

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 813026

Fluid

Component Diesel Engine

### DIESEL ENGINE OIL SAE 30 (62 QTS)

### 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.

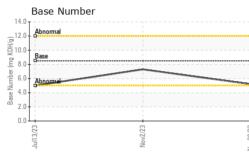
#### Fluid Condition

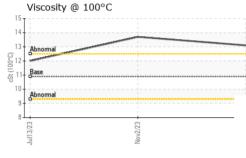
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0092673	GFL0092719	GFL0072380
Sample Date		Client Info		29 Nov 2023	02 Nov 2023	13 Jul 2023
Machine Age	hrs	Client Info		2677	2677	2677
Oil Age	hrs	Client Info		676	262	752
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	0.4
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	51	29	107
Chromium	ppm	ASTM D5185m	>20	2	<1	4
Nickel	ppm	ASTM D5185m	>5	5	2	<b>1</b> 3
Titanium	ppm	ASTM D5185m	>2	0	0	<1
Silver	ppm	ASTM D5185m	>2	<1	<1	<1
Aluminum	ppm	ASTM D5185m	>20	4	2	6
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	44	22	163
Tin	ppm	ASTM D5185m	>15	2	2	7
Vanadium	ppm	ASTM D5185m		0	<1	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 4	history1 11	history2 31
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	250	4	11	31
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	4 0	11 0	31 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	4 0 68	11 0 67	31 0 117
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	4 0 68 2	11 0 67 1	31 0 117 6
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	4 0 68 2 948	11 0 67 1 981	31 0 117 6 920
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	4 0 68 2 948 1191	11 0 67 1 981 1175	31 0 117 6 920 1488
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	4 0 68 2 948 1191 979	11 0 67 1 981 1175 1028	31 0 117 6 920 1488 873
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	4 0 68 2 948 1191 979 1268	11 0 67 1 981 1175 1028 1338	31 0 117 6 920 1488 873 1104
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	4 0 68 2 948 1191 979 1268 2245	11 0 67 1 981 1175 1028 1338 2835	31 0 117 6 920 1488 873 1104 2512
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	4 0 68 2 948 1191 979 1268 2245 current	11 0 67 1 981 1175 1028 1338 2835 history1	31 0 117 6 920 1488 873 1104 2512 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 <b>limit/base</b> >25	4 0 68 2 948 1191 979 1268 2245 2245 current 11	11 0 67 1 981 1175 1028 1338 2835 history1 8	31 0 117 6 920 1488 873 1104 2512 history2 ▲ 45
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> >25 >75	4 0 68 2 948 1191 979 1268 2245 <u>current</u> 11 4	11 0 67 1 981 1175 1028 1338 2835 history1 8 1	31 0 117 6 920 1488 873 1104 2512 history2 ▲ 45 5
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> >25 >75 >20	4 0 68 2 948 1191 979 1268 2245 current 11 4 8	11 0 67 1 981 1175 1028 1338 2835 history1 8 1 3	31 0 117 6 920 1488 873 1104 2512 history2 ▲ 45 5 14
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Imit/base</b> >25 >75 >20 <b>Imit/base</b> >4	4 0 68 2 948 1191 979 1268 2245 <b>current</b> 11 4 8 <b>current</b>	11 0 67 1 981 1175 1028 1338 2835 history1 8 1 3 3 history1	31 0 117 6 920 1488 873 1104 2512 history2 ↓ 45 5 14 14 history2
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	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Imit/base</b> >25 >75 >20 <b>Imit/base</b> >4	4 0 68 2 948 1191 979 1268 2245 current 11 4 8 current 1.3	11 0 67 1 981 1175 1028 1338 2835 history1 8 1 3 history1 0.7	31 0 117 6 920 1488 873 1104 2512 history2 ▲ 45 5 14 14 history2 1.5
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>imit/base</b> >25 >75 >20 <b>imit/base</b> >4 >20	4 0 68 2 948 1191 979 1268 2245 <i>current</i> 11 4 8 <i>current</i> 1.3 11.4	11 0 67 1 981 1175 1028 1338 2835 history1 8 1 3 <i>history1</i> 0.7 8.1	31 0 117 6 920 1488 873 1104 2512 history2 ▲ 45 5 14 × 5 14 history2 1.5 15.3
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> >25 >75 >20 <b>imit/base</b> >4 >20 >30	4 0 68 2 948 1191 979 1268 2245 <b>current</b> 11 4 8 <b>current</b> 1.3 11.4 22.8	11 0 67 1 981 1175 1028 1338 2835 history1 8 1 3 <b>history1</b> 0.7 8.1 20.2	31 0 117 6 920 1488 873 1104 2512 <b>history2</b> ▲ 45 5 14 <b>history2</b> 1.5 1.5 1.5 3 26.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	250 10 100 450 3000 1150 1350 4250 <b>imit/base</b> >25 >20 <b>imit/base</b> >4 >20 >30 <b>imit/base</b>	4 0 68 2 948 1191 979 1268 2245 current 11 4 8 current 1.3 11.4 22.8 current	11 0 67 1 981 1175 1028 1338 2835 history1 8 1 3 history1 0.7 8.1 20.2 history1	31 0 117 6 920 1488 873 1104 2512 history2 ↓ 45 5 12 history2 1.5 15.3 26.8 history2



# **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		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	10.9	13.1	13.7	12.0
GRAPHS						
Ferrous Alloys						
00 - iron chromium						
80						
60						
40			_			
	1					
20						
And Apply week have the set of an exchange the set of an exchange the set of a set o						
	Z3		23			
0	Nov2/23		Nov29/23			
Ron-ferrous Metal			Nov29/23			
Non-ferrous Metal			Nov29/23			
Non-ferrous Metal			Nov29/23			
Non-ferrous Metal			E2/62/volv			
Non-ferrous Metal			Nov29/23			
Non-ferrous Metal			Nov29/23			
Non-ferrous Metal			Nov29/23			
Non-ferrous Metal			Nov29/23			
Non-ferrous Metal	s					
Non-ferrous Metal			Nov28/23			
Non-ferrous Metal	S EZZZVON			Base Number		
Non-ferrous Metal	S EZZZVON			Τ		
Non-ferrous Metal	S EZZZVON		E2/62/00 14.0 12.0			
Non-ferrous Metal	S EZZZVON		E2/62/00 14.0 12.0	Abnormal		
Non-ferrous Metal	S EZZZVON		E2/62/00 14.0 12.0	Abnormal		
Non-ferrous Metal	S EZZZVON		E2/62/00 14.0 12.0	Abnormal Base		
Non-ferrous Metal	S EZZZVON		EZ/6Z/00V 14.0 12.0 (0/H010.0 u) jai	Abnormal Base Abnormal		
Non-ferrous Metal	S EZZZVON		E2/62/00 14.0 12.0	Abnormal Base Abnormal		
Non-ferrous Metal	S EZZZVON		14.0 12.0 (0) (0) (0) (0) (0) (0) (0) (0) (0) (0	Abnormal Base Abnormal	Nov.2/23	



Unique Number : 10781954 Diagnostician : Sean Felton Test Package : FLEET Contact: WALTER SKOKOWSKI Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. walter.skokowski@gflenv.com \* - 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)

: GFL0092673

: 06032163

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

: 12 Dec 2023

: 14 Dec 2023

Received

Diagnosed

Laboratory Sample No.

Lab Number

Submitted By: WALTER SKOKOWSKI

GFL Environmental - 005 - Wilson/Tri-East(CNG)

2810 Contentnea Road S

Page 2 of 2

Wilson, NC

T:

F:

US 27893-8501