

# **OIL ANALYSIS REPORT**

## Sample Rating Trend







Machine Id 813016 Component **Diesel Engine** 

**DIESEL ENGINE OIL SAE 40 (--- GAL)** 

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil.

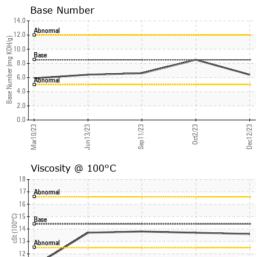
### **Fluid Condition**

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

Sample Date	AE 40 ( GAL)		Mar2023	Jun2023	Sep2023 Oct2023	Dec2023	
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         3122         2599         2454           Oil Age         hrs         Client Info         0         2599         2454           Oil Changed         Client Info         N/A         N/A         N/A         N/A           Sample Status         NORMAL         NORMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         Imitubase         current         history1         history2           Fuel         WC Method         >3.0         <1.0         <1.0         <1.0           Water         WC Method         >0.2         NEG         NEG         NEG           NEG         NEG         NEG         NEG         NEG         NEG           WEAR METALS         method         limitubase         current         history1         history2           Iron         ppm         ASTM 05185m         >120         17         7         18           Chromium         ppm         ASTM 05185m         >20         1         -1         -1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Sample Number		Client Info		GFL0098204	GFL0083902	GFL0061546
Oil Changed Oil Changed Client Info         N/A	Sample Date		Client Info		12 Dec 2023	02 Oct 2023	11 Sep 2023
Oil Changed   Client Info   N/A   N/A   N/A   NORMAL   NORMAL   NORMAL   NORMAL   NORMAL	Machine Age	hrs	Client Info		3122	2599	2454
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history2	Oil Age	hrs	Client Info		0	2599	2454
Fuel	Oil Changed		Client Info		N/A	N/A	N/A
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol         WC Method         >0.2         NEG NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         17         7         18           Chromium         ppm         ASTM D5185m         >20         1         <1         <1           Nickel         ppm         ASTM D5185m         >5         4         <1         2           Silver         ppm         ASTM D5185m         >2         <1         <1         0           Silver         ppm         ASTM D5185m         >2         0         0         <1           Aluminum         ppm         ASTM D5185m         >2         0         0         <1           Lead         ppm         ASTM D5185m         >40         <1         <1         <1         <1           Copper         ppm         ASTM D5185m         >15         1         <1         <1         <1           Vanadium         ppm         ASTM D5185m         >15         1         <1         <1         <1           Vanadium         ppm	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	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
Nickel	Iron	ppm	ASTM D5185m	>120	17	7	18
Titanium	Chromium	ppm	ASTM D5185m	>20	1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>5	4	<1	2
Aluminum	Titanium	ppm	ASTM D5185m	>2	<1	<1	0
Lead	Silver	ppm	ASTM D5185m	>2	0	0	<1
Copper         ppm         ASTM D5185m         >330         4         2         9           Tin         ppm         ASTM D5185m         >15         1         <1	Aluminum	ppm	ASTM D5185m	>20	2	0	<1
Trin	Lead	ppm			<1	<1	<1
Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         <1         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         250         5         7         2           Barium         ppm         ASTM D5185m         10         12         0         0           Molybdenum         ppm         ASTM D5185m         100         63         59         62           Manganese         ppm         ASTM D5185m         100         63         59         62           Manganesium         ppm         ASTM D5185m         450         962         982         962           Calcium         ppm         ASTM D5185m         3000         1121         1091         1145           Phosphorus         ppm         ASTM D5185m         1350         1254         1229         1331           Sulfur         ppm         ASTM D5185m         25         5         4         5           Sulfur         ppm         ASTM D5185m         25         5         4	Copper	ppm	ASTM D5185m	>330	4	2	9
ADDITIVES	Tin	ppm	ASTM D5185m	>15	1	<1	1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	<1	0
Boron	Cadmium	ppm	ASTM D5185m		<1	<1	0
Barium         ppm         ASTM D5185m         10         12         0         0           Molybdenum         ppm         ASTM D5185m         100         63         59         62           Manganese         ppm         ASTM D5185m         100         63         59         62           Magnesium         ppm         ASTM D5185m         450         962         982         962           Calcium         ppm         ASTM D5185m         3000         1121         1091         1145           Phosphorus         ppm         ASTM D5185m         3000         1254         129         1331           Zinc         ppm         ASTM D5185m         1350         1254         1229         1331           Sulfur         ppm         ASTM D5185m         4250         3056         3073         3069           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >225         5         4         5           Sodium         ppm         ASTM D5185m         >20         2         1         2           INFRA-RED         method         limit/	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         100         63         59         62           Manganese         ppm         ASTM D5185m         <1         <1         <1           Magnesium         ppm         ASTM D5185m         450         962         982         962           Calcium         ppm         ASTM D5185m         3000         1121         1091         1145           Phosphorus         ppm         ASTM D5185m         1150         978         1000         1054           Zinc         ppm         ASTM D5185m         1350         1254         1229         1331           Sulfur         ppm         ASTM D5185m         4250         3056         3073         3069           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         5           Sodium         ppm         ASTM D5185m         >20         2         1         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7624         >20         9.4	Boron	ppm	ASTM D5185m	250			
Manganese         ppm         ASTM D5185m         <1         <1         <1           Magnesium         ppm         ASTM D5185m         450         962         982         962           Calcium         ppm         ASTM D5185m         3000         1121         1091         1145           Phosphorus         ppm         ASTM D5185m         1150         978         1000         1054           Zinc         ppm         ASTM D5185m         1350         1254         1229         1331           Sulfur         ppm         ASTM D5185m         4250         3056         3073         3069           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         5           Sodium         ppm         ASTM D5185m         >216         0         1         4           Potassium         ppm         ASTM D5185m         >20         2         1         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4 <td></td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th></th> <td></td> <td></td>		ppm	ASTM D5185m				
Magnesium         ppm         ASTM D5185m         450         962         982         962           Calcium         ppm         ASTM D5185m         3000         1121         1091         1145           Phosphorus         ppm         ASTM D5185m         1150         978         1000         1054           Zinc         ppm         ASTM D5185m         1350         1254         1229         1331           Sulfur         ppm         ASTM D5185m         4250         3056         3073         3069           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         5           Sodium         ppm         ASTM D5185m         >216         0         1         4           Potassium         ppm         ASTM D5185m         >20         2         1         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         9.4         6.8         9.1           Sulfation         Abs/.1mm         *ASTM	-	ppm		100			
Calcium         ppm         ASTM D5185m         3000         1121         1091         1145           Phosphorus         ppm         ASTM D5185m         1150         978         1000         1054           Zinc         ppm         ASTM D5185m         1350         1254         1229         1331           Sulfur         ppm         ASTM D5185m         4250         3056         3073         3069           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         5           Sodium         ppm         ASTM D5185m         >216         0         1         4           Potassium         ppm         ASTM D5185m         >20         2         1         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.3         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.4         6.8         9.1           Sulfation         Abs/.1mm	-	ppm					
Phosphorus         ppm         ASTM D5185m         1150         978         1000         1054           Zinc         ppm         ASTM D5185m         1350         1254         1229         1331           Sulfur         ppm         ASTM D5185m         4250         3056         3073         3069           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         5           Sodium         ppm         ASTM D5185m         >216         0         1         4           Potassium         ppm         ASTM D5185m         >20         2         1         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.3         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.4         6.8         9.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         18.6         20.3           FLUID DEGRADATION         meth	Magnesium	ppm	ASTM D5185m			982	962
Zinc         ppm         ASTM D5185m         1350         1254         1229         1331           Sulfur         ppm         ASTM D5185m         4250         3056         3073         3069           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         5           Sodium         ppm         ASTM D5185m         >216         0         1         4           Potassium         ppm         ASTM D5185m         >20         2         1         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.3         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.4         6.8         9.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         18.6         20.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm		ppm					
Sulfur         ppm         ASTM D5185m         4250         3056         3073         3069           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         5           Sodium         ppm         ASTM D5185m         >216         0         1         4           Potassium         ppm         ASTM D5185m         >20         2         1         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.3         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.4         6.8         9.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         18.6         20.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         14.2         16.6							
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         5           Sodium         ppm         ASTM D5185m         >216         0         1         4           Potassium         ppm         ASTM D5185m         >20         2         1         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.3         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.4         6.8         9.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         18.6         20.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         14.2         16.6	-	ppm			1254		
Silicon         ppm         ASTM D5185m         >25         5         4         5           Sodium         ppm         ASTM D5185m         >216         0         1         4           Potassium         ppm         ASTM D5185m         >20         2         1         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.3         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.4         6.8         9.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         18.6         20.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         14.2         16.6			ASTM D5185m	4250	3056	3073	3069
Sodium         ppm         ASTM D5185m         >216         0         1         4           Potassium         ppm         ASTM D5185m         >20         2         1         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.3         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.4         6.8         9.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         18.6         20.3           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         14.2         16.6		TS	method		current	history1	history2
Potassium         ppm         ASTM D5185m         >20         2         1         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.3         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.4         6.8         9.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         18.6         20.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         14.2         16.6							
INFRA-RED		ppm	ASTM D5185m	>216			
Soot %         %         *ASTM D7844 >4         0.5         0.3         0.6           Nitration         Abs/cm         *ASTM D7624 >20         9.4         6.8         9.1           Sulfation         Abs/.1mm         *ASTM D7415 >30         20.9         18.6         20.3           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         16.8         14.2         16.6	Potassium	ppm	ASTM D5185m	>20	2	1	2
Nitration         Abs/cm         *ASTM D7624         >20         9.4         6.8         9.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         18.6         20.3           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         14.2         16.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         18.6         20.3           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         14.2         16.6	Soot %						
FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     16.8     14.2     16.6		Abs/cm	*ASTM D7624	>20			
Oxidation Abs/.1mm *ASTM D7414 >25 <b>16.8</b> 14.2 16.6	Sulfation	Abs/.1mm	*ASTM D7415	>30	20.9	18.6	20.3
	FLUID DEGRA	OITAC	method	limit/base	current	history1	history2
Base Number (BN)         mg KOH/g         ASTM D2896         8.5         6.4         8.5         6.6	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.8	14.2	16.6
	Base Number (BN)	mg KOH/g	ASTM D2896	8.5	6.4	8.5	6.6



# **OIL ANALYSIS REPORT**



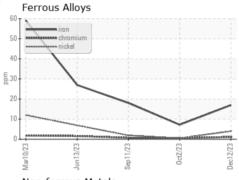
Sep11/23

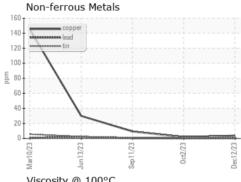
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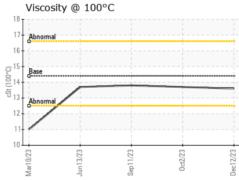
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

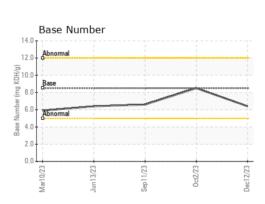
FLUID PROPE	RHES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	13.6	13.7	13.8

### **GRAPHS**













Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : FLEET

: GFL0098204 : 06035618 : 10790847

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 15 Dec 2023 Diagnosed

: 18 Dec 2023 Diagnostician : Wes Davis

GFL Environmental - 652 - Fredericksburg Hauling

10954 Houser Drive Fredericksburg, VA US 22408

Contact: WILLIAM MILO wmilo@gflenv.com

T:

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)

Report Id: GFL652 [WUSCAR] 06035618 (Generated: 12/18/2023 13:48:24) Rev: 1

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