

# **OIL ANALYSIS REPORT**

Sample Rating Trend



GFL035 10997 Component Diesel Engine

### Fluid DIESEL ENGINE OIL SAE 40 (9 GAL)

## DIAGNOSIS Recommendation

Resample at the next service interval to monitor.

Area

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

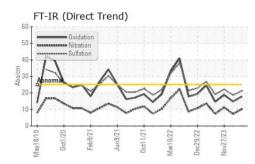
### Fluid Condition

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

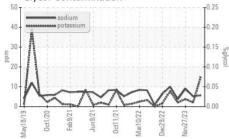
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0116459	GFL0102304	GFL0102287
Sample Date		Client Info		22 Mar 2024	22 Dec 2023	27 Nov 2023
Machine Age	hrs	Client Info		19680	19680	19680
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
WEAR METAL	5	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>75	25	11	36
Chromium	ppm	ASTM D5185m	>5	<1	0	1
Nickel	ppm	ASTM D5185m	>4	<1	0	<1
Titanium	ppm	ASTM D5185m	>2	0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>15	3	1	4
Lead	ppm	ASTM D5185m	>25	0	0	<1
Copper	ppm	ASTM D5185m	>100	1	0	2
Tin	ppm	ASTM D5185m	>4	0	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES		methou	mme base	current	Thistory I	matoryz
Boron	ppm	ASTM D5185m	250	<1	2	3
	ppm ppm					
Boron		ASTM D5185m	250	<1	2	3
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	<1 0	2 0	3 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	<1 0 66	2 0 48	3 0 63
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	<1 0 66 0	2 0 48 0	3 0 63 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	<1 0 66 0 1059	2 0 48 0 888	3 0 63 <1 1022
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 1150	<1 0 66 0 1059 1227	2 0 48 0 888 1040	3 0 63 <1 1022 1165
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	250 10 100 450 3000 1150	<1 0 66 0 1059 1227 1131	2 0 48 0 888 1040 884	3 0 63 <1 1022 1165 1082
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	<1 0 66 0 1059 1227 1131 1418	2 0 48 0 888 1040 884 1159	3 0 63 <1 1022 1165 1082 1344
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	250 10 100 450 3000 1150 1350 4250 limit/base	<1 0 66 0 1059 1227 1131 1418 3734	2 0 48 0 888 1040 884 1159 2806	3 0 63 <1 1022 1165 1082 1344 2918
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> >25	<1 0 66 0 1059 1227 1131 1418 3734 current	2 0 48 0 888 1040 884 1159 2806 history1	3 0 63 <1 1022 1165 1082 1344 2918 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> ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25 >216	<1 0 66 0 1059 1227 1131 1418 3734 current 8	2 0 48 0 888 1040 884 1159 2806 history1 6	3 0 63 <1 1022 1165 1082 1344 2918 history2 10
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm	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> >25 >216	<1 0 66 0 1059 1227 1131 1418 3734 <u>current</u> 8 6	2 0 48 0 888 1040 884 1159 2806 history1 6 5	3 0 63 <1 1022 1165 1082 1344 2918 history2 10 9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	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> >25 >216	<1 0 66 0 1059 1227 1131 1418 3734 <u>current</u> 8 6 15	2 0 48 0 888 1040 884 1159 2806 history1 6 5 2	3 0 63 <1 1022 1165 1082 1344 2918 history2 10 9 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol	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> >25 >216 >20 20 <b>limit/base</b>	<1 0 66 0 1059 1227 1131 1418 3734 current 8 6 15 NEG	2 0 48 0 888 1040 884 1159 2806 history1 6 5 2 2 NEG	3 0 63 <1 1022 1165 1082 1344 2918 history2 10 9 4 NEG
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m *ASTM D2982	250 10 100 450 3000 1150 1350 4250 25 >216 >20 216 >20 <b>limit/base</b> >20	<1 0 66 0 1059 1227 1131 1418 3734 <i>current</i> 8 6 15 NEG	2 0 48 0 888 1040 884 1159 2806 history1 6 5 2 2 NEG NEG history1	3 0 63 <1 1022 1165 1082 1344 2918 history2 10 9 4 NEG history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m *ASTM D2982 <b>method</b>	250 10 100 450 3000 1150 1350 4250 216 >25 >216 >20 imit/base >6 >20	<1 0 66 0 1059 1227 1131 1418 3734 <i>current</i> 8 6 15 NEG <i>current</i> 0.6	2 0 48 0 888 1040 884 1159 2806 history1 6 5 2 2 NEG history1 0.4	3 0 63 <1 1022 1165 1082 1344 2918 history2 10 9 4 NEG history2 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m *ASTM D2982 method *ASTM D7844 *ASTM D7844	250 10 100 450 3000 1150 1350 4250 216 >25 >216 >20 imit/base >6 >20	<1 0 66 0 1059 1227 1131 1418 3734 <i>current</i> 8 6 15 NEG <i>current</i> 0.6 10.2	2 0 48 0 888 1040 884 1159 2806 history1 6 5 2 8 NEG NEG NEG 0.4 7.3	3 0 63 <1 1022 1165 1082 1344 2918 history2 10 9 4 NEG history2 1 history2 1 1 11.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m *ASTM D2982 <b>method</b> *ASTM D7844 *ASTM D7844	250 10 100 450 3000 1150 1350 4250 216 >25 >216 >20 imit/base >6 >20 imit/base >30	<1 0 66 0 1059 1227 1131 1418 3734 <i>current</i> 8 6 15 NEG <i>current</i> 0.6 10.2 21.2	2 0 48 0 888 1040 884 1159 2806 history1 6 5 2 8 NEG history1 0.4 7.3 18.7 history1	3 0 63 <1 1022 1165 1082 1344 2918 history2 10 9 4 NEG history2 1 11.3 22.2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm % % Abs/cm Abs/cm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25 >216 >20 <b>limit/base</b> >6 >20 30 <b>limit/base</b>	<1 0 66 0 1059 1227 1131 1418 3734 Current 8 6 15 NEG 0.6 10.2 21.2 Current	2 0 48 0 888 1040 884 1159 2806 history1 6 5 2 2 NEG history1 0.4 7.3 18.7	3 0 63 <1 1022 1165 1082 1344 2918 history2 10 9 4 NEG history2 1 11.3 22.2

