

## **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id 922046 Component Diesel Engine

#### Fluid DIESEL ENGINE OIL SAE 40 (40 QTS)

### DIAGNOSIS

#### A Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

#### 🔺 Wear

Valve wear is indicated. All other 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.

		methou	IIIIII/Dase	current	Thistory	This tory 2
Sample Number		Client Info		GFL0103891	GFL0071599	GFL0061670
Sample Date		Client Info		15 Jan 2024	24 May 2023	29 Dec 2022
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	600	600
Oil Changed		Client Info		N/A	Changed	Changed
Sample Status				ABNORMAL	NORMAL	NORMAL
		and the set	11		Internet	
CONTAMINAT	UN	method	limit/base	current	nistory i	nistory2
Fuel		WC Method	>3.0	<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	>120	28	12	7
Chromium	ppm	ASTM D5185m	>20	1	1	<1
Nickel	ppm	ASTM D5185m	>5	<u> </u>	2	0
Titanium	ppm	ASTM D5185m	>2	<1	<1	0
Silver	ppm	ASTM D5185m	>2	0	<1	<1
Aluminum	ppm	ASTM D5185m	>20	6	3	2
Lead	ppm	ASTM D5185m	>40	<1	1	0
Copper	ppm	ASTM D5185m	>330	12	6	9
Tin	ppm	ASTM D5185m	>15	1	1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 250	current 7	<mark>history1</mark> 15	history2 18
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	limit/base 250 10	current 7 0	history1 15 0	history2 18 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100	current 7 0 62	history1 15 0 68	history2 18 0 62
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100	current 7 0 62 1	history1 15 0 68 1	history2 18 0 62 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450	current 7 0 62 1 972	history1 15 0 68 1 1023	history2 18 0 62 <1 855
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450 3000	current 7 0 62 1 972 1121	history1 15 0 68 1 1023 1186	history2 18 0 62 <1 855 1156
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450 3000 1150	Current 7 0 62 1 972 1121 1014	history1 15 0 68 1 1023 1186 1072	history2 18 0 62 <1 855 1156 1013
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350	Current 7 0 62 1 972 1121 1014 1270	history1 15 0 68 1 1023 1186 1072 1330	history2 18 0 62 <1 855 1156 1013 1118
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	limit/base 250 10 100 450 3000 1150 1350 4250	current           7           0           62           1           972           1121           1014           1270           2396	history1 15 0 68 1 1023 1186 1072 1330 3473	history2 18 0 62 <1 855 1156 1013 1118 3423
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm 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	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base	current           7           0           62           1           972           1121           1014           1270           2396           current	history1 15 0 68 1 1023 1186 1072 1330 3473 history1	history2           18           0           62           <1           855           1156           1013           1118           3423           history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm 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	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25	current         7         0         62         1         972         1121         1014         1270         2396         current         8	history1 15 0 68 1 1023 1186 1072 1330 3473 history1 10	history2           18           0           62           <1           855           1156           1013           1118           3423           history2           6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm 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	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >216	current           7           0           62           1           972           1121           1014           1270           2396           current           8           6	history1         15         0         68         1         1023         1186         1072         1330         3473         history1         10         4	history2           18           0           62           <1           855           1156           1013           1118           3423           history2           6           3
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> ppm	method           ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20	current           7           0           62           1           972           1121           1014           1270           2396           current           8           6           10	history1         15         0         68         1         1023         1186         1072         1330         3473         history1         10         4         6	history2         18         0         62         <1         855         1156         1013         1118         3423         history2         6         3         2
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> ppm ppm	method           ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base	current           7           0           62           1           972           1121           1014           1270           2396           current           8           6           10           current	history1         15         0         68         1         1023         1186         1072         1330         3473         history1         10         4         6         history1	history2         18         0         62         <1         855         1156         1013         1118         3423         history2         6         3         2
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	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base	current         7         0         62         1         972         1121         1014         1270         2396         current         8         6         10         current         0.8	history1         15         0         68         1         1023         1186         1072         1330         3473         history1         10         4         6         history1         0.4	history2         18         0         62         <1         855         1156         1013         1118         3423         history2         6         3         2         history2         0.3
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	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base	current         7         0         62         1         972         1121         1014         1270         2396         current         8         6         10         current         0.8         10.4	history1         15         0         68         1         1023         1186         1072         1330         3473         history1         10         4         6         history1         0.4         7.2	history2         18         0         62         <1         855         1156         1013         1118         3423         history2         6         3         2         history2         0.3         7.2
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	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base >4 >20 >30	current         7         0         62         1         972         1121         1014         1270         2396         current         8         6         10         current         0.8         10.4         22.4	history1         15         0         68         1         1023         1186         1072         1330         3473         history1         10         4         6         history1         0.4         7.2         20.2	history2         18         0         62         <1         855         1156         1013         1118         3423         history2         6         3         2         history2         0.3         7.2         19.8
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 <b>TS</b> ppm ppm ppm ppm ppm	method           ASTM D5185m           ASTM D7185M           *ASTM D7844           *ASTM D7624           *ASTM D7415	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base >4 >20 limit/base	current         7         0         62         1         972         1121         1014         1270         2396         current         8         6         10         current         0.8         10.4         22.4	history1         15         0         68         1         1023         1186         1072         1330         3473         history1         10         4         6         history1         0.4         7.2         20.2         history1	history2         18         0         62         <1         855         1156         1013         1118         3423         history2         6         3         2         history2         0.3         7.2         19.8
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m           ASTM D7844           *ASTM D7415           method	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base >4 >20 >30 limit/base >25	current         7         0         62         1         972         1121         1014         1270         2396         current         8         6         10         current         0.8         10.4         22.4         current	history1         15         0         68         1         1023         1186         1072         1330         3473         history1         10         4         6         history1         0.4         7.2         20.2         history1	history2         18         0         62         <1         855         1156         1013         1118         3423         history2         6         3         2         history2         0.3         7.2         19.8         history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method         ASTM D5185m         ASTM D7844         *ASTM D7414         *ASTM D74144	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >20 limit/base >30 limit/base >25 30 limit/base >25 30 limit/base >25 30 limit/base >25 30	current         7         0         62         1         972         1121         1014         1270         2396         current         8         6         10         current         0.8         10.4         22.4         current         19.8	history1         15         0         68         1         1023         1186         1072         1330         3473         history1         10         4         6         history1         0.4         7.2         20.2         history1         15.5         8.5	history2         18         0         62         <1         855         1156         1013         1118         3423         history2         6         3         2         history2         0.3         7.2         19.8         history2         15.3



FT-IR (Direct Trend)

# **OIL ANALYSIS REPORT**

limit/base

current

history1

NONE

NONE

NONE

NONE

NONE

NONE

NORML

NORML

history

NEG

NEG

13.9

history2

NONE

NONE

NONE

NONE

NONE

NONE

NORML

NORML

history

NEG

NEG

13.9

method

VISUAL



GFL Environmental - 045 - Tidewater 3821 Cook Blvd. Chesapeake, VA US 23323 Contact: ELVIN RODRIGUEZ elvinrodriguez@gflenv.com T: Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F:

Mav24/23

Report Id: GFL045 [WUSCAR] 06065353 (Generated: 04/30/2024 06:35:22) Rev: 1

Certificate 12367

Unique Number : 10836735

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.

Test Package : FLEET

Diagnosed

: 22 Jan 2024 - Don Baldridge

Submitted By: Matt oversee 654, 654S, 659 - Matthew Shinault

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