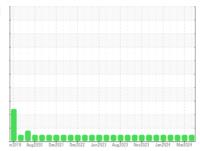


# **OIL ANALYSIS REPORT**

Sample Rating Trend



**NORMAL** 



Machine Id

829057-101295

**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.

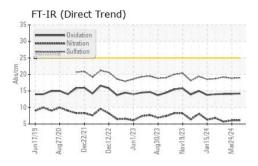
### **Fluid Condition**

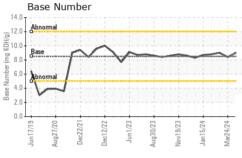
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

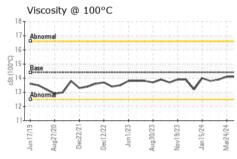
Sample Number			in2019 Aug20	20 Dec2021 Dec2022 Ju	un2023 Aug2023 Nov2023 Jan202	4 Mar2024	
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age     hrs     Client Info     0     0     0       Oil Age     hrs     Client Info     0     0     0       Oil Changed     Client Info     N/A     N/A     N/A     N/A       Sample Status     Image: Client Info     N/A     N/A     N/A     N/A       CONTAMINATION     method     Imilibase     current     history1     history2       Fuel     WC Method     >5     <1.0     <1.0     <1.0       Water     WC Method     NEG     NEG     NEG     NEG       Glycol     WC Method     NEG     NEG     NEG     NEG       WEAR METALS     method     limil/base     current     history2     history2       Iron     ppm     ASTM D5185m     >100     5     7     4       Chromium     ppm     ASTM D5185m     >20     <1     <1     0       Nickel     ppm     ASTM D5185m     >20     <1     <1     0       Silver     ppm     ASTM D5	Sample Number		Client Info		GFL0102945	GFL0102987	GFL0102971
Oil Age     hrs     Client Info     N/A	Sample Date		Client Info		14 Apr 2024	24 Mar 2024	27 Feb 2024
Oil Changed Status     Client Info     N/A     N/A     N/A     N/A       CONTAMINATION     method     limit/base     current     history1     history2       Fuel     WC Method     >5.5     <1.0	Machine Age	hrs	Client Info		11592	11447	11233
Sample Status	Oil Age	hrs	Client Info		0	0	0
CONTAMINATION     method     limit/base     current     history1     history2       Fuel     WC Method     >5     <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     NEG <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>N/A</th> <th>N/A</th> <th>N/A</th>	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       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >100     5     7     4       Chromium     ppm     ASTM D5185m     >20     <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >100     5     7     4       Chromium     ppm     ASTM D5185m     >20     <1     <1     0       Nickel     ppm     ASTM D5185m     >20     <1     0     <1     0       Titanium     ppm     ASTM D5185m     >3     0     0     0     0     0       Aluminum     ppm     ASTM D5185m     >3     0     0     0     0     0       Aluminum     ppm     ASTM D5185m     >40     0     <1     0     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	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	Iron	ppm	ASTM D5185m	>100	5	7	4
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >20     3     4     3       Lead     ppm     ASTM D5185m     >40     0     <1	Nickel	ppm	ASTM D5185m	>4	0	<1	0
Aluminum		ppm			-		
Lead     ppm     ASTM D5185m     >40     0     <1		• • • • • • • • • • • • • • • • • • • •					
Copper     ppm     ASTM D5185m     >330     0     <1		ppm			-		
Tin     ppm     ASTM D5185m     >15     0     <1		• • • • • • • • • • • • • • • • • • • •					
Vanadium     ppm     ASTM D5185m     0     <1	• •				-		
Cadmium     ppm     ASTM D5185m     0     <1		• • • • • • • • • • • • • • • • • • • •		>15			
ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     250     62     66     115       Barium     ppm     ASTM D5185m     10     0     1     0       Molybdenum     ppm     ASTM D5185m     100     76     77     84       Manganese     ppm     ASTM D5185m     100     76     77     84       Magnesium     ppm     ASTM D5185m     450     999     915     904       Calcium     ppm     ASTM D5185m     450     999     915     904       Calcium     ppm     ASTM D5185m     3000     1204     1271     1274       Phosphorus     ppm     ASTM D5185m     1350     1291     1228     1219       Sulfur     ppm     ASTM D5185m     4250     3768     3459     3184       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5					-		
Boron		ppm			-		
Barium     ppm     ASTM D5185m     10     0     1     0       Molybdenum     ppm     ASTM D5185m     100     76     77     84       Manganese     ppm     ASTM D5185m     100     76     77     84       Manganese     ppm     ASTM D5185m     100     21     21     21       Magnesium     ppm     ASTM D5185m     450     999     915     904       Calcium     ppm     ASTM D5185m     3000     1204     1271     1274       Phosphorus     ppm     ASTM D5185m     1150     1101     1038     1060       Zinc     ppm     ASTM D5185m     1350     1291     1228     1219       Sulfur     ppm     ASTM D5185m     4250     3768     3459     3184       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     5     3       Sodium     ppm     ASTM D5	ADDITIVES						
Molybdenum     ppm     ASTM D5185m     100     76     77     84       Manganese     ppm     ASTM D5185m      <1		• • • • • • • • • • • • • • • • • • • •					
Manganese     ppm     ASTM D5185m     <1					-		
Magnesium     ppm     ASTM D5185m     450     999     915     904       Calcium     ppm     ASTM D5185m     3000     1204     1271     1274       Phosphorus     ppm     ASTM D5185m     1150     1101     1038     1060       Zinc     ppm     ASTM D5185m     1350     1291     1228     1219       Sulfur     ppm     ASTM D5185m     4250     3768     3459     3184       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     5     3       Sodium     ppm     ASTM D5185m     >216     1     1     3       Potassium     ppm     ASTM D5185m     >20     0     2     <1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     "ASTM D7624     >20     6.1     6.1     5.7       Sulfation     Abs/.1mm     "ASTM D7415	•			100			
Calcium     ppm     ASTM D5185m     3000     1204     1271     1274       Phosphorus     ppm     ASTM D5185m     1150     1101     1038     1060       Zinc     ppm     ASTM D5185m     1350     1291     1228     1219       Sulfur     ppm     ASTM D5185m     4250     3768     3459     3184       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     5     3       Sodium     ppm     ASTM D5185m     >216     1     1     3       Potassium     ppm     ASTM D5185m     >20     0     2     <1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624     >20     6.1     6.1     5.7       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.0     18.8     19.2       FLUID DEGRADATION     me	•			450			
Phosphorus     ppm     ASTM D5185m     1150     1101     1038     1060       Zinc     ppm     ASTM D5185m     1350     1291     1228     1219       Sulfur     ppm     ASTM D5185m     4250     3768     3459     3184       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     5     3       Sodium     ppm     ASTM D5185m     >216     1     1     3       Potassium     ppm     ASTM D5185m     >20     0     2     <1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624     >20     6.1     6.1     5.7       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.0     18.8     19.2       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm<	-	• • • • • • • • • • • • • • • • • • • •					
Zinc     ppm     ASTM D5185m     1350     1291     1228     1219       Sulfur     ppm     ASTM D5185m     4250     3768     3459     3184       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     5     3       Sodium     ppm     ASTM D5185m     >216     1     1     3       Potassium     ppm     ASTM D5185m     >20     0     2     <1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >3     0.3     0.3     0.2       Nitration     Abs/.mm     *ASTM D7624     >20     6.1     6.1     5.7       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.0     18.8     19.2       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>							
Sulfur     ppm     ASTM D5185m     4250     3768     3459     3184       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     5     3       Sodium     ppm     ASTM D5185m     >216     1     1     3       Potassium     ppm     ASTM D5185m     >20     0     2     <1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >3     0.3     0.3     0.2       Nitration     Abs/cm     *ASTM D7624     >20     6.1     6.1     5.7       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.0     18.8     19.2       FLUID DEGRADATION method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     14.2     14.1     14.1		• • • • • • • • • • • • • • • • • • • •			-		
CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     5     3       Sodium     ppm     ASTM D5185m     >216     1     1     3       Potassium     ppm     ASTM D5185m     >20     0     2     <1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >3     0.3     0.3     0.2       Nitration     Abs/cm     *ASTM D7624     >20     6.1     6.1     5.7       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.0     18.8     19.2       FLUID DEGRADATION method limit/base current history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     14.2     14.1     14.1	-				-		
Silicon     ppm     ASTM D5185m     >25     3     5     3       Sodium     ppm     ASTM D5185m     >216     1     1     3       Potassium     ppm     ASTM D5185m     >20     0     2     <1	CONTAMINAN		method_	limit/base	current	historv1	historv2
Sodium     ppm     ASTM D5185m     >216     1     1     3       Potassium     ppm     ASTM D5185m     >20     0     2     <1							
Potassium     ppm     ASTM D5185m     >20     0     2     <1		• • • • • • • • • • • • • • • • • • • •					
Soot %     %     *ASTM D7844     >3     0.3     0.3     0.2       Nitration     Abs/cm     *ASTM D7624     >20     6.1     6.1     5.7       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.0     18.8     19.2       FLUID DEGRADATION method limit/base current history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     14.2     14.1     14.1							
Nitration     Abs/cm     *ASTM D7624     >20     6.1     6.1     5.7       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.0     18.8     19.2       FLUID DEGRADATION method limit/base current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     14.2     14.1     14.1	INFRA-RED		method	limit/base	current	history1	history2
Nitration     Abs/cm     *ASTM D7624     >20     6.1     6.1     5.7       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.0     18.8     19.2       FLUID DEGRADATION method limit/base current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     14.2     14.1     14.1	Soot %	%	*ASTM D7844	>3	0.3	0.3	0.2
Sulfation     Abs/.1mm     *ASTM D7415     >30     19.0     18.8     19.2       FLUID DEGRADATION method limit/base current history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     14.2     14.1     14.1							
Oxidation							
	FLUID DEGRAD	OITAC	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.2	14.1	14.1



# **OIL ANALYSIS REPORT**



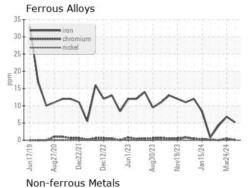


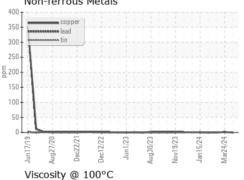


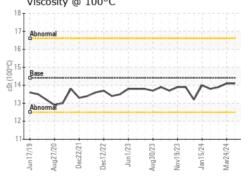
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

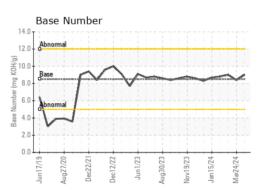
FLUID PROP	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	14.4	14.1	14.1	13.9

## **GRAPHS**













Certificate 12367

Laboratory Sample No.

Test Package : FLEET

: GFL0102945 Lab Number : 06149367 Unique Number : 10979445

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 15 Apr 2024 **Tested** 

: 16 Apr 2024 Diagnosed

: 16 Apr 2024 - Wes Davis

GFL Environmental - 816 - WCA of South Arkansas

3083 Smackover Hwy El Dorado, AR US 71730

Contact: Mike Howell mike.howell@gflenv.com

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)

T:

F: