

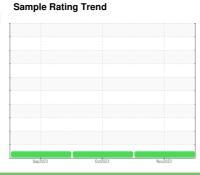
# **OIL ANALYSIS REPORT**

Bernardsville **FREIGHTLINER 2494** 

Component

**Diesel Engine** 

GIBRALTAR 15W/40 SUPER S-3 LX (11)





# DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the

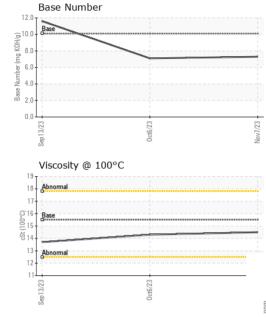
### **Fluid Condition**

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		history2
Sample Number		Client Info		WC0864840	WC0864901	WC0830891
Sample Date		Client Info		07 Nov 2023	06 Oct 2023	13 Sep 2023
Machine Age	hrs	Client Info		9834	9616	9426
Oil Age	hrs	Client Info		9834	0	450
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATIO	٧	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>80	10	9	29
Chromium	ppm	ASTM D5185m	>5	<1	<1	2
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m	>3	<1	0	0
Aluminum	ppm	ASTM D5185m	>30	2	3	6
Lead	ppm	ASTM D5185m	>30	0	<1	<1
Copper	ppm	ASTM D5185m	>150	4	2	5
Tin	ppm	ASTM D5185m	>5	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	method ASTM D5185m	limit/base	current 30	history1 33	history2
	ppm		limit/base			
Boron		ASTM D5185m	limit/base	30	33	11
Boron Barium	ppm	ASTM D5185m ASTM D5185m	66	30 6	33 12	11 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m		30 6 74	33 12 68	11 0 58
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66	30 6 74 0	33 12 68 <1	11 0 58 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66	30 6 74 0 497	33 12 68 <1 533	11 0 58 <1 768
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66 1000 1050	30 6 74 0 497 1573	33 12 68 <1 533 1524 955 1182	11 0 58 <1 768 1111 928 1232
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	66 1000 1050 1150	30 6 74 0 497 1573 955	33 12 68 <1 533 1524 955	11 0 58 <1 768 1111 928
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 ASTM D5185m	66 1000 1050 1150	30 6 74 0 497 1573 955 1149	33 12 68 <1 533 1524 955 1182	11 0 58 <1 768 1111 928 1232
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 ASTM D5185m	1000 1050 1150 1270	30 6 74 0 497 1573 955 1149 3685	33 12 68 <1 533 1524 955 1182 3203	11 0 58 <1 768 1111 928 1232 3679
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	66 1000 1050 1150 1270	30 6 74 0 497 1573 955 1149 3685	33 12 68 <1 533 1524 955 1182 3203 history1	11 0 58 <1 768 1111 928 1232 3679 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	66 1000 1050 1150 1270	30 6 74 0 497 1573 955 1149 3685 current	33 12 68 <1 533 1524 955 1182 3203 history1 5	11 0 58 <1 768 1111 928 1232 3679 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	66 1000 1050 1150 1270 limit/base >20	30 6 74 0 497 1573 955 1149 3685 current 5	33 12 68 <1 533 1524 955 1182 3203 history1 5	11 0 58 <1 768 1111 928 1232 3679 history2 10 8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	66  1000 1050 1150 1270  limit/base >20 >20	30 6 74 0 497 1573 955 1149 3685 current 5 0	33 12 68 <1 533 1524 955 1182 3203 history1 5 1	11 0 58 <1 768 1111 928 1232 3679 history2 10 8 10
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	66  1000 1050 1150 1270  limit/base >20  limit/base	30 6 74 0 497 1573 955 1149 3685 current 5 0 4	33 12 68 <1 533 1524 955 1182 3203 history1 5 history1	11 0 58 <1 768 1111 928 1232 3679 history2 10 8 10
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  method  *ASTM D5185m  *ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  *ASTM D5185m  *ASTM D5185m	66 1000 1050 1150 1270 limit/base >20	30 6 74 0 497 1573 955 1149 3685 current 5 0 4	33 12 68 <1 533 1524 955 1182 3203 history1 5 history1 0.3	11 0 58 <1 768 1111 928 1232 3679 history2 10 8 10 history2 0.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  Method  *ASTM D5185m ASTM D5185m	66  1000 1050 1150 1270  limit/base >20  limit/base >3 >20	30 6 74 0 497 1573 955 1149 3685 current 5 0 4 current 0.5 7.9	33 12 68 <1 533 1524 955 1182 3203 history1 5 history1 0.3 7.0	11 0 58 <1 768 1111 928 1232 3679 history2 10 8 10 history2 0.8 11.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  Method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	66  1000 1050 1150 1270  limit/base >20  >20  limit/base >3 >20 >30	30 6 74 0 497 1573 955 1149 3685 current 5 0 4 current 0.5 7.9	33 12 68 <1 533 1524 955 1182 3203 history1 5 1 0.3 7.0 18.0	11 0 58 <1 768 1111 928 1232 3679 history2 10 8 10 history2 0.8 11.5 17.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm	ASTM D5185m  method  ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m  method  *ASTM D7844  *ASTM D7844  *ASTM D7844  *ASTM D7844	66 1000 1050 1150 1270 limit/base >20 >20 limit/base >3 >20 >30 limit/base >25	30 6 74 0 497 1573 955 1149 3685 current 5 0 4 current 0.5 7.9 19.4	33 12 68 <1 533 1524 955 1182 3203 history1 5 1 0.3 7.0 18.0 history1	11 0 58 <1 768 1111 928 1232 3679 history2 10 8 10 history2 0.8 11.5 17.3



## **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
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	TIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.5	14.5	14.3	13.7

(	GRAPHS			
	ron (ppm)	Lead (ppm)		
100 - 50 - 50 - 50 - 50 - 50 - 50 - 50 -	Severe	Severe  Abnormal	0c6/23	723
San13/23	Oct6/23	Sep13/23	950	Nov7/23
50 50	Aluminum (ppm) Severe	Chromium ()  12 10 Severe  8 4 4 Abnormal	opm)	
San13/73		Sep13/23	Oct6/23 -	Nov7/23
250	Copper (ppm) Severe	Silicon (ppm  40  Severe 30  Abnormal		
Com 13/73		Sep 13/23 +	Oct6/23 +-	Nov7/23 +
20 T	Viscosity @ 100°C	Base Numbe	r	
18 - 61 (100°C)	Abnormal  Abnormal  277	888 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0+6/23	Nov723
	oct6/23	ep 13/23	)±0	Novī





Laboratory

Sample No. Lab Number

: 06006738 Unique Number : 10740500

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0864840

Received : 14 Nov 2023 Diagnosed Diagnostician : Sean Felton

: 16 Nov 2023

Test Package : MOB 1 (Additional Tests: TBN) 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)

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