

## **OIL ANALYSIS REPORT**

#### Area ERS-NEWARK Machine Id KENWORTH 1286

Component Diesel Engine

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

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

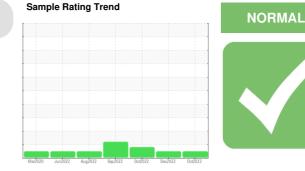
All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

### Fluid Condition

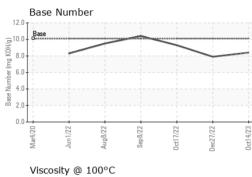
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

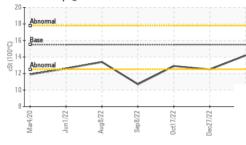


SAMPLE INFORM	<b>IATION</b>	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0863180	WC0745257	WC0725641
Sample Date		Client Info		14 Oct 2023	27 Dec 2022	17 Oct 2022
Machine Age	mls	Client Info		187982	0	0
Oil Age	mls	Client Info		187982	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	MARGINAL
CONTAMINATION	N	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<b>2</b> .7
Glycol		WC Method		NEG	NEG	0.0
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	10	12	16
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	6	<1	2
Lead	ppm	ASTM D5185m	>40	<1	2	3
Copper	ppm	ASTM D5185m	>330	<1	<1	16
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		<1	0	<1
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 11	history1 10	history2 12
	ppm ppm		limit/base			
Boron		ASTM D5185m	limit/base 66	11	10	12
Boron Barium	ppm	ASTM D5185m ASTM D5185m		11 0	10 0	12 2
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m		11 0 74	10 0 56	12 2 65
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66	11 0 74 0	10 0 56 <1	12 2 65 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66 1000	11 0 74 0 933	10 0 56 <1 826	12 2 65 <1 798
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66 1000 1050	11 0 74 0 933 1380	10 0 56 <1 826 1114	12 2 65 <1 798 1149
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	66 1000 1050 1150	11 0 74 0 933 1380 1073	10 0 56 <1 826 1114 902	12 2 65 <1 798 1149 925
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	66 1000 1050 1150	11 0 74 0 933 1380 1073 1376	10 0 56 <1 826 1114 902 1181	12 2 65 <1 798 1149 925 1163
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	66 1000 1050 1150 1270 limit/base	11 0 74 0 933 1380 1073 1376 4170	10 0 56 <1 826 1114 902 1181 3402	12 2 65 <1 798 1149 925 1163 3207
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	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	66 1000 1050 1150 1270 limit/base	11 0 74 0 933 1380 1073 1376 4170 current	10 0 56 <1 826 1114 902 1181 3402 history1	12 2 65 <1 798 1149 925 1163 3207 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	66 1000 1050 1150 1270 limit/base >25	11 0 74 0 933 1380 1073 1376 4170 current 6	10 0 56 <1 826 1114 902 1181 3402 history1 2	12 2 65 <1 798 1149 925 1163 3207 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	66 1000 1050 1150 1270 limit/base >25	11 0 74 0 933 1380 1073 1376 4170 current 6 0	10 0 56 <1 826 1114 902 1181 3402 history1 2 2 2	12 2 65 <1 798 1149 925 1163 3207 history2 4 10
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 <b>limit/base</b> >25 >20 <b>limit/base</b>	11 0 74 0 933 1380 1073 1376 4170 current 6 0 19	10 0 56 <1 826 1114 902 1181 3402 history1 2 2 2 3	12 2 65 <1 798 1149 925 1163 3207 history2 4 10 39
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 <b>limit/base</b> >25 >20 <b>limit/base</b> >3	11 0 74 0 933 1380 1073 1376 4170 current 6 0 19 2	10 0 56 <1 826 1114 902 1181 3402 history1 2 2 3 3	12 2 65 <1 798 1149 925 1163 3207 history2 4 10 39 history2
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	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 <b>limit/base</b> >25 >20 <b>limit/base</b> >3	11 0 74 0 933 1380 1073 1376 4170 <u>current</u> 6 0 19 <u>current</u> 0.2	10 0 56 <1 826 1114 902 1181 3402 history1 2 2 2 3 history1 0.3	12 2 65 <1 798 1149 925 1163 3207 history2 4 10 39 history2 0.4
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 ASTM D5185m	66 1000 1050 1150 1270 1270 imit/base >25 >20 imit/base >3 >20	11 0 74 0 933 1380 1073 1376 4170 current 6 0 19 current 0.2 7.5	10 0 56 <1 826 1114 902 1181 3402 history1 2 2 2 3 history1 0.3 8.8	12 2 65 <1 798 1149 925 1163 3207 history2 4 10 39 history2 0.4 9.9
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 ASTM D5185m	66 1000 1050 1150 1270 225 >25 >20 <b>limit/base</b> >3 >20 >3 >20	11 0 74 0 933 1380 1073 1376 4170 current 6 0 19 current 0.2 7.5 18.5	10 0 56 <1 826 1114 902 1181 3402 history1 2 2 2 3 <b>history1</b> 0.3 8.8 19.4	12 2 65 <1 798 1149 925 1163 3207 history2 4 10 39 history2 0.4 9.9 21.7
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 ASTM D7844 *ASTM D7624	66 1000 1050 1150 1270 225 220 220 imit/base >3 >20 >30 imit/base	11 0 74 0 933 1380 1073 1376 4170 current 6 0 19 current 0.2 7.5 18.5	10 0 56 <1 826 1114 902 1181 3402 history1 2 2 2 3 history1 0.3 8.8 19.4 history1	12 2 65 <1 798 1149 925 1163 3207 history2 4 10 39 history2 0.4 9.9 21.7 history2