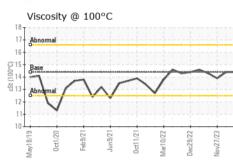


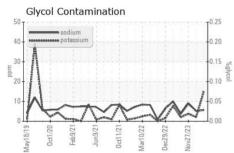
## **OIL ANALYSIS REPORT**





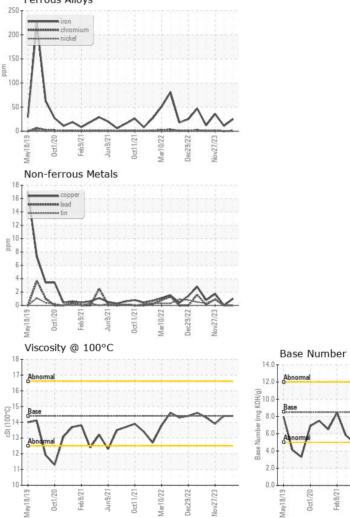






VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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	14.4	14.4	13.9
GRAPHS						

Ferrous Alloys



GFL Environmental - 035 - Greensboro 1236 Elon Place High Point, NC US 27263 Contact: JORGE COSTA jorge.costa@gflenv.com T: (336)668-3712

 Lab Number : 06137210
 Tested : 05 Apr 2024
 High

 Unique Number : 10956675
 Diagnosed : 05 Apr 2024 - Don Baldridge
 Contact: JORG

 Centificate 12367
 Test Package : FLEET (Additional Tests: Glycol)
 Contact: JORG

 To discuss this sample report, contact Customer Service at 1-800-237-1369.
 jorge.costa@

 \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.
 T: (330)

 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)
 Output Decision

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

Received

: 03 Apr 2024

Report Id: GFL035 [WUSCAR] 06137210 (Generated: 04/05/2024 23:49:36) Rev: 1

Laboratory

Sample No.

: GFL0116459

Submitted By: JORGE COSTA

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