

# **OIL ANALYSIS REPORT**

Sample Rating Trend



### Machine Id CATERPILLAR 320 131

Diesel Engine Fluid



SAMPLE INFORMATION method



NORMAL

PETRO CANADA 15W40 (--- 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.

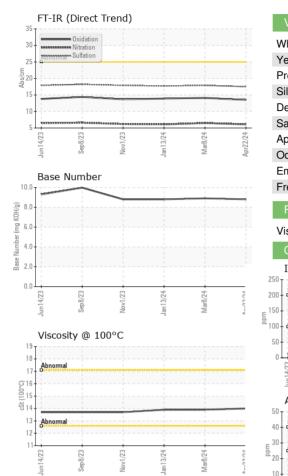
#### Fluid Condition

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

Sample Number		Client Info		WC0917251	WC0893828	WC0879014	
Sample Date		Client Info		22 Apr 2024	08 Mar 2024	13 Jan 2024	
Machine Age	hrs	Client Info		2550	2322	2055	
Oil Age	hrs	Client Info		250	267	2055	
Oil Changed		Client Info		Changed	Changed	Changed	
Sample Status				NORMAL	NORMAL	NORMAL	
CONTAMINATION	method	limit/base	current	history1	history 0		
	N					history2	
Fuel		WC Method	>5	<1.0	<1.0	<1.0	
Water		WC Method	>0.2	NEG	NEG	NEG	
Glycol		WC Method		NEG	NEG	NEG	
WEAR METALS		method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>100	8	11	2	
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1	
Nickel	ppm	ASTM D5185m	>2	0	0	0	
Titanium	ppm	ASTM D5185m		0	<1	0	
Silver	ppm	ASTM D5185m	>2	0	0	0	
Aluminum	ppm	ASTM D5185m	>25	1	3	<1	
Lead	ppm	ASTM D5185m	>40	0	0	0	
Copper	ppm	ASTM D5185m	>330	2	2	3	
Tin	ppm	ASTM D5185m	>15	<1	<1	0	
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	current 1	history1 <1	history2 0	
	ppm ppm		limit/base				
Boron		ASTM D5185m	limit/base	1	<1	0	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	1 0	<1 2	0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	1 0 56	<1 2 63	0 0 57	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	1 0 56 <1	<1 2 63 0	0 0 57 <1	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	1 0 56 <1 920	<1 2 63 0 964	0 0 57 <1 895	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	1 0 56 <1 920 984	<1 2 63 0 964 1130	0 0 57 <1 895 978	
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	1 0 56 <1 920 984 999	<1 2 63 0 964 1130 967	0 0 57 <1 895 978 1028	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	1 0 56 <1 920 984 999 1186	<1 2 63 0 964 1130 967 1250	0 0 57 <1 895 978 1028 1187	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		1 0 56 <1 920 984 999 1186 3301	<1 2 63 0 964 1130 967 1250 3336	0 0 57 <1 895 978 1028 1187 2880	
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	limit/base	1 0 56 <1 920 984 999 1186 3301 current	<1 2 63 0 964 1130 967 1250 3336 history1	0 0 57 <1 895 978 1028 1187 2880 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> ASTM D5185m	limit/base >25	1 0 56 <1 920 984 999 1186 3301 current 3	<1 2 63 0 964 1130 967 1250 3336 history1 3	0 0 57 <1 895 978 1028 1187 2880 history2 3	
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	limit/base >25	1 0 56 <1 920 984 999 1186 3301 current 3 <1 0	<1 2 63 0 964 1130 967 1250 3336 history1 3 0	0 0 57 <1 895 978 1028 1187 2880 history2 3 0	
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 ASTM D5185m	limit/base >25 >20 limit/base	1 0 56 <1 920 984 999 1186 3301 <u>current</u> 3 <1 0 <u>current</u>	<1 2 63 0 964 1130 967 1250 3336 history1 3 0 2 history1	0 0 57 <1 895 978 1028 1187 2880 history2 3 0 0 0	
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	limit/base >25 >20 limit/base >3	1 0 56 <1 920 984 999 1186 3301 <u>current</u> 3 <1 0 <u>current</u>	<1 2 63 0 964 1130 967 1250 3336 history1 3 0 2 history1 0.2	0 0 57 <1 895 978 1028 1187 2880 history2 3 0 0 0 history2 0.1	
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	limit/base >25 >20 limit/base >3 >20	1 0 56 <1 920 984 999 1186 3301 <u>current</u> 3 <1 0 <u>current</u> 0.1 6.1	<1 2 63 0 964 1130 967 1250 3336 history1 3 0 2 history1 0.2 6.5	0 0 57 <1 895 978 1028 1187 2880 history2 3 0 0 0 history2 0.1 6.1	
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	Imit/base >25 >20 Imit/base >3 >20 >3 >20 >30	1 0 56 <1 920 984 999 1186 3301 <u>current</u> 3 <1 0 <u>current</u> 0.1 6.1 17.5	<1 2 63 0 964 1130 967 1250 3336 history1 3 0 2 history1 0.2 6.5 17.9	0 0 57 <1 895 978 1028 1187 2880 history2 3 0 0 0 history2 0.1 6.1 17.7	
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	limit/base >25 >20 limit/base >3 >20	1 0 56 <1 920 984 999 1186 3301 Current 3 <1 0 Current 0.1 6.1 17.5 Current	<1 2 63 0 964 1130 967 1250 3336 history1 3 0 2 history1 0.2 6.5 17.9 history1	0 0 57 <1 895 978 1028 1187 2880 history2 3 0 0 0 history2 0.1 6.1 17.7 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	Imit/base >25 >20 Imit/base >3 >20 >3 >20 >30	1 0 56 <1 920 984 999 1186 3301 <u>current</u> 3 <1 0 <u>current</u> 0.1 6.1 17.5	<1 2 63 0 964 1130 967 1250 3336 history1 3 0 2 history1 0.2 6.5 17.9	0 0 57 <1 895 978 1028 1187 2880 history2 3 0 0 0 history2 0.1 6.1 17.7	



