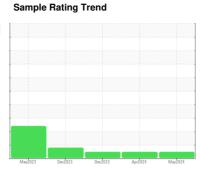


# **OIL ANALYSIS REPORT**







## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the

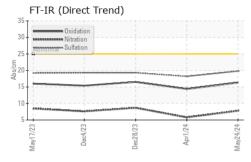
### **Fluid Condition**

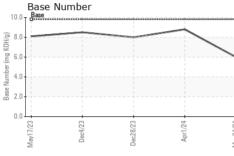
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

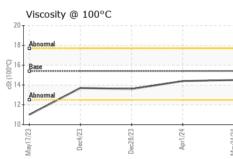
Sample Date	N 3HF 13W40 (	- GAL)	mayzuzs	0602023	DBC2023 Apr2024	May2024		
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2	
Sample Date	Sample Number		Client Info		GFL0122366	GFL0117636	GFL0105630	
Dil Age	Sample Date		Client Info		24 May 2024	01 Apr 2024	28 Dec 2023	
Client Info   Changed   NORMAL   NORMAL   NORMAL   NORMAL   NORMAL	Machine Age	hrs	Client Info		-	18708	17945	
CONTAMINATION   method   militibase   current   history1   history2	Oil Age	hrs	Client Info		17945	17945	0	
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   minit/base   current   history1   history2	-		Client Info		Changed	Not Changd	Changed	
Fuel					_	NORMAL		
Water Glycol         WC Method WC Method         >0.2         NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >90         23         8         16           Chromium         ppm         ASTM D5185m         >20         <1	CONTAMINAT	ION	method	limit/base	current	history1	history2	
NEG   Neg	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0	
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG	
Part	Glycol		WC Method		NEG	NEG	NEG	
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2	
Chromium	ron	ppm	ASTM D5185m	>90	23	8	16	
Nickel	Chromium		ASTM D5185m	>20	<1	0	<1	
Silver	Nickel				0	0	<1	
Silver	Titanium		ASTM D5185m	>2	0	0	<1	
Aluminum	Silver		ASTM D5185m	>2	0	0	0	
Lead	Aluminum		ASTM D5185m	>20	7	2	6	
Copper	Lead				0	0	<1	
Princ	Copper		ASTM D5185m	>330	0	2	<1	
Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         1         5         2           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Manganese         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         1010         1013         1005         1044           Calcium         ppm         ASTM D5185m         1070         1111         1126         1143           Phosphorus         ppm         ASTM D5185m         1270         1313         1320         1327           Sulfur         ppm         ASTM D5185m         2060         3421         3916         3232           CONTAMINANTS         method         limit/base         current         history1 <td>• •</td> <td></td> <td></td> <td>&gt;15</td> <th></th> <td>0</td> <td>1</td>	• •			>15		0	1	
ADDITIVES	Vanadium		ASTM D5185m		0	<1	0	
Barium	Cadmium		ASTM D5185m			0	0	
Barium	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum         ppm         ASTM D5185m         60         62         61         61           Manganese         ppm         ASTM D5185m         0         0         0         <1           Magnesium         ppm         ASTM D5185m         1010         1013         1005         1044           Calcium         ppm         ASTM D5185m         1070         1111         1126         1143           Phosphorus         ppm         ASTM D5185m         1150         1079         1090         1128           Zinc         ppm         ASTM D5185m         1270         1313         1320         1327           Sulfur         ppm         ASTM D5185m         2060         3421         3916         3232           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         3         6           Sodium         ppm         ASTM D5185m         >20         10         2         5           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7824         >20	Boron	ppm	ASTM D5185m	0	1	5	2	
Manganese         ppm         ASTM D5185m         0         0         0         <1           Magnesium         ppm         ASTM D5185m         1010         1013         1005         1044           Calcium         ppm         ASTM D5185m         1070         1111         1126         1143           Phosphorus         ppm         ASTM D5185m         1150         1079         1090         1128           Zinc         ppm         ASTM D5185m         1270         1313         1320         1327           Sulfur         ppm         ASTM D5185m         2060         3421         3916         3232           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         3         6           Sodium         ppm         ASTM D5185m         >20         10         2         5           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         7.8         5.8         8.7           Sulfation         Abs/:mm         *AS	Barium	ppm	ASTM D5185m	0	0	0	0	
Magnesium         ppm         ASTM D5185m         1010         1013         1005         1044           Calcium         ppm         ASTM D5185m         1070         1111         1126         1143           Phosphorus         ppm         ASTM D5185m         1150         1079         1090         1128           Zinc         ppm         ASTM D5185m         1270         1313         1320         1327           Sulfur         ppm         ASTM D5185m         2060         3421         3916         3232           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         3         6           Sodium         ppm         ASTM D5185m         >20         10         2         5           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.5         0.2         0.4           Nitration         Abs/.1mm         *ASTM D7415         >30         19.8         18.2         19.3           FLUID DEGRADATION         method	Molybdenum	ppm	ASTM D5185m	60	62	61	61	
Calcium         ppm         ASTM D5185m         1070         1111         1126         1143           Phosphorus         ppm         ASTM D5185m         1150         1079         1090         1128           Zinc         ppm         ASTM D5185m         1270         1313         1320         1327           Sulfur         ppm         ASTM D5185m         2060         3421         3916         3232           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         3         6           Sodium         ppm         ASTM D5185m         >20         10         2         5           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.5         0.2         0.4           Nitration         Abs/.1mm         *ASTM D7415         >30         19.8         18.2         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm	•	ppm	ASTM D5185m	0	0	0	<1	
Phosphorus         ppm         ASTM D5185m         1150         1079         1090         1128           Zinc         ppm         ASTM D5185m         1270         1313         1320         1327           Sulfur         ppm         ASTM D5185m         2060         3421         3916         3232           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         3         6           Sodium         ppm         ASTM D5185m         >20         10         2         5           Potassium         ppm         ASTM D5185m         >20         10         2         5           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.5         0.2         0.4           Nitration         Abs/cm         *ASTM D7415         >30         19.8         18.2         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm <t< td=""><td>Magnesium</td><td>ppm</td><td>ASTM D5185m</td><td>1010</td><th>1013</th><td>1005</td><td>1044</td></t<>	Magnesium	ppm	ASTM D5185m	1010	1013	1005	1044	
Zinc   ppm   ASTM D5185m   1270   1313   1320   1327	Calcium	ppm	ASTM D5185m	1070	1111	1126	1143	
Zinc         ppm         ASTM D5185m         1270         1313         1320         1327           Sulfur         ppm         ASTM D5185m         2060         3421         3916         3232           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         3         6           Sodium         ppm         ASTM D5185m         8         3         7           Potassium         ppm         ASTM D5185m         >20         10         2         5           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.5         0.2         0.4           Nitration         Abs/.1mm         *ASTM D7624         >20         7.8         5.8         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.8         18.2         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414	Phosphorus	ppm	ASTM D5185m	1150	1079	1090	1128	
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         3         6           Sodium         ppm         ASTM D5185m         8         3         7           Potassium         ppm         ASTM D5185m         >20         10         2         5           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.5         0.2         0.4           Nitration         Abs/cm         *ASTM D7624         >20         7.8         5.8         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.8         18.2         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.3         14.4         16.5		ppm	ASTM D5185m	1270	1313	1320	1327	
Silicon         ppm         ASTM D5185m         >25         6         3         6           Sodium         ppm         ASTM D5185m         8         3         7           Potassium         ppm         ASTM D5185m         >20         10         2         5           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.5         0.2         0.4           Nitration         Abs/cm         *ASTM D7624         >20         7.8         5.8         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.8         18.2         19.3           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.3         14.4         16.5	Sulfur	ppm	ASTM D5185m	2060	3421	3916	3232	
Sodium         ppm         ASTM D5185m         8         3         7           Potassium         ppm         ASTM D5185m         >20         10         2         5           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.5         0.2         0.4           Nitration         Abs/cm         *ASTM D7624         >20         7.8         5.8         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.8         18.2         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.3         14.4         16.5	CONTAMINAN	ITS	method	limit/base	current	history1	history2	
Sodium         ppm         ASTM D5185m         8         3         7           Potassium         ppm         ASTM D5185m         >20         10         2         5           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.5         0.2         0.4           Nitration         Abs/cm         *ASTM D7624         >20         7.8         5.8         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.8         18.2         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.3         14.4         16.5	Silicon	ppm	ASTM D5185m	>25	6	3	6	
Potassium         ppm         ASTM D5185m         >20         10         2         5           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.5         0.2         0.4           Nitration         Abs/cm         *ASTM D7624         >20         7.8         5.8         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.8         18.2         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.3         14.4         16.5	Sodium		ASTM D5185m		8	3		
Soot %         %         *ASTM D7844 >6         0.5         0.2         0.4           Nitration         Abs/cm         *ASTM D7624 >20         7.8         5.8         8.7           Sulfation         Abs/.1mm         *ASTM D7415 >30         19.8         18.2         19.3           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         16.3         14.4         16.5	Potassium	ppm	ASTM D5185m	>20	10	2	5	
Nitration         Abs/cm         *ASTM D7624         >20         7.8         5.8         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.8         18.2         19.3           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.3         14.4         16.5	INFRA-RED		method	limit/base	current	history1	history2	
Nitration         Abs/cm         *ASTM D7624         >20         7.8         5.8         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.8         18.2         19.3           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.3         14.4         16.5	Soot %	%	*ASTM D7844	>6	0.5	0.2	0.4	
Sulfation         Abs/.1mm         *ASTM D7415         >30         19.8         18.2         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.3         14.4         16.5								
Oxidation								
	FLUID DEGRADATION method limit/base current history1 history2							
	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.3	14.4	16.5	
	Base Number (BN)	mg KOH/g			6.0	8.8	8.0	



