

OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



CATERPILLAR 345 122

Component

Diesel Engine

PETRO CANADA 15W40 (--- GAL)

	G۱			

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

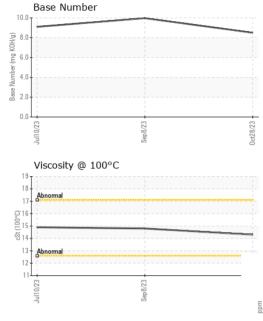
Fluid Condition

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

		Ju	2023	Sep.2023 Oct20		
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0868153	WC0517481	WC0822394
Sample Date		Client Info		28 Oct 2023	08 Sep 2023	10 Jul 2023
Machine Age	hrs	Client Info		20657	20401	20100
Oil Age	hrs	Client Info		256	301	357
Oil Changed		Client Info		Changed	N/A	Changed
Sample Status				NORMAL	SEVERE	NORMAL
CONTAMINATION	V	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	>100	14	25	22
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	1	4	2
Lead	ppm	ASTM D5185m	>40	0	1	3
Copper	ppm	ASTM D5185m	>330	2	5	6
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current	history1	history2
	ppm		limit/base			
Boron		ASTM D5185m	limit/base	9	4	9
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	9 0	4 0	9 <1
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	9 0 62	4 0 65	9 <1 69
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	9 0 62 0	4 0 65 <1	9 <1 69 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	9 0 62 0 956	4 0 65 <1 1059	9 <1 69 <1 1099
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	9 0 62 0 956 1070	4 0 65 <1 1059 1170	9 <1 69 <1 1099 1269
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 ASTM D5185m	limit/base	9 0 62 0 956 1070 1035	4 0 65 <1 1059 1170 1074	9 <1 69 <1 1099 1269 1193
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	limit/base	9 0 62 0 956 1070 1035 1284	4 0 65 <1 1059 1170 1074 1369	9 <1 69 <1 1099 1269 1193 1491
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m		9 0 62 0 956 1070 1035 1284 2968	4 0 65 <1 1059 1170 1074 1369 3263	9 <1 69 <1 1099 1269 1193 1491 4019
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base	9 0 62 0 956 1070 1035 1284 2968	4 0 65 <1 1059 1170 1074 1369 3263 history1	9 <1 69 <1 1099 1269 1193 1491 4019 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base	9 0 62 0 956 1070 1035 1284 2968 current	4 0 65 <1 1059 1170 1074 1369 3263 history1	9 <1 69 <1 1099 1269 1193 1491 4019 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >25	9 0 62 0 956 1070 1035 1284 2968 current 3	4 0 65 <1 1059 1170 1074 1369 3263 history1 4	9 <1 69 <1 1099 1269 1193 1491 4019 history2 4 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >25 >20	9 0 62 0 956 1070 1035 1284 2968 current 3 0	4 0 65 <1 1059 1170 1074 1369 3263 history1 4 2	9 <1 69 <1 1099 1269 1193 1491 4019 history2 4 2 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	ASTM D5185m	limit/base >25 >20 limit/base >3	9 0 62 0 956 1070 1035 1284 2968 current 3 0	4 0 65 <1 1059 1170 1074 1369 3263 history1 4 2 3 history1	9 <1 69 <1 1099 1269 1193 1491 4019 history2 4 2 3 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 ppm	ASTM D5185m	limit/base >25 >20 limit/base >3	9 0 62 0 956 1070 1035 1284 2968 current 3 0 current 0.3	4 0 65 <1 1059 1170 1074 1369 3263 history1 4 2 3 history1 0.4	9 <1 69 <1 1099 1269 1193 1491 4019 history2 4 2 3 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 method *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3 >20	9 0 62 0 956 1070 1035 1284 2968 current 3 0 current 0.3 8.4	4 0 65 <1 1059 1170 1074 1369 3263 history1 4 2 3 history1 0.4 9.6	9 <1 69 <1 1099 1269 1193 1491 4019 history2 4 2 3 history2 0.4 9.8
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 D76145	limit/base >25	9 0 62 0 956 1070 1035 1284 2968 current 3 0 current 0.3 8.4 20.9	4 0 65 <1 1059 1170 1074 1369 3263 history1 4 2 3 history1 0.4 9.6 22.3	9 <1 69 <1 1099 1269 1193 1491 4019 history2 4 2 3 history2 0.4 9.8 23.0



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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 PROPERT	TIES	method	limit/base	ourrent	history1	history2
FLUID FROFER I	IEO	memou			HISTOLAL	HIStOLY∠

FLUID PROPER	RITES	method	limit/base	current	history1	nistory2
Visc @ 100°C	cSt	ASTM D445		14.3	14.8	14.9
GRAPHS						
Iron (ppm)			100	Lead (ppm)		
Severe			80	Severe		
150 - Abnormal			E 60	 		
100 - Abnormal			40	Abnormal		
50			20			
Jul10/23	Sep8/23		0ct28/23	Jul10/23	Sep8/23	0ct28/23
-			Octi			00
Aluminum (ppm	1)		50	Chromium (p	pm)	
40 Severe			40	Severe		
30 - Abnormal			E 30	Abnormal		
1				- O		
10			10			
Jul10/23	Sep8/23 -		0ct28/23	Jul10/23	Sep8/23 -	Oct28/23
-	Ø		0	-	Ö	ő
Copper (ppm) Severe			80	Silicon (ppm)		
Severe Abnormal			60	-		
200			E 40			
100			20	Abnormal		***************************************
0			0			
Jul10/23	Sep8/23.		0ct28/23	Jul10/23	Sep8/23 -	0ct28/23
Viscosity @ 100°			ŏ	,		ő
20 T			10.0	Base Number		
18 - Abnormal			o.9 (mg KOH/g)			
16-			£ 6.0			

Base Number 4.0

0.0





Laboratory Sample No. Lab Number

: WC0868153 : 05997220 Unique Number : 10725580

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : 02 Nov 2023 Received Diagnosed : 03 Nov 2023

Diagnostician : Wes Davis

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)

C.L. BENTON & SONS INC 706 38TH AVE N

MYRTLE BEACH, SC US 29577 Contact: NEIL

neil@clbenton.com

T:

Report Id: CLBMYR [WUSCAR] 05997220 (Generated: 11/03/2023 13:31:28) Rev: 1

Contact/Location: NEIL ? - CLBMYR

F: