |                                     |                                     |
| Copper         ppm         ASTM D5185m         >330         111             Tin         ppm         ASTM D5185m         0             Vanadium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0             Barium         ppm         ASTM D5185m         0         0             Molybdenum         ppm         ASTM D5185m         0         5             Manganese         ppm         ASTM D5185m         0         5             Magnesium         ppm         ASTM D5185m         1010         798             Calcium         ppm         ASTM D5185m         1070         1618             Phosphorus         ppm         ASTM D5185m         1270         985 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>  |  |  |   |  |  |                                     |                                     |
| Tin ppm ASTM D5185m > 15 5   |  |  |   |  |  |                                     |                                     |
| Vanadium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         110             Barium         ppm         ASTM D5185m         0         0             Molybdenum         ppm         ASTM D5185m         0         120             Manganese         ppm         ASTM D5185m         0         5             Magnesium         ppm         ASTM D5185m         1010         798             Calcium         ppm         ASTM D5185m         1070         1618             Phosphorus         ppm         ASTM D5185m         1270         985             Sulfur         ppm         ASTM D5185m         1270         985             Sulfur         ppm         ASTM D5185m         2060         2619             CONTAMINANTS         method         limit/base         current  |  |  |   |  |  |                                     |                                     |
| Cadmium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         110             Barium         ppm         ASTM D5185m         0         0             Molybdenum         ppm         ASTM D5185m         60         120             Manganese         ppm         ASTM D5185m         0         5             Magnesium         ppm         ASTM D5185m         1070         1618             Phosphorus         ppm         ASTM D5185m         1270         985             Zinc         ppm         ASTM D5185m         2060         2619             Sulfur         ppm         ASTM D5185m         >25         56             CONTAMINANTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D5185m         >20 <td< td=""><td></td><td></td><td></td><td>&gt;10</td><td></td><td></td><td></td></td<>   |  |  |   | >10  |  |                                     |                                     |
| ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         110             Barium         ppm         ASTM D5185m         0         0             Molybdenum         ppm         ASTM D5185m         0         5             Manganese         ppm         ASTM D5185m         1010         798             Magnesium         ppm         ASTM D5185m         1070         1618             Calcium         ppm         ASTM D5185m         1150         772             Phosphorus         ppm         ASTM D5185m         1270         985             Zinc         ppm         ASTM D5185m         2060         2619             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         56             Sodium         ppm         ASTM D5185m  |  |  |   |  |  |                                     |                                     |
| Boron ppm ASTM D5185m 0 110 Molybdenum ppm ASTM D5185m 0 120 Manganese ppm ASTM D5185m 0 5 Manganese ppm ASTM D5185m 1010 798  | Cadmium  | ррпі   | A9 IIVI D3 I03III   |  | U  |                                     |                                     |
| Barium ppm ASTM D5185m 0 0 120 Molybdenum ppm ASTM D5185m 60 120 Magnaese ppm ASTM D5185m 0 5 Magnesium ppm ASTM D5185m 1010 798   | ADDITIVES  |  | method  | limit/base   | current  | history1                            | history2                            |
| Molybdenum         ppm         ASTM D5185m         60         120             Manganese         ppm         ASTM D5185m         0         5             Magnesium         ppm         ASTM D5185m         1010         798             Calcium         ppm         ASTM D5185m         1070         1618             Phosphorus         ppm         ASTM D5185m         1150         772             Zinc         ppm         ASTM D5185m         1270         985             Sulfur         ppm         ASTM D5185m         2060         2619             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         56             Solium         ppm         ASTM D5185m         >20         8             Fuel         %         ASTM D5185m         >20         8             Fuel         %         ASTM D7844 <t< td=""><td>Boron</td><td>10 10 100</td><td>ACTM DE10Em</td><td>0</td><td>440</td><td></td><td></td></t<>  | Boron  | 10 10 100  | ACTM DE10Em   | 0  | 440  |                                     |                                     |
| Manganese         ppm         ASTM D5185m         0         5             Magnesium         ppm         ASTM D5185m         1010         798             Calcium         ppm         ASTM D5185m         1070         1618             Phosphorus         ppm         ASTM D5185m         1150         772             Zinc         ppm         ASTM D5185m         1270         985             Sulfur         ppm         ASTM D5185m         2060         2619             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         56             Sodium         ppm         ASTM D5185m         >20         8             Fuel         %         ASTM D5185m         >20         8             Fuel         %         ASTM D5185m         >20         8             Fuel         %         ASTM D5185m         >0 <td></td> <td>ppm</td> <td>HICOLCG INLOW</td> <td>U</td> <td>110</td> <td></td> <td></td>   |  | ppm  | HICOLCG INLOW   | U  | 110  |                                     |                                     |
| Magnesium         ppm         ASTM D5185m         1010         798             Calcium         ppm         ASTM D5185m         1070         1618             Phosphorus         ppm         ASTM D5185m         1150         772             Zinc         ppm         ASTM D5185m         1270         985             Sulfur         ppm         ASTM D5185m         2060         2619             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         ▲ 56             Sodium         ppm         ASTM D5185m         >20         8             Potassium         ppm         ASTM D5185m         >20         8             Fuel         %         ASTM D3524         >3.0         0.4             Soot %         %         *ASTM D7844         >4         0.9             Sulfation         Abs/:1mm         *ASTM D7415 <td>Barium</td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td>  | Barium   |  |   |  | -  |                                     |                                     |
| Calcium         ppm         ASTM D5185m         1070         1618             Phosphorus         ppm         ASTM D5185m         1150         772             Zinc         ppm         ASTM D5185m         1270         985             Sulfur         ppm         ASTM D5185m         2060         2619             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         56             Sodium         ppm         ASTM D5185m         >20         8             Potassium         ppm         ASTM D5185m         >20         8             Fuel         %         ASTM D5185m         >20         8             Fuel         %         ASTM D5185m         >20         0.4             Soot %         %         *ASTM D7844         >4         0.9             Soot %         %         *ASTM D7624         >20 <td></td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <td>0</td> <td></td> <td></td>   |  | ppm  | ASTM D5185m   | 0  | 0  |                                     |                                     |
| Phosphorus         ppm         ASTM D5185m         1150         772             Zinc         ppm         ASTM D5185m         1270         985             Sulfur         ppm         ASTM D5185m         2060         2619             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         56             Sodium         ppm         ASTM D5185m         20         8             Foul         %         ASTM D5185m         >20         8             Fuel         %         ASTM D5185m         >20         8             Fuel         %         ASTM D3524         >3.0         0.4             Soot %         %         *ASTM D7844         >4         0.9             Nitration         Abs/:1mm         *ASTM D7415         >30         24.7             FLUID DEGRADATION         method         limit/base  | Molybdenum   | ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m  | 0 60   | 0<br>120   |                                     |                                     |
| Zinc         ppm         ASTM D5185m         1270         985             Sulfur         ppm         ASTM D5185m         2060         2619             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         56             Sodium         ppm         ASTM D5185m         4             Potassium         ppm         ASTM D5185m         >20         8             Fuel         %         ASTM D5185m         >20         8             Fuel         %         ASTM D5185m         >20         8             Fuel         %         ASTM D5185m         >20         8             Soot %         %         *ASTM D7844         >4         0.9             Soot %         %         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         24.7   | Molybdenum<br>Manganese  | ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 0<br>60<br>0   | 0<br>120<br>5  |                                     |                                     |
| Sulfur         ppm         ASTM D5185m         2060         2619             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         ▶ 56             Sodium         ppm         ASTM D5185m         4             Potassium         ppm         ASTM D5185m         >20         8             Fuel         %         ASTM D3524         >3.0         0.4             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.9             Nitration         Abs/cm         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         24.7             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         <  | Molybdenum<br>Manganese<br>Magnesium   | ppm<br>ppm<br>ppm  | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | 0<br>60<br>0<br>1010   | 0<br>120<br>5<br>798   |                                     |                                     |
| Sulfur         ppm         ASTM D5185m         2060         2619             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         ▲ 56             Sodium         ppm         ASTM D5185m         4             Potassium         ppm         ASTM D5185m         >20         8             Fuel         %         ASTM D5185m         >20         8             Fuel         %         ASTM D5185m         >20         8             Fuel         %         ASTM D5185m         >20         0.4             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.9             Soot %         %         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         24.7   | Molybdenum<br>Manganese<br>Magnesium<br>Calcium  | ppm<br>ppm<br>ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 0<br>60<br>0<br>1010<br>1070   | 0<br>120<br>5<br>798<br>1618   |                                     |                                     |
| Silicon         ppm         ASTM D5185m         >25         ▶ 56             Sodium         ppm         ASTM D5185m         4             Potassium         ppm         ASTM D5185m         >20         8             Fuel         %         ASTM D3524         >3.0         0.4             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.9             Nitration         Abs/cm         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         24.7             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1   | 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  | 0<br>60<br>0<br>1010<br>1070<br>1150   | 0<br>120<br>5<br>798<br>1618<br>772  |                                     |                                     |
| ASTM D5185m   ASTM D5185m   ASTM D5185m   ASTM D5185m   Potassium   ppm   ASTM D5185m   >20   8  | Molybdenum Manganese Magnesium Calcium Phosphorus Zinc   | 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   | 0<br>60<br>0<br>1010<br>1070<br>1150<br>1270   | 0<br>120<br>5<br>798<br>1618<br>772<br>985   |                                     |                                     |
| Potassium         ppm         ASTM D5185m         >20         8             Fuel         %         ASTM D3524         >3.0         0.4             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.9             Nitration         Abs/cm         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         24.7             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1   | Molybdenum Manganese Magnesium Calcium Phosphorus Zinc   | 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  | 0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060   | 0<br>120<br>5<br>798<br>1618<br>772<br>985<br>2619   |                                     |                                     |
| Fuel         %         ASTM D3524         >3.0         0.4             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.9             Nitration         Abs/cm         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         24.7             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1   | Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN   | 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   | 0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060   | 0<br>120<br>5<br>798<br>1618<br>772<br>985<br>2619   | <br><br><br><br>history1            | <br><br><br><br>history2            |
| INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.9             Nitration         Abs/cm         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         24.7             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1  | Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185m   | 0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060   | 0<br>120<br>5<br>798<br>1618<br>772<br>985<br>2619<br>current<br>▲ 56  | <br><br><br><br>history1            | <br><br><br><br>history2            |
| Soot %         *ASTM D7844         >4         0.9             Nitration         Abs/cm         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         24.7             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1  | Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm        | ASTM D5185m   | 0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base   | 0<br>120<br>5<br>798<br>1618<br>772<br>985<br>2619<br>current<br>▲ 56<br>4   | <br><br><br><br>history1            | <br><br><br><br>history2            |
| Nitration         Abs/cm         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         24.7             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1  | Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium  | ppm                            | ASTM D5185m   | 0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base<br>>25  | 0<br>120<br>5<br>798<br>1618<br>772<br>985<br>2619<br>current<br>▲ 56<br>4   | <br><br><br><br>history1            | history2                            |
| Nitration         Abs/cm         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         24.7             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1  | Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel   | ppm                            | ASTM D5185m   | 0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base<br>>25<br>>20<br>>3.0                                   | 0<br>120<br>5<br>798<br>1618<br>772<br>985<br>2619<br>current<br>▲ 56<br>4<br>8<br>0.4                                   | history1                            | history2                            |
| Sulfation         Abs/.1mm         *ASTM D7415         >30         24.7             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1  | Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m   | 0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base<br>>25<br>>20<br>>3.0                                   | 0<br>120<br>5<br>798<br>1618<br>772<br>985<br>2619<br>current<br>▲ 56<br>4<br>8<br>0.4                                   | history1 history1                   | <br><br><br>history2                |
| Oxidation  | Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %                                  | ppm                            | ASTM D5185m ASTM D7844                                | 0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base<br>>25<br>>20<br>>3.0<br>limit/base                     | 0<br>120<br>5<br>798<br>1618<br>772<br>985<br>2619<br>current<br>▲ 56<br>4<br>8<br>0.4<br>current                        | history1 history1 history1          | history2 history2                   |
|  | Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur  CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration                       | ppm                            | ASTM D5185m ASTM D7844 *ASTM D7844                    | 0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base<br>>25<br>>20<br>>3.0<br>limit/base                     | 0 120 5 798 1618 772 985 2619  current  ▲ 56 4 8 0.4  current 0.9 11.9   | history1 history1                   | history2 history2                   |
|  | Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation              | ppm                            | ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7624        | 0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base<br>>25<br>>20<br>>3.0<br>limit/base<br>>4<br>>20<br>>30 | 0<br>120<br>5<br>798<br>1618<br>772<br>985<br>2619<br>current<br>▲ 56<br>4<br>8<br>0.4<br>current<br>0.9<br>11.9<br>24.7 | history1 history1                   | history2 history2                   |
|  | Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE | ppm                            | ASTM D5185m ASTM D7624 *ASTM D7624 *ASTM D7624 *ASTM D7615 method | 0 60 0 1010 1070 1150 1270 2060  limit/base >25  >20 >3.0  limit/base >4 >20 >30  limit/base                               | 0 120 5 798 1618 772 985 2619 current  ▲ 56 4 8 0.4 current 0.9 11.9 24.7 current  | history1 history1 history1 history1 | history2 history2 history2 history2 |



# **OIL ANALYSIS REPORT**





Laboratory Sample No. Lab Number **Unique Number** 

: 05948676 : 10644635

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0091719 Received : 12 Sep 2023 Diagnosed : 14 Sep 2023 Diagnostician : Don Baldridge

**Test Package**: FLEET (Additional Tests: FuelDilution, PercentFuel) 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)

GFL Environmental - 401 - Fort Wayne Hauling 4429 ALLEN MARTIN DR FORT WAYNE, IN

US 46806 Contact: Stephanie Burton

stephanieburton@gflenv.com

T: (260)747-5037

F: