

# **OIL ANALYSIS REPORT**

# Sample Rating Trend





#### Component Gasoline Engine Fluid DIESEL ENGINE OIL SAE 15W40 (--- 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

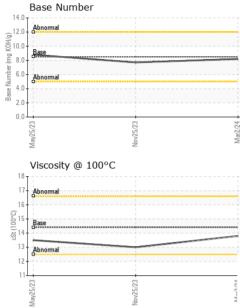
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Mark023 Nark024										
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2				
Sample Number		Client Info		GFL0108983	GFL0101449	GFL0081383				
Sample Date		Client Info		02 Mar 2024	25 Nov 2023	25 May 2023				
Machine Age	hrs	Client Info		4364	2227	6532				
Oil Age	hrs	Client Info		4364	0	5659				
Oil Changed		Client Info		Not Changd	Not Changd	Changed				
Sample Status				NORMAL	NORMAL	NORMAL				
CONTAMINAT	ION	method	limit/base	current	history1	history2				
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0				
Water		WC Method	>0.2	NEG	NEG	NEG				
Glycol		WC Method		NEG	NEG	NEG				
WEAR METAL	S	method	limit/base	current	history1	history2				
Iron	ppm	ASTM D5185m	>150	17	35	26				
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1				
Nickel	ppm	ASTM D5185m	>5	0	0	0				
Titanium	ppm	ASTM D5185m		0	0	0				
Silver	ppm	ASTM D5185m	>2	0	0	0				
Aluminum	ppm	ASTM D5185m	>40	2	3	1				
Lead	ppm	ASTM D5185m	>50	0	<1	<1				
Copper	ppm	ASTM D5185m	>155	<1	1	<1				
Tin	ppm	ASTM D5185m	>10	0	<1	<1				
Vanadium	ppm	ASTM D5185m		0	0	0				
<b>a</b>										
Cadmium	ppm	ASTM D5185m		0	0	0				
ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	0 history2				
	ppm ppm		limit/base 250	-	-	-				
ADDITIVES		method		current	history1	history2				
ADDITIVES Boron	ppm	method ASTM D5185m	250	current 2	history1 4	history2 4				
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	250 10	current 2 0	history1 4 0	history2 4 0				
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	250 10	current 2 0 62	history1 4 0 55	history2 4 0 62				
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	current 2 0 62 0	history1 4 0 55 <1	history2 4 0 62 <1				
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	current 2 0 62 0 943	history1 4 0 55 <1 857	history2 4 0 62 <1 901 1091 1040				
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	current     2     0     62     0     943     1018	history1 4 0 55 <1 857 976	history2 4 0 62 <1 901 1091				
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	Current 2 0 62 0 943 1018 1026	history1 4 0 55 <1 857 976 973	history2 4 0 62 <1 901 1091 1040				
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	method 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	current     2     0     62     0     943     1018     1026     1248     3126     current	history1 4 0 55 <1 857 976 973 1193 2712 history1	history2 4 0 62 <1 901 1091 1040 1238 3532 history2				
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	method 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 <b>limit/base</b> >30	current     2     0     62     0     943     1018     1026     1248     3126     current     4	history1     4     0     55     <1     857     976     973     1193     2712     history1     3	history2     4     0     62     <1     901     1091     1040     1238     3532     history2     1				
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	method     ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >30 >158	current     2     0     62     0     943     1018     1026     1248     3126     current     4     4	history1     4     0     55     <1     857     976     973     1193     2712     history1     3     4	history2     4     0     62     <1     901     1091     1040     1238     3532     history2     1     0				
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	method     ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >30 >158 >20	current     2     0     62     0     943     1018     1026     1248     3126     current     4	history1     4     0     55     <1     857     976     973     1193     2712     history1     3     4     2	history2     4     0     62     <1     901     1091     1040     1238     3532     history2     1     0     1				
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	method     ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >30 >158	current     2     0     62     0     943     1018     1026     1248     3126     current     4     2     current	history1   4   0   55   <1   857   976   973   1193   2712   history1   3   4   2   history1	history2   4   0   62   <1   901   1091   1040   1238   3532   history2   1   0   1   0   1   wistory2				
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Iimit/base</b> >30 >158 >20	current     2     0     62     0     943     1018     1026     1248     3126     current     4     2     current     0     0.5	history1   4   0   55   <1   857   976   973   1193   2712   history1   3   4   2   history1   1.1	history2   4   0   62   <1   901   1091   1040   1238   3532   history2   1   0   1   0   1   0   1   0   1   0.8				
ADDITIVES 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 <b>TS</b> ppm ppm ppm	method     ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Iimit/base</b> >30 >158 >20	current     2     0     62     0     943     1018     1026     1248     3126     current     4     2     current     0     9     1026     1248     3126     current     0     0.5     7.0	history1   4   0   55   <1   857   976   973   1193   2712   history1   3   4   0   1.1   9.6	history2   4   0   62   <1   901   1091   1040   1238   3532   history2   1   0   1   0   1   0.8   7.8				
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Iimit/base</b> >30 >158 >20	current     2     0     62     0     943     1018     1026     1248     3126     current     4     2     current     0     0.5	history1   4   0   55   <1   857   976   973   1193   2712   history1   3   4   2   history1   1.1	history2   4   0   62   <1   901   1091   1040   1238   3532   history2   1   0   1   0   1   0   1   0   1   0.8				
ADDITIVES 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	method     ASTM D5185m     ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Iimit/base</b> >30 >158 >20	current     2     0     62     0     943     1018     1026     1248     3126     current     4     2     current     0     9     1026     1248     3126     current     0     0.5     7.0	history1   4   0   55   <1   857   976   973   1193   2712   history1   3   4   0   1.1   9.6	history2   4   0   62   <1   901   1091   1040   1238   3532   history2   1   0   1   0   1   0.8   7.8				
ADDITIVES 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	method     ASTM D5185m     ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Iinit/base</b> >30 >158 >20 <b>Iinit/base</b> >20	current     2     0     62     0     943     1018     1026     1248     3126     current     4     2     current     0.5     7.0     19.1	history1   4   0   55   <1   857   976   973   1193   2712   history1   3   4   2   history1   1.1   9.6   21.3	history2   4   0   62   <1   901   1091   1040   1238   3532   history2   1   0   1   0   1   0.8   7.8   20.3				
ADDITIVES 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 TS ppm ppm ppm ppm	method     ASTM D5185m     ASTM D7844     *ASTM D7415     method	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >30 >158 >20 <b>limit/base</b> >20 >30 >30	current     2     0     62     0     943     1018     1026     1248     3126     current     4     2     current     0.5     7.0     19.1     current	history1   4   0   55   <1   857   976   973   1193   2712   history1   3   4   2   history1   1.1   9.6   21.3   history1	history2   4   0   62   <1   901   1091   1040   1238   3532   history2   1   0   1   0   1   0.8   7.8   20.3   history2				



# **OIL ANALYSIS REPORT**

VISUAL



	VISUAL		method	limit/base	current	history1	history2		
	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE		
I I I	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		
. c7/c	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML		
C7/C7/01	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		13.8	13.0	13.5		
	GRAPHS								
	Ferrous Alloys								
n	35 iron								
C7/C7ADA	30 - chromium								
DAL	= 25 -								
	E 20								
	<sup>15</sup>								
	10								
	5								
	0								
	May25/22	Vov25/23		Mar2/24					
	May	Nov		Z					
	Non-ferrous Meta	ls							
	copper								
	8 - sessesses lead								
	m dd								
	4								
	0		Control and the state of a state	Conditional and a					
	May25/23	Nov25/23		Mar2/24					
	—			Z					
	Viscosity @ 100°C	2			Base Number				
	1			14.0					
	17- Abnormal			12.0	- Abnormal				
	16			0.0 KOH/0) 6.0 8386 Number (mg KOH/0) 8386 Aumper (mg KOH/0)	Pres				
	(2) 15 00 5 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8			Ē 8.0	dase				
	t; 14			6.0	Abnormal				
	13 Abnormal			N 4.0	Abnormal				
	Abnormal			2.0					
	11			0.0					
	5/23	5/23 -			5/23	5/23 -			
	May25/23	Nav25/23		Mar2/24	May25/23	Nov25/23			
Laborato		: WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 415 - Mich : GFL0108983 Received : 05 Mar 2024 6200							
AB Sample	No. : GFL0108983 Iber : 06108431			d : 05 Mar 2024 : 06 Mar 2024			6200 Elmrid Sterling Heights,		
	mber : 10911928								
CC (7025	<b>IIDEI</b> . 10311320								
ute L2367 Test Pacl	kage : FLEET Port, contact Customer Serv	-					ct: Frank Wol ak@gflenv.cc		