# **OIL ANALYSIS REPORT**



	VISUAL		method	limit/base	current	history	1	history2	
	White Metal	scalar	*Visual	NONE	NONE	NONE	Ν	ONE	
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	Ν	ONE	
	Precipitate	scalar	*Visual	NONE	NONE	NONE	N	ONE	
	Silt	scalar	*Visual	NONE	NONE	NONE	Ν	ONE	
	Debris	scalar	*Visual	NONE	NONE	NONE	N	ONE	
**********	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	Ν	ONE	
Mar8/24 -	Appearance	scalar	*Visual	NORML	NORML	NORML	N	ORML	
Mar Apr2	Odor	scalar	*Visual	NORML	NORML	NORML	N	ORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	N	EG	
	Free Water	scalar	*Visual		NEG	NEG	Ν	EG	
	FLUID PROPERT	IES	method	limit/base	current	history	1	history2	
	Visc @ 100°C	cSt	ASTM D445		14.0	13.9	10	3.9	
	GRAPHS								
	Iron (ppm)			10	Lead (ppm)				
+ v	250 Severe			100	Severa			I I I I I I I I I I I I I I I I I I I	
Mar8/24				80					
2 2	Abnormal			E 61	Abaran				
	50		1			1			
	0			2					
		3/24 -	8/24 -			1/23 -	3/24 .	2/24	
	Jun14/23 Sep8/23 Nov1/23	Jan 13/24	Mar8/24	Apr22/24	Jun 14/23 Sep 8/23	Nov1/23	Jan 13/24	Maro/24 Apr22/24	
	Aluminum (ppm)				Chromium (p	pm)			
	50 T			50	T : T :	· · · · ·			
1	40 - Severe			41	Severe				
	E 20 Abnormal			یر <sup>31</sup> 21	) - · · · · · · · · · · · · · · · · · ·				
Mar8/24	20			2	Abnormal				
2	10			10	)				
	<sup>23</sup> <sup>23</sup> <sup>23</sup> <sup>0</sup>	24 -	24 -			23.	24.	24	
	Jun 14/23 Sep 8/23 Nov1/23	Jan 13/24	Mar8/24	Apr22/24	Jun 14/23 Sep 8/23	Nov1/23	Jan 13/24	Mpr22/24	
	∽ Copper (ppm)	7			Silicon (ppm)		~		
	400-			80					
	300 -			60	J				
	튭 200 -			E.4					
					Abnormal	1			
	100-			2	J •				
		5	4			33	4	5	
	Jun 14/23 Sep 8/23 Nov1/23	Jan 13/24	Mar8/24	Apr22/24	Jun 14/23 Sep 8/23	Nov1/23	Jan 13/24	Mpr22/24	
	Jiscosity @ 100°C	J.	<u>~</u>				-j *	- A	
	20 T			(B)HO3 (B)HO3 (B)HO3 (B) (B) (B) (B) (B) (B) (B) (B) (B) (B)					
	18 - Abnormal			B/H0) 8.0	0				
	ê 16			Ē 6.0	D <b>-</b>				
	(), 16 (01) 37 14 Abnormal				•				
	<sup>33</sup> 12			N 2.0	) -				
	10		sd*			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	+ .		
	ap 8/2.	13/24	ar8/2*	r22/2	14/2 p8/2;	ov1/2.	13/2	iaro/z :22/24	
Laboratory Sample No. Lab Number	: WearCheck USA - 501 : WC0917251 : 06183812 : 11035138	1 Madiso Recei Teste Diagn	ved : 17 d : 20	Apr22/24	Jun14/23 Sep 8/23		<b>NTON &amp; S</b> 706 38 <sup>-</sup> YRTLE BE	TH AVE N	

To discuss this sample report, contact Customer \* - 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)

Report Id: CLBMYR [WUSCAR] 06183812 (Generated: 05/20/2024 20:32:31) Rev: 1

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Contact/Location: JAMIE HUCKS - CLBMYR

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