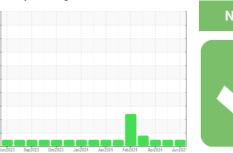


## **OIL ANALYSIS REPORT**

# Sample Rating Trend









(413UA)
Machine Id

813012
Component
Diesel Engine
Fluid

**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.

#### Wear

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil.

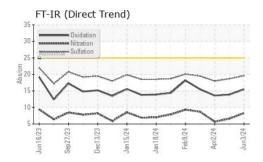
### **Fluid Condition**

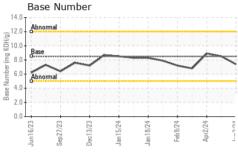
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

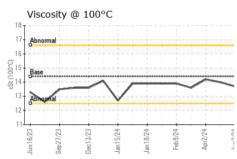
SAMPLE INFORMATION   method   limit/base   current   history1   history2	AE 40 ( GAL)	SAE 40 ( GAL)   Nudde23 Sep2023 Dec2023 Jan2024 Jan2024 Feb2024 Apr2024 Jun2024						
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2	
Machine Age         hrs         Client Info         4233         3973         3780           Oil Age         hrs         Client Info         3896         3829         144           Oil Changed         Client Info         Changed         NOT Changed	Sample Number		Client Info		GFL0116585	GFL0116609	GFL0116557	
Oil Age         hrs         Client Info         3896         3829         144           Oil Changed Sample Status         Client Info         Changed Not Changed Not Changed Not Changed Not Changed NormAL         NORMAL </th <th></th> <th></th> <th>Client Info</th> <th></th> <th>03 Jun 2024</th> <th>26 Apr 2024</th> <th>02 Apr 2024</th>			Client Info		03 Jun 2024	26 Apr 2024	02 Apr 2024	
Oil Changed   Client Info   NoRMAL   NORMAL   NORMAL   NORMAL	Machine Age	hrs	Client Info		4233	3973	3780	
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   imilibase   current   history1   history2	Oil Age	hrs	Client Info		3896	3829	144	
CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >3.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         NEG         <	Oil Changed		Client Info		Changed	Not Changd	Not Changd	
Fuel	Sample Status				NORMAL	NORMAL	NORMAL	
Water Glycol         WC Method WC Method         >0.2         NEG NEG NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         11         8         4           Chromium         ppm         ASTM D5185m         >20         <1         <1         0           Nickel         ppm         ASTM D5185m         >2         0         <1         <1         0           Silver         ppm         ASTM D5185m         >2         0         <1         <1         0           Silver         ppm         ASTM D5185m         >2         0         <1         <1         0           Silver         ppm         ASTM D5185m         >20         2         2         <1         0         0           Aluminum         ppm         ASTM D5185m         >40         0         <1         0         0         <1         0         <1         <1         0         <1         <1         0         <1         <1         0         <0         <0         <1         <1         <1         <1         <1 </th <th>CONTAMINAT</th> <th>ION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	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	
Iron	Glycol		WC Method		NEG	NEG	NEG	
Chromium         ppm         ASTM D5185m         >20         <1	WEAR METAL	S	method	limit/base	current	history1	history2	
Nickel         ppm         ASTM D5185m         >5         5         4         4           Titanium         ppm         ASTM D5185m         >2         0         <1	Iron	ppm	ASTM D5185m	>120	11	8	4	
Titanium         ppm         ASTM D5185m         >2         0         <1	Chromium	ppm	ASTM D5185m	>20	<1	<1	0	
Stilver	Nickel	ppm	ASTM D5185m	>5	5	4	4	
Aluminum	Titanium	ppm	ASTM D5185m	>2	0	<1	<1	
Lead         ppm         ASTM D5185m         >40         0         <1	Silver	ppm	ASTM D5185m	>2	<1	0	0	
Copper         ppm         ASTM D5185m         >330         2         2         <1	Aluminum	ppm	ASTM D5185m	>20	2	2	<1	
Tin         ppm         ASTM D5185m         >15         1         <1         0           Vanadium         ppm         ASTM D5185m         0         <1         <1           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         250         11         13         17           Barium         ppm         ASTM D5185m         10         <1         0         0           Molybdenum         ppm         ASTM D5185m         10         <1         0         0           Molybdenum         ppm         ASTM D5185m         100         63         59         58           Mangaesium         ppm         ASTM D5185m         10         63         59         58           Magnesium         ppm         ASTM D5185m         450         927         902         966           Calcium         ppm         ASTM D5185m         3000         1136         1112         1186           Phosphorus         ppm         ASTM D5185m         150         1078         1006	Lead	ppm	ASTM D5185m	>40	0	<1	0	
Vanadium         ppm         ASTM D5185m         0         <1         <1           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         250         11         13         17           Barium         ppm         ASTM D5185m         10         <1         0         0           Molybdenum         ppm         ASTM D5185m         100         63         59         58           Manganese         ppm         ASTM D5185m         1         <1         <1         <1           Magnesium         ppm         ASTM D5185m         450         927         902         966           Calcium         ppm         ASTM D5185m         450         927         902         966           Calcium         ppm         ASTM D5185m         1150         1078         1006         961           Zinc         ppm         ASTM D5185m         1350         1239         1212         1283           Sulfur         ppm         ASTM D5185m         >25         4         4	Copper	ppm	ASTM D5185m	>330	2	2	<1	
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         250         11         13         17           Barium         ppm         ASTM D5185m         10         <1	Tin	ppm	ASTM D5185m	>15	1	<1	0	
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	<1	<1	
Boron	Cadmium	ppm	ASTM D5185m		0	0	0	
Barium         ppm         ASTM D5185m         10         <1	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum         ppm         ASTM D5185m         100         63         59         58           Manganese         ppm         ASTM D5185m         1         <1	Boron	ppm	ASTM D5185m	250		13		
Manganese         ppm         ASTM D5185m         1         <1         <1           Magnesium         ppm         ASTM D5185m         450         927         902         966           Calcium         ppm         ASTM D5185m         3000         1136         1112         1186           Phosphorus         ppm         ASTM D5185m         1150         1078         1006         961           Zinc         ppm         ASTM D5185m         1350         1239         1212         1283           Sulfur         ppm         ASTM D5185m         4250         3252         3115         3860           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         2           Sodium         ppm         ASTM D5185m         >216         2         <1	Barium	ppm						
