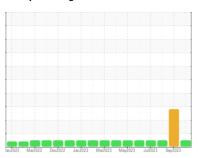


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



428087

Component **Diesel Engine**

DIESEL ENGINE OIL SAE 15W40 (9 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample. 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

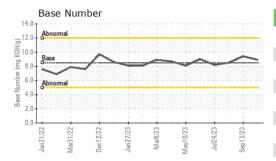
Fluid Condition

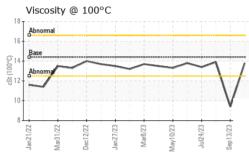
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		Jan2022 Marž	022 Dec2022 Jan2023	Mar2023 May2023 Jul2023	Sep2023	
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0094936	GFL0094936	GFL0088410
Sample Date		Client Info		13 Sep 2023	13 Sep 2023	15 Aug 2023
Machine Age	hrs	Client Info		9450	9450	9254
Oil Age	hrs	Client Info		9102	9102	9102
Oil Changed		Client Info		Not Changd	Not Changd	N/A
Sample Status				NORMAL	ABNORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	0.5	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	7	26	5
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	1	0
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m	>3	0	1	<1
Aluminum	ppm	ASTM D5185m	>20	2	<u>18</u>	1
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	0	42	<1
Tin	ppm	ASTM D5185m	>15	<1	3	<1
Vanadium	ppm	ASTM D5185m	710	0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES	PP		line it /le e e e			_
		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	<1	349	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	<1 0	349 0	0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250	<1 0 61	349 0 125	0 0 59
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	<1 0 61 <1	349 0 125 5	0 0 59 <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 61 <1 1034	349 0 125 5 752	0 0 59 <1 984
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	<1 0 61 <1 1034 1159	349 0 125 5 752 1565	0 0 59 <1 984 1088
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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	<1 0 61 <1 1034 1159 1119	349 0 125 5 752 1565 690	0 0 59 <1 984 1088 1020
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	<1 0 61 <1 1034 1159 1119	349 0 125 5 752 1565 690 840	0 0 59 <1 984 1088 1020
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	250 10 100 450 3000 1150	<1 0 61 <1 1034 1159 1119	349 0 125 5 752 1565 690	0 0 59 <1 984 1088
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base	<1 0 61 <1 1034 1159 1119 1363 3998	349 0 125 5 752 1565 690 840 2832 history1	0 0 59 <1 984 1088 1020 1236 3697 history2
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	<1 0 61 <1 1034 1159 1119 1363 3998	349 0 125 5 752 1565 690 840 2832 history1 ▲ 70	0 59 <1 984 1088 1020 1236 3697
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base	<1 0 61 <1 1034 1159 1119 1363 3998	349 0 125 5 752 1565 690 840 2832 history1	0 0 59 <1 984 1088 1020 1236 3697 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25	<1 0 61 <1 1034 1159 1119 1363 3998 current	349 0 125 5 752 1565 690 840 2832 history1 ▲ 70	0 0 59 <1 984 1088 1020 1236 3697 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158	<1 0 61 <1 1034 1159 1119 1363 3998 current 3 1	349 0 125 5 752 1565 690 840 2832 history1 ▲ 70 5	0 0 59 <1 984 1088 1020 1236 3697 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20	<1 0 61 <1 1034 1159 1119 1363 3998 current 3 1	349 0 125 5 752 1565 690 840 2832 history1 ▲ 70 5 45	0 0 59 <1 984 1088 1020 1236 3697 history2 3 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base	<1 0 61 <1 1034 1159 1119 1363 3998 current 3 1 1 current	349 0 125 5 752 1565 690 840 2832 history1 ▲ 70 5 45	0 0 59 <1 984 1088 1020 1236 3697 history2 3 2 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m method *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base	<1 0 61 <1 1034 1159 1119 1363 3998 current 3 1 current 0	349 0 125 5 752 1565 690 840 2832 history1 ▲ 70 5 45	0 0 59 <1 984 1088 1020 1236 3697 history2 3 2 2 history2 0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm	ASTM D5185m Method ASTM D5185m Method *ASTM D7844 *ASTM D7624 *ASTM D76145	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base	<1 0 61 <1 1034 1159 1119 1363 3998 current 3 1 1 current 0 7.2	349 0 125 5 752 1565 690 840 2832 history1 ▲ 70 5 45 history1 0 9.0	0 0 59 <1 984 1088 1020 1236 3697 history2 3 2 2 history2 0.1 5.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m Method ASTM D5185m Method *ASTM D7844 *ASTM D7624 *ASTM D76145	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3 >20 >30	<1 0 61 <1 1034 1159 1119 1363 3998	349 0 125 5 752 1565 690 840 2832 history1 ▲ 70 5 45 history1 0 9.0 30.1	0 0 59 <1 984 1088 1020 1236 3697 history2 3 2 2 history2 0.1 5.2 17.4



OIL ANALYSIS REPORT

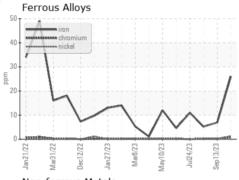


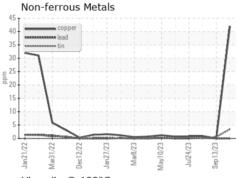


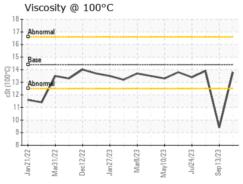
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	LIGHT
Sand/Dirt	scalar	*Visual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

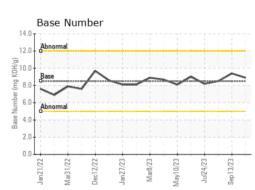
FLUID PROP	EHILO	method			riistory i	nistoryz
Visc @ 100°C	cSt	ASTM D445	14.4	13.8	△ 9.4	13.9

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10659303 Test Package : FLEET

: GFL0094936 : 05958090

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 21 Sep 2023 Diagnosed

: 22 Sep 2023 Diagnostician : Wes Davis

GFL Environmental - 084 - Clarksville

699 Jack Miller Boulevard Clarksville, TN US 37042

Contact: ROBERT THIBAULT

robert.thibault@gflenv.com T: (931)552-7276

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)

Report Id: GFL084 [WUSCAR] 05958090 (Generated: 09/30/2023 19:50:06) Rev: 1

Submitted By: ROBERT THIBAULT

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