# **OIL ANALYSIS REPORT**





			VISUAL			methoo	l limit/k	oase	curre	ent	history	1	histo	ry2
			White Meta		scalar	*Visual	NONE		NONE		NONE		NONE	
			Yellow Meta	al	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	
Sep8/22	Dec27/22	0ct14/23	Appearance	;	scalar	*Visual	NORM	1L	NORM	L	NORML		NORM	L
Se Se	Dec	Oct	Odor		scalar	*Visual	NORM	1L	NORM	L	NORML		NORM	L
			Emulsified \	Nater	scalar	*Visual	>0.2		NEG		NEG		NEG	
			Free Water		scalar	*Visual			NEG		NEG		NEG	
			FLUID PF	ROPER	RTIES	methoo	l limit/k	oase	curre	ent	history	1	histo	ry2
		-	Visc @ 100	°C	cSt	ASTM D4	45 15.5		14.2		12.5		12.9	
			GRAPHS											
· ·		250	Iron (ppm	1)				100	Lead (p	pm)				
Sep8/22 -	1/22	200	) - Severe					80	Severe					
Sep8/22	Dec27/22	트 100	•					e <sup>60</sup>						
		8 <sup>100</sup>	Abnormal					E 40	- Abnormal					
		50	)-					20	-					
		(		2	2	2		0		2	2+	2	2	
			Mar4/20 Jun1/22	Aug8/22	Sep 8/22	0ct17/22 Dec27/22	0ct14/23		Mar4/20	Aug8/22	Sep 8/22	0ct17/22	Dec27/22	
							0		– Chromiu			0	Ő	
		50	Aluminum	r (ppm)	,			50		ini (bbi				
		4(	) - Severe					40	Severe					
		یر <sup>30</sup> ط	•					법 30 업 20						
		8 20	Abnormal					<sup>ස</sup> 20	Abnormal					
		10	)-					10	-					
		(		22	22+	22	23	0		22	22	22	22	_
			Mar4/20 Jun1/22	Aug8/22	Sep8/22	0ct17/22 Dec27/22	0ct14/23		Mar4/20	Aug8/22	Sep 8/22	0ct17/22	Dec27/22	
		400	Copper (p	opm)			80	Silicon (	ppm)					
		300	Abitottnal					60	Severe	1	1			
		톱 200						튭 40						
		100						20	Abnormal	1		   		
		(						0						_
			Mar4/20 Jun1/22	Aug8/22	Sep8/22	0ct17/22 Dec27/22	0ct14/23		Mar4/20	Aug8/22	Sep8/22	0ct17/22	Dec27/22	
			Viscosity	@ 100°	C				Base Nu	ımber				
		20	Abaran				1		Base					
			-		1			0.8 g					-	-
		10.00 14 12 12	Abnormal					Base Number (mg KOH/g) 6.0 4.0 2.0						
		<sup>63</sup> 12 1(	1		$\searrow$			Ling 4.0	1					
		10	3					8 Z.U	L,					
			Mar4/20	Aug8/22	Sep 8/22	0ct17/22	0ct14/23		Mar4/20	Aug8/22	Sep 8/22	0ct17/22	Dec27/22	
Laboratory Sample No. Lab Number Unique Number		lo. : ber :	: WearCheck USA - 5 : WC0863180 I : 05997311 I er : 10725671 I			son Ave., d : 0 ed : 0				INTE	INTERSTATE WASTE-NEWAR 110 EVERGREEN AVE, BAY NEWARK, N US 071 Contact: Robert Wityns			
	Test Pack													

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

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