# **OIL ANALYSIS REPORT**



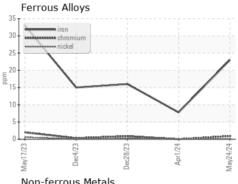


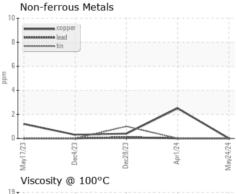


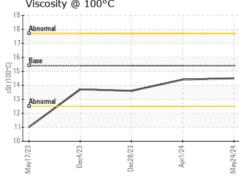
VISUAL		method				history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

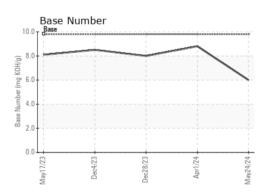
FLUID PROP	ERHES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.5	14.4	13.6

## **GRAPHS**













Certificate 12367

Laboratory Sample No.

: GFL0122366 Lab Number : 06195203 Unique Number : 11057326

Test Package : FLEET

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 30 May 2024 **Tested** 

: 31 May 2024 Diagnosed : 31 May 2024 - Wes Davis

6200 Elmridge Sterling Heights, MI US 48313

GFL Environmental - 415 - Michigan East

Contact: Frank Wolak fwolak@gflenv.com T: (586)825-9514

\* - 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)