

### **OIL ANALYSIS REPORT**

#### Sample Rating Trend

Dec2022 Feb2023 Max/2



# Machine Id 812032

#### Component Diesel Engine Fluid DIESEL ENGINE OIL SAE 15W40 (--- GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

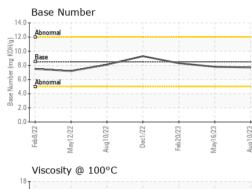
#### Fluid Condition

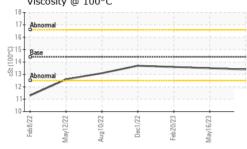
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0080385	GFL0080394	GFL0066725
Sample Date		Client Info		10 Aug 2023	16 May 2023	20 Feb 2023
Machine Age	hrs	Client Info		4156	3571	3009
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	9	8	4
Chromium	ppm	ASTM D5185m	>4	<1	0	0
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m		<1	1	0
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>25	5	8	3
Lead	ppm	ASTM D5185m	>45	0	0	0
Copper	ppm	ASTM D5185m	>85	1	1	0
Tin	ppm	ASTM D5185m	>4	0	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
					nistory i	Thistory Z
Boron	ppm	ASTM D5185m	250	2	4	2
	ppm ppm					
Boron Barium		ASTM D5185m	250	2	4	2
Boron	ppm	ASTM D5185m ASTM D5185m	250 10	2 2	4 0	2 0
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	2 2 62	4 0 61	2 0 54
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	2 2 62 <1	4 0 61 <1	2 0 54 <1
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	2 2 62 <1 970	4 0 61 <1 960	2 0 54 <1 867
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	2 2 62 <1 970 1113 990	4 0 61 <1 960 1143	2 0 54 <1 867 1062
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	2 2 62 <1 970 1113	4 0 61 <1 960 1143 965	2 0 54 <1 867 1062 828
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350	2 2 62 <1 970 1113 990 1196	4 0 61 <1 960 1143 965 1244	2 0 54 <1 867 1062 828 1047
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250	2 2 62 <1 970 1113 990 1196 3029	4 0 61 <1 960 1143 965 1244 3215	2 0 54 <1 867 1062 828 1047 2682
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <i>limit/base</i> >30	2 2 62 <1 970 1113 990 1196 3029 current	4 0 61 <1 960 1143 965 1244 3215 history1	2 0 54 <1 867 1062 828 1047 2682 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	250 10 100 450 3000 1150 1350 4250 <i>limit/base</i> >30	2 2 62 <1 970 1113 990 1196 3029 current 4	4 0 61 <1 960 1143 965 1244 3215 history1 3	2 0 54 <1 867 1062 828 1047 2682 history2 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >30 >158	2 2 62 <1 970 1113 990 1196 3029 current 4 0	4 0 61 <1 960 1143 965 1244 3215 history1 3 2	2 0 54 <1 867 1062 828 1047 2682 history2 2 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >30 >158 >20	2 2 62 <1 970 1113 990 1196 3029 current 4 0 10	4 0 61 <1 960 1143 965 1244 3215 history1 3 2 9	2 0 54 <1 867 1062 828 1047 2682 history2 2 <1 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >30 >158 >20 <b>limit/base</b>	2 2 62 <1 970 1113 990 1196 3029 current 4 0 10 10	4 0 61 <1 960 1143 965 1244 3215 history1 3 2 9 9	2 0 54 <1 867 1062 828 1047 2682 history2 2 <1 6 yhistory2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >30 >158 >20 <b>limit/base</b> >3	2 2 62 <1 970 1113 990 1196 3029 <u>current</u> 4 0 10 10 <u>current</u>	4 0 61 <1 960 1143 965 1244 3215 history1 3 2 9 history1 0.3	2 0 54 <1 867 1062 828 1047 2682 history2 2 <1 6 history2 0.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >30 >158 >20 <b>limit/base</b> >3	2 2 62 <1 970 1113 990 1196 3029 current 4 0 10 10 current 0.3 7.8	4 0 61 <1 960 1143 965 1244 3215 history1 3 2 9 history1 0.3 7.7	2 0 54 <1 867 1062 828 1047 2682 history2 2 <1 6 history2 0.2 6.9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>imit/base</b> >30 >158 >20 <b>imit/base</b> >3 >20	2 2 62 <1 970 1113 990 1196 3029 <u>current</u> 4 0 10 <u>current</u> 0.3 7.8 20.3	4 0 61 <1 960 1143 965 1244 3215 history1 3 2 9 <u>history1</u> 0.3 7.7 20.3	2 0 54 <1 867 1062 828 1047 2682 <b>history2</b> 2 <1 6 <b>history2</b> 0.2 6.9 18.9



## **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
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	13.4	13.5	13.6
GRAPHS						
Ferrous Alloys						
40 - iron						
35 - mickel						
30						
25-20-						
15						
10						
5						
0						
22 22	22	23 23	23			
Feb8/22 ay12/22 ug10/22	Dec1/22	eb 20/23 ay 16/23				
Feb8/22 May12/22 Aug10/22	Dec1/22	Feb20/23 May16/23	Aug10/23			
Non-ferrous Metal		Feb20/23 May16/23	Aug10/23			
Non-ferrous Metal		Feb.20/23	Aug10/23			
Non-ferrous Metal		Feb20/23	Aug 10/23			
Non-ferrous Metals		Feb20/23	Aug10/23			
Non-ferrous Metals		Feb2023	Aug10/23			
Non-ferrous Metals		Feb2023	Aug10/23			
Non-ferrous Metals		Feb2023	Aug10/23			
Non-ferrous Metals		Feb20/23	Aug10/23			
Non-ferrous Metals	s					
Non-ferrous Metals						
Non-ferrous Metals	Dect/22	Feb20/23 Feb20/23 Feb20/23 May16/23 May16/23	Aug10/23	Bace Number		
Non-ferrous Metals	Dect/22			Base Number		
Non-ferrous Metals	Dect/22		EC2001@my 14.0 12.0	Base Number		
Non-ferrous Metals	Dect/22		EC2001@my 14.0 12.0	Abnormal		
Non-ferrous Metals	Dect/22		EC2001@my 14.0 12.0	T		
Non-ferrous Metal	Dect/22		EC2001@my 14.0 12.0	Abnormal Base		
Non-ferrous Metal	Dect/22		EC2001@my 14.0 12.0	Abnormal		
Non-ferrous Metals	Dect/22		14.0 12.0 12.0 12.0 10.0 10.0 8.0 8.0 8.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9	Abnormal Base		
Non-ferrous Metals	Dect/22		14.0 12.0 (9)H010.0 0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,	Abnormal Base		
Non-ferrous Metals	Dect/22		14.0 12.0 12.0 12.0 10.0 10.0 8.0 8.0 8.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9	Abnormal Base Abnormal	Aug10.22	May 16/23



 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)

: GFL0080385

: 05936524

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

: 28 Aug 2023

: 29 Aug 2023

Diagnostician : Don Baldridge

Received

Diagnosed

Laboratory

Sample No.

Lab Number

Unique Number : 10621795

GFL Environmental - 892 - Pauls Valley Hauling

405 East Airport Industrial Road

Pauls Valley, OK US 73075

T:

F:

Contact: Tony Graham

tgraham2@wcamerica.com