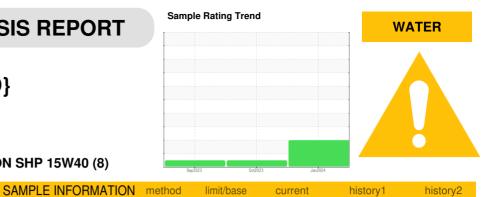


## **OIL ANALYSIS REPORT**





## DIAGNOSIS

#### A Recommendation

We advise that you check for the source of water entry. Resample at the next service interval to monitor.

## Wear

All component wear rates are normal.

### Contamination

There is a light concentration of water present in the oil. Moderate concentration of visible dirt/debris present in the oil.

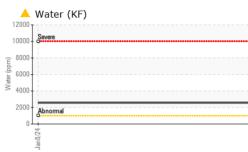
### Fluid Condition

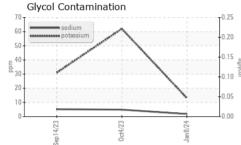
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

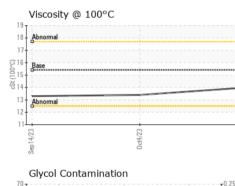
|  | -  |  |   |   |  |   |
|--|--|--|---|---|--|---|
| Sample Number  |  | Client Info  |   | GFL0107262  | GFL0097885   | GFL0094335  |
| Sample Date  |  | Client Info  |   | 08 Jan 2024   | 04 Oct 2023  | 14 Sep 2023   |
| Machine Age  | hrs  | Client Info  |   | 746   | 293  | 147   |
| Oil Age  | hrs  | Client Info  |   | 153   | 293  | 147   |
| Oil Changed  |  | Client Info  |   | Not Changd  | Not Changd   | Not Changd  |
| Sample Status  |  |  |   | ABNORMAL  | NORMAL   | NORMAL  |
| WEAR METAL   | S  | method   | limit/base  | current   | history1   | history2  |
| Iron   | ppm  | ASTM D5185m  | >50   | 15  | 44   | 37  |
| Chromium   | ppm  | ASTM D5185m  | >4  | <1  | 0  | <1  |
| Nickel   | ppm  | ASTM D5185m  | >2  | <1  | 0  | <1  |
| Titanium   | ppm  | ASTM D5185m  |   | 0   | 0  | <1  |
| Silver   | ppm  | ASTM D5185m  | >3  | <1  | 0  | 0   |
| Aluminum   | ppm  | ASTM D5185m  | >9  | 6   | 16   | 8   |
| Lead   | ppm  | ASTM D5185m  | >30   | <1  | 0  | <1  |
| Copper   | ppm  | ASTM D5185m  | >35   | 3   | 16   | 16  |
| Tin  | ppm  | ASTM D5185m  | >4  | 1   | 0  | <1  |
| Vanadium   | ppm  | ASTM D5185m  |   | <1  | 0  | <1  |
| Cadmium  | ppm  | ASTM D5185m  |   | <1  | 0  | 0   |
| ADDITIVES  |  | method   | limit/base  | current   | history1   | history2  |
| Boron  | ppm  | ASTM D5185m  | 0   | 0   | 14   | 35  |
| Barium   | ppm  | ASTM D5185m  | 0   | 0   | 0  | 0   |
| Molybdenum   | ppm  | ASTM D5185m  | 60  | 59  | 47   | 47  |
| Manganese  | ppm  | ASTM D5185m  | 0   | 2   | 12   | 13  |
| Magnesium  | ppm  | ASTM D5185m  | 1010  | 934   | 691  | 757   |
| Calcium  | ppm  | ASTM D5185m  | 1070  | 1022  | 967  | 1103  |
| Phosphorus   | ppm  | ASTM D5185m  | 1150  | 1000  | 682  | 761   |
| Zinc   | ppm  | ASTM D5185m  | 1270  |   | 829  | 881   |
| o 1/   | ppiii  |  | 1210  | 1260  | 029  | 001   |
| Sultur   | ppm  | ASTM D5185m  | 2060  | 1260<br>2981  | 2206   | 3054  |
| Sulfur<br>CONTAMINAN   | ppm  |  |   |   |  |   |
| CONTAMINAN   | ppm  | ASTM D5185m  | 2060  | 2981  | 2206   | 3054  |
| CONTAMINAN<br>Silicon  | ppm<br>ITS   | ASTM D5185m<br>method  | 2060<br>limit/base  | 2981<br>current   | 2206<br>history1   | 3054<br>history2  |
| CONTAMINAN<br>Silicon<br>Sodium  | ppm<br>ITS<br>ppm  | ASTM D5185m<br>method<br>ASTM D5185m   | 2060<br>limit/base  | 2981<br>current<br>7  | 2206<br>history1<br>32   | 3054<br>history2<br>32  |
| CONTAMINAN<br>Silicon<br>Sodium<br>Potassium   | ppm<br>ITS<br>ppm<br>ppm   | ASTM D5185m<br>method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 2060<br>limit/base<br>>+100<br>>20  | 2981<br>current<br>7<br>2   | 2206<br>history1<br>32<br>5  | 3054<br>history2<br>32<br>5   |
| CONTAMINAN<br>Silicon<br>Sodium<br>Potassium<br>Water  | ppm<br>ITS<br>ppm<br>ppm<br>ppm  | ASTM D5185m<br>method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 2060<br>limit/base<br>>+100<br>>20  | 2981<br>current<br>7<br>2<br>13   | 2206<br>history1<br>32<br>5<br>62  | 3054<br>history2<br>32<br>5<br>31                                       |