Magnesium         ppm         ASTM D5185m         450         927         902         966           Calcium         ppm         ASTM D5185m         3000         1136         1112         1186           Phosphorus         ppm         ASTM D5185m         1150         1078         1006         961           Zinc         ppm         ASTM D5185m         1350         1239         1212         1283           Sulfur         ppm         ASTM D5185m         4250         3252         3115         3860           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         2           Sodium         ppm         ASTM D5185m         >216         2         <1	Molybdenum	ppm	ASTM D5185m	100				
Calcium         ppm         ASTM D5185m         3000         1136         1112         1186           Phosphorus         ppm         ASTM D5185m         1150         1078         1006         961           Zinc         ppm         ASTM D5185m         1350         1239         1212         1283           Sulfur         ppm         ASTM D5185m         4250         3252         3115         3860           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         2           Sodium         ppm         ASTM D5185m         >216         2         <1	-	ppm	ASTM D5185m					
Phosphorus         ppm         ASTM D5185m         1150         1078         1006         961           Zinc         ppm         ASTM D5185m         1350         1239         1212         1283           Sulfur         ppm         ASTM D5185m         4250         3252         3115         3860           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         2           Sodium         ppm         ASTM D5185m         >216         2         <1         <1           Potassium         ppm         ASTM D5185m         >20         2         2         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.6         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         8.3         6.6         5.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         18.7         18.0           FLUID DEGRADATION         m		ppm	ASTM D5185m		-			
Zinc         ppm         ASTM D5185m         1350         1239         1212         1283           Sulfur         ppm         ASTM D5185m         4250         3252         3115         3860           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         2           Sodium         ppm         ASTM D5185m         >216         2         <1         <1           Potassium         ppm         ASTM D5185m         >20         2         2         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.6         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         8.3         6.6         5.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         18.7         18.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm </th <th></th> <th>ppm</th> <th></th> <th></th> <th></th> <th></th> <th></th>		ppm						
Sulfur         ppm         ASTM D5185m         4250         3252         3115         3860           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         2           Sodium         ppm         ASTM D5185m         >216         2         <1         <1           Potassium         ppm         ASTM D5185m         >20         2         2         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.6         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         8.3         6.6         5.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         18.7         18.0           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         13.9         13.6	•							
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         2           Sodium         ppm         ASTM D5185m         >216         2         <1		ppm						
Silicon         ppm         ASTM D5185m         >25         4         4         2           Sodium         ppm         ASTM D5185m         >216         2         <1         <1           Potassium         ppm         ASTM D5185m         >20         2         2         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.6         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         8.3         6.6         5.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         18.7         18.0           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         13.9         13.6			ASTM D5185m	4250	3252	3115	3860	
Sodium         ppm         ASTM D5185m         >216         2         <1		TS	method		current	history1	history2	
Potassium         ppm         ASTM D5185m         >20         2         2         <1								
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.6         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         8.3         6.6         5.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         18.7         18.0           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         13.9         13.6		ppm	ASTM D5185m	>216				
Soot %         %         *ASTM D7844 >4         0.6         0.3         0.2           Nitration         Abs/cm         *ASTM D7624 >20         8.3         6.6         5.7           Sulfation         Abs/.1mm         *ASTM D7415 >30         19.6         18.7         18.0           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         15.5         13.9         13.6	Potassium	ppm	ASTM D5185m	>20	2	2	<1	
Nitration         Abs/cm         *ASTM D7624         >20         8.3         6.6         5.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         18.7         18.0           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         13.9         13.6	INFRA-RED		method	limit/base	current	history1	history2	
Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         18.7         18.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         13.9         13.6	Soot %	%	*ASTM D7844	>4	0.6	0.3	0.2	
FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2515.513.913.6	Nitration	Abs/cm	*ASTM D7624	>20	8.3	6.6	5.7	
Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         13.9         13.6	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.6	18.7	18.0	
	FLUID DEGRA	OATION	method	limit/base	current	history1	history2	
<b>Base Number (BN)</b> mg KOH/g ASTM D2896 8.5 <b>7.4</b> 8.5 8.9	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.5	13.9	13.6	
	Base Number (BN)	mg KOH/g	ASTM D2896	8.5	7.4	8.5	8.9	



## **OIL ANALYSIS REPORT**



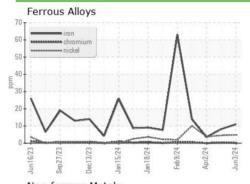


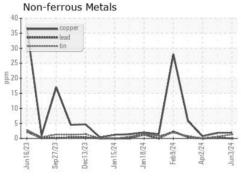


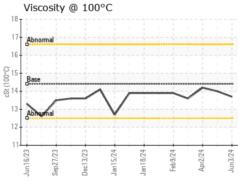
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

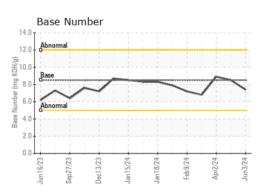
FLUID PROPE	:RHES	method				history2
Visc @ 100°C	cSt	ASTM D445	14.4	13.7	14.0	14.2

### **GRAPHS**













Laboratory Sample No.

Lab Number : 06199796 Unique Number : 11061919

: GFL0116585

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 05 Jun 2024

**Tested** : 05 Jun 2024 Diagnosed : 05 Jun 2024 - Wes Davis

GFL Environmental - 652 - Fredericksburg Hauling

10954 Houser Drive Fredericksburg, VA US 22408

Contact: TECHNICIAN ACCOUNT catherine.anastasio@wearcheck.com

Certificate 12367

Test Package : FLEET 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] 06199796 (Generated: 06/05/2024 18:25:04) Rev: 1

Submitted By: TECHNICIAN ACCOUNT

T:

F: