

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine

DIESEL ENGINE OIL SAE 15W40 (--- GAL)

Recommendation

Resample at the next service interval to monitor. 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

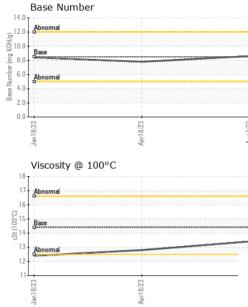
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0760066	WC0760024	WC0760032
Sample Date		Client Info		07 Aug 2023	18 Apr 2023	18 Jan 2023
Machine Age	hrs	Client Info		11873	11428	10921
Oil Age	hrs	Client Info		520	520	450
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	MARGINAL
CONTAMINATIO	N	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	0.4
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	7	6	6
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	<1	0
Titanium	ppm	ASTM D5185m	>2	<1	0	0
Silver	ppm	ASTM D5185m	>2	0	<1	<1
Aluminum	ppm	ASTM D5185m	>20	4	6	5
Lead	ppm	ASTM D5185m	>40	<1	0	<1
Copper	ppm	ASTM D5185m	>330	<1	1	1
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	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 2	history1 6	history2 12
	ppm ppm				· · · · ·	
Boron		ASTM D5185m	250	2	6	12
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m	250 10	2 0	6 0	12 1
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	2 0 64	6 0 66	12 1 74
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	2 0 64 <1	6 0 66 <1	12 1 74 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	2 0 64 <1 1026	6 0 66 <1 924	12 1 74 <1 747
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	2 0 64 <1 1026 1227	6 0 66 <1 924 1135	12 1 74 <1 747 1172
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 1350	2 0 64 <1 1026 1227 1107	6 0 66 <1 924 1135 1053	12 1 74 <1 747 1172 953
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	2 0 64 <1 1026 1227 1107 1380	6 0 66 <1 924 1135 1053 1234	12 1 74 <1 747 1172 953 1096
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 limit/base	2 0 64 <1 1026 1227 1107 1380 4153	6 0 66 <1 924 1135 1053 1234 3921	12 1 74 <1 747 1172 953 1096 3172
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	250 10 100 450 3000 1150 1350 4250 limit/base >25	2 0 64 <1 1026 1227 1107 1380 4153 current	6 0 66 <1 924 1135 1053 1234 3921 history1	12 1 74 <1 747 1172 953 1096 3172 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 method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158	2 0 64 <1 1026 1227 1107 1380 4153 current 4	6 0 66 <1 924 1135 1053 1234 3921 history1 3	12 1 74 <1 747 1172 953 1096 3172 history2 5
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 method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158	2 0 64 <1 1026 1227 1107 1380 4153 <u>current</u> 4 2	6 0 66 <1 924 1135 1053 1234 3921 history1 3 4	12 1 74 <1 747 1172 953 1096 3172 history2 5 0
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	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base	2 0 64 <1 1026 1227 1107 1380 4153 current 4 2 1	6 0 66 <1 924 1135 1053 1234 3921 history1 3 4 <1	12 1 74 <1 747 1172 953 1096 3172 history2 5 0 2
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 ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base	2 0 64 <1 1026 1227 1107 1380 4153 current 4 2 1 current 0.4	6 0 66 <1 924 1135 1053 1234 3921 history1 3 4 <1 4 <1 0.3	12 1 74 <1 747 1172 953 1096 3172 history2 5 0 2 history2 0.3
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	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >4 >20	2 0 64 <1 1026 1227 1107 1380 4153 current 4 2 1 1 current	6 0 66 <1 924 1135 1053 1234 3921 history1 3 4 <1 history1	12 1 74 <1 747 1172 953 1096 3172 history2 5 0 2 history2
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	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >4 >20	2 0 64 <1 1026 1227 1107 1380 4153 <i>current</i> 4 2 1 <i>current</i> 0.4 7.3	6 0 66 <1 924 1135 1053 1234 3921 history1 3 4 <1 history1 0.3 7.5	12 1 74 <1 747 1172 953 1096 3172 history2 5 0 2 history2 0.3 8.0
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 D7844	250 10 100 450 3000 1150 1350 4250 <i>limit/base</i> >25 >158 >20 <i>limit/base</i> >4 >20 <i>s</i> 4 >20 >30	2 0 64 <1 1026 1227 1107 1380 4153 <u>current</u> 4 2 1 2 1 <u>current</u> 0.4 7.3 17.5	6 0 66 <1 924 1135 1053 1234 3921 history1 3 4 <1 istory1 0.3 7.5 16.4 history1	12 1 74 <1 747 1172 953 1096 3172 history2 5 0 2 history2 0.3 8.0 17.6 history2
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	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >4 >20 limit/base >30 limit/base	2 0 64 <1 1026 1227 1107 1380 4153 <i>current</i> 4 2 1 <i>current</i> 0.4 7.3 17.5	6 0 66 <1 924 1135 1053 1234 3921 history1 3 4 <1 5 history1 0.3 7.5 16.4	12 1 74 <1 747 1172 953 1096 3172 history2 5 0 2 history2 0.3 8.0 17.6



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
/23		scalar	*Visual	NORML	NORML	NORML	NORML
Apr18/23	CZL Appearance Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water			>0.2	NEG	NEG	NEG
		scalar	*Visual		NEG		
	FLUID PROPE		method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	14.4	13.4	12.8	12.4
	GRAPHS						
	Ferrous Alloys						
23	iron						
Apr18/23	8 - nickel						
	6						
	E d d						
	4						
	2						
	0	() ()		Contractions			
	n18/2	Apr18/23		Aug7/23			
				A			
	Non-ferrous Met	tals					
	copper						
	8 - lead						
	D +						
	E.						
	E						
	4						
	ق 4 2						
	4 2 0	18/23		1723 - 1			
	mma 4 2 0 500 mm	Apri 8/23		Aug7/23 +			
	Viscosity @ 100			Aug7/23	Base Number		
	4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			EZ/LBmW 14.0			
	Viscosity @ 100			14.0	Abnormal		
	4 2 0 Viscosity @ 100 18 17 Abnomal 16			14.0	Abnormal		
	4 2 0 Viscosity @ 100 18 17 Abnomal 16			14.0	Abnormal		
	Viscosity @ 100			14.0	Abnormal		
	Viscosity @ 100			14.0	Abnormal		
	Viscosity @ 100 ¹⁸ ¹⁷ ⁴ ² ¹⁸ ¹⁷ ⁴ ⁸ ¹⁰ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹³ ¹⁶ ¹³ ¹³ ¹³ ¹⁴ ¹³ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹³ ¹⁴ ¹³ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹⁵			14.0 12.0 12.0 14.0 12.0 14.0 12.0 14.0 14.0 14.0 12.0 12.0 14.0 12.0 14.0 12.0 12.0 14.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12	Abnormal		
	Viscosity @ 100			14.0 12.0 (PH10.0 PUN 8.0 Pun 6.0 2.0	Abnormal		
	Viscosity @ 100 ¹⁰ 	°C		14.0 12.0 (9)10.0 12.0 10,0 10,0 10,0 10,0 10,0 10,0 10,0 10	Abnormal Base Abnormal	23	
	Viscosity @ 100 ¹⁰ 	°C		14.0 12.0 (9)10.0 12.0 10,0 10,0 10,0 10,0 10,0 10,0 10,0 10	Abnormal Base Abnormal	23	
Laborat Sample Lab Nur Unique N Test Pa discuss this sample	Viscosity @ 100 ¹⁸ ¹⁷ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁶ ¹⁷ ¹⁷ ¹⁶ ¹⁶ ¹⁶ ¹⁷ ¹⁷ ¹⁶ ¹⁷ ¹⁷ ¹⁶ ¹⁷ 	• C • 501 Madia Received Diagnoss Diagnost mal Tests: T	d : 147 ed : 157 tician : We BN)	14.0 12.0 12.0 10.0	Abnormal Base Abnormal		ometown Locatio 155 Airport Roa Selinsgrove, F US 178 Service Manag

Submitted By: CODY COLON Page 2 of 2