| CONTAMINAN<br>Silicon<br>Sodium<br>Potassium<br>Water  | ppm<br>JTS<br>ppm<br>ppm<br>ppm<br>%                                   | ASTM D5185m<br>method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D6304   | 2060<br>limit/base<br>>+100<br>>20<br>>0.1                                      | 2981<br>current<br>7<br>2<br>13<br>▲ 0.256  | 2206<br>history1<br>32<br>5<br>62<br>                                      | 3054<br>history2<br>32<br>5<br>31<br>                                   |
| CONTAMINAN<br>Silicon<br>Sodium<br>Potassium<br>Water<br>ppm Water<br>INFRA-RED                        | ppm<br>JTS<br>ppm<br>ppm<br>ppm<br>%                                   | ASTM D5185m<br>method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D6304<br>ASTM D6304                               | 2060<br>limit/base<br>>+100<br>>20<br>>0.1<br>>1000                             | 2981<br>current<br>7<br>2<br>13<br>▲ 0.256<br>▲ 2560                                | 2206<br>history1<br>32<br>5<br>62<br>                                      | 3054<br>history2<br>32<br>5<br>31<br>                                   |
| CONTAMINAN<br>Silicon<br>Sodium<br>Potassium<br>Water<br>ppm Water<br>INFRA-RED<br>Soot %              | ppm<br>JTS<br>ppm<br>ppm<br>ppm<br>%<br>ppm                            | ASTM D5185m<br>method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D6304<br>ASTM D6304<br>method                                    | 2060<br>limit/base<br>>+100<br>>20<br>>0.1<br>>1000<br>limit/base               | 2981<br>current<br>7<br>2<br>13<br>▲ 0.256<br>▲ 2560<br>current                     | 2206<br>history1<br>32<br>5<br>62<br><br><br>history1                      | 3054<br>history2<br>32<br>5<br>31<br><br><br>history2                   |
| CONTAMINAN<br>Silicon<br>Sodium<br>Potassium<br>Water<br>ppm Water<br>INFRA-RED<br>Soot %<br>Nitration | ppm<br>JTS<br>ppm<br>ppm<br>ppm<br>%<br>ppm                            | ASTM D5185m<br>method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D6304<br>ASTM D6304<br>Method<br>*ASTM D7844                     | 2060<br>limit/base<br>>+100<br>>20<br>>0.1<br>>1000<br>limit/base               | 2981<br>current<br>7<br>2<br>13<br>▲ 0.256<br>▲ 2560<br>current<br>0                | 2206<br>history1<br>32<br>5<br>62<br><br><br>history1<br>0                 | 3054<br>history2<br>32<br>5<br>31<br><br>history2<br>0.1                |
| CONTAMINAN<br>Silicon<br>Sodium<br>Potassium<br>Water<br>opm Water<br>INFRA-RED<br>Soot %<br>Nitration | ppm<br>JTS<br>ppm<br>ppm<br>ppm<br>%<br>ppm<br>%<br>Abs/cm<br>Abs/.1mm | ASTM D5185m<br>method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D6304<br>ASTM D6304<br>*ASTM D7844<br>*ASTM D7844<br>*ASTM D7415 | 2060<br>limit/base<br>>+100<br>>20<br>>0.1<br>>1000<br>limit/base               | 2981<br>current<br>7<br>2<br>13<br>▲ 0.256<br>▲ 2560<br>current<br>0<br>7.7         | 2206<br>history1<br>32<br>5<br>62<br><br><br>history1<br>0<br>10.1         | 3054<br>history2<br>32<br>5<br>31<br><br>history2<br>0.1<br>8.3         |
| Silicon<br>Sodium<br>Potassium<br>Water<br>ppm Water<br>INFRA-RED<br>Soot %<br>Nitration<br>Sulfation  | ppm<br>JTS<br>ppm<br>ppm<br>ppm<br>%<br>ppm<br>%<br>Abs/cm<br>Abs/.1mm | ASTM D5185m<br>method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D6304<br>ASTM D6304<br>*ASTM D7844<br>*ASTM D7844<br>*ASTM D7415 | 2060<br>limit/base<br>>+100<br>>20<br>>0.1<br>>1000<br>limit/base<br>>20<br>>30 | 2981<br>current<br>7<br>2<br>13<br>▲ 0.256<br>▲ 2560<br>current<br>0<br>7.7<br>18.2 | 2206<br>history1<br>32<br>5<br>62<br><br><br>history1<br>0<br>10.1<br>26.0 | 3054<br>history2<br>32<br>5<br>31<br><br>history2<br>0.1<br>8.3<br>25.8 |

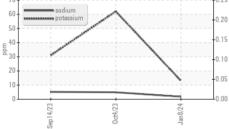


# **OIL ANALYSIS REPORT**









|  |  | method    | limit/base  | current   | history1 | history |
|--|--|-----------|---|---|----------|---------|
| 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    |
| 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   | >0.1  | 0.2%  | NEG      | NEG     |
| Free Water   | scalar   | *Visual   |   | NEG   | NEG      | NEG     |
| FLUID PROPE  | ERTIES   | method    | limit/base  | current   | history1 | history |
| Visc @ 100°C   | cSt  | ASTM D445 | 15.4  | 14.0  | 13.4     | 13.3    |
| GRAPHS   |  |           |   |   |          |         |
| Ferrous Alloys   |  |           |   |   |          |         |
| iron   |  |           |   |   |          |         |
| And the second s |  |           |   |   |          |         |
| 5 - nickel   |  |           |   |   |          |         |
| 10   |  |           |   |   |          |         |
| 15   |  |           |   |   |          |         |
| 15 -<br>10 -   |  |           |   |   |          |         |
|  |  |           |   |   |          |         |
| 5  |  |           |   |   |          |         |
| 0  |  |           |   |   |          |         |
|  |  |           |   |   |          |         |
| 5-   |  |           |   |   |          |         |
| 0  |  |           |   |   |          |         |
| 0  | t4/23  |           | 18/24   |   |          |         |
| 1  | 0ct4/23  |           | Jan 8/24  |   |          |         |
| Sep 14/23  |  |           | Jan8/24 👼   |   |          |         |
| EZ/HIdds<br>Non-ferrous Meta   |  |           | Jan 8/24  |   |          |         |
| Non-ferrous Meta   |  |           | Jan8/24 🚰   |   |          |         |
| Non-ferrous Meta   |  |           | Jan8/24 👼   |   |          |         |
| Non-ferrous Meta   |  |           | Jan 8/24 👼 💼  |   |          |         |
| Non-ferrous Meta   |  |           | Jan8/24   |   |          |         |
| Non-ferrous Meta   |  |           | Jan8/24   |   |          |         |
| Non-ferrous Meta   |  |           | Jan8/24   |   |          |         |
| Non-ferrous Meta   |  |           | Jan8/24   |   |          |         |
| Non-ferrous Meta   |  |           | Jan8/24   |   |          |         |
| Non-ferrous Meta   |  |           |   |   |          |         |
| Non-ferrous Meta   |  |           |   |   |          |         |
| Non-ferrous Meta   | als  |           |   |   |          |         |
| Non-ferrous Meta   | als  |           |   |   |          |         |
| Non-ferrous Meta   | alls<br>C2(through the second sec    |           |   |   |          |         |
| Non-ferrous Meta   | alls<br>C2(4)00  |           |   | Base Number   | r        |         |
| Non-ferrous Meta   | alls<br>C2(4)00  |           | Jan8/24   | Base Number   | r        |         |
| Non-ferrous Meta   | alls<br>C2(4)00  |           | Jan8/24   | Base Number   | r        |         |
| Non-ferrous Meta   | alls<br>C2(4)00  |           | 10  | .0 Base   | r        |         |
| Non-ferrous Meta   | alls<br>C2(4)00  |           | 10  | .0 Base   | r        |         |
| Non-ferrous Meta   | alls<br>C2(4)00  |           | 10  | .0 Base   | r        |         |
| Non-ferrous Meta   | alls<br>C2(4)00  |           | 10  | .0 - Base   | r        |         |
| Non-ferrous Meta   | alls<br>C2(4)00  |           | 10  | .0 - Base   | r        |         |
| Non-ferrous Meta   | alls<br>C2(4)00  |           | 10  | .0 - Base   | r        |         |
| Non-ferrous Meta   | alls<br>C2(4)00  |           | ase Mumber (mg K0H(g)<br>9<br>8<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10   | .0 - Base   | r        |         |
| Non-ferrous Meta   | alls<br>C2(4)00  |           | ase Mumber (mg K0H(g)<br>9<br>8<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10   | 0 = Base<br>0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 = | r        |         |
| Non-ferrous Meta   | nls<br>EC<br>the second secon |           | 10<br>+2/3 mper (Market | 0 - Base<br>0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - |          |         |
| Non-ferrous Meta   | alls<br>C2(4)00  |           | 10<br>6<br>8<br>6<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10   | 0 - Base<br>0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - | r        |         |

Sep14/23 Sep14/23 : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Laboratory Sample No. : GFL0107262 Recieved : 11 Jan 2024 Lab Number : 06057856 Diagnosed : 15 Jan 2024 Unique Number : 10829238 Diagnostician : Jonathan Hester Test Package : FLEET (Additional Tests: Glycol, KF) Certificate L2367 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 - 010 - Stockbridge 1280 Rum Creek Parkway Stockbridge, GA US 30281 Contact: JOSHUA TINKER joshuatinker@gflenv.com T: F:



Submitted By: JOSHUA TINKER

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