

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



GZJ00403

Component Biogas Engine

PETRO CANADA SENTRON CG 40 (--- GAL)

RON CG 40 (--- GAL) SAMPLE INFORMATION method limit/base current his

Recommendation No corrective action is recommended at this time. Resample at the next service interval to monitor. (Customer Sample Comment: Total oil added 7 gal) Wear

Fluic

All component wear rates are normal.

Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

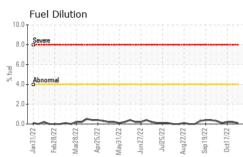
Fluid Condition

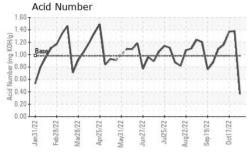
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

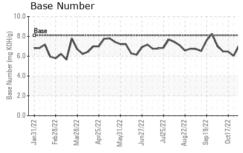
Sample Number							
Sample Number		Client Info		WC0699063	WC0699056	WC0699051	
Sample Date		Client Info		31 Oct 2022	24 Oct 2022	17 Oct 2022	
Machine Age	hrs	Client Info		109744	109577	109409	
Oil Age	hrs	Client Info			958	790	
Oil Changed		Client Info		N/A	N/A	N/A	
Sample Status				NORMAL	ABNORMAL	ABNORMAL	
			11 11 11				
CONTAMINATIO	N	method	limit/base	current	history1	history2	
Water		WC Method	>0.1	NEG	NEG	NEG	
Glycol		WC Method		NEG	NEG	NEG	
WEAR METALS		method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>45	2	9	7	
Chromium	ppm	ASTM D5185m	>2	<1	1	1	
Nickel	ppm	ASTM D5185m	>2	0	0	<1	
Titanium	ppm	ASTM D5185m		0	0	0	
Silver	ppm	ASTM D5185m		0	0	0	
Aluminum	ppm	ASTM D5185m	>10	2	5	3	
Lead	ppm	ASTM D5185m	>5	<1	2	2	
Copper	ppm	ASTM D5185m	>14	<1	3	3	
Tin	ppm	ASTM D5185m	>13	2	7	6	
Vanadium	ppm	ASTM D5185m		0	0	<1	
Cadmium	ppm	ASTM D5185m		0	0	0	
ADDITIVES		method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m	0	0	0	0	
Barium				-			
Barium Molvbdenum	ppm	ASTM D5185m	1	<1	0	0	
Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	1 2	<1 1	0	0	
Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m	1	<1 1 <1	0	0	
Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1 9	<1 1 <1 14	0 2 <1 14	0 2 <1 11	
Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1	<1 1 <1 14 2805	0 2 <1	0 2 <1	
Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1 9 2712	<1 1 <1 14	0 2 <1 14 3044 279	0 2 <1 11 2884	
Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1 9 2712 292	<1 1 <1 14 2805 262	0 2 <1 14 3044	0 2 <1 11 2884 265	
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	1 2 1 9 2712 292 342 2575	<1 1 <1 14 2805 262 322 3671	0 2 <1 14 3044 279 345 3941	0 2 <1 11 2884 265 323 3375	
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	1 2 1 9 2712 292 342	<1 1 <1 14 2805 262 322 3671	0 2 <1 14 3044 279 345	0 2 <1 11 2884 265 323	
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	1 2 1 9 2712 292 342 2575 limit/base	<1 1 <1 14 2805 262 322 3671 current	0 2 <1 14 3044 279 345 3941 history1	0 2 <1 11 2884 265 323 3375 history2	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	1 2 1 9 2712 292 342 2575 limit/base	<1 1 <1 14 2805 262 322 3671 current 115	0 2 <1 14 3044 279 345 3941 history1 ▲ 471	0 2 <1 11 2884 265 323 3375 history2 ▲ 417	
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 method ASTM D5185m ASTM D5185m	1 2 1 9 2712 292 342 2575 Limit/base >200	<1 1 1 <1 14 2805 262 322 3671 current 115 0	0 2 <1 14 3044 279 345 3941 history1 ▲ 471 0	0 2 <1 11 2884 265 323 3375 history2 ▲ 417 2	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	1 2 1 9 2712 292 342 2575 2575 200 2200	<1 1 1 <1 14 2805 262 322 3671 current 115 0 0 0	0 2 <1 14 3044 279 345 3941 history1 ▲ 471 0 0 0	0 2 <1 11 2884 265 323 3375 history2 ▲ 417 2 0	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	1 2 1 9 2712 292 342 2575 limit/base >200 >20 >20 >20	<1 1 1 <1 14 2805 262 322 3671 current 115 0 0 0 0.1 current	0 2 <1 14 3044 279 345 3941 ► history1 ▲ 471 0 0 0 0.2 ► history1	0 2 <1 11 2884 265 323 3375 history2 ▲ 417 2 0 0.2 history2	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	1 2 1 9 2712 292 342 2575 limit/base >200 >20 20 >4.0	<1 1 1 <1 14 2805 262 322 3671 current 115 0 0 0 0.1 current 0.1	0 2 <1 14 3044 279 345 3941 history1 ▲ 471 0 0 0 0.2 history1 0.1	0 2 <1 11 2884 265 323 3375 history2 ▲ 417 2 0 0.2 history2 0.2	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	1 2 1 9 2712 292 342 2575 limit/base >200 >20 20 >4.0	<1 1 1 <1 14 2805 262 322 3671 current 115 0 0 0 0.1 current	0 2 <1 14 3044 279 345 3941 ► history1 ▲ 471 0 0 0 0.2 ► history1	0 2 <1 11 2884 265 323 3375 history2 ▲ 417 2 0 0 0.2 history2	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	1 2 2 1 9 2712 292 342 2575 limit/base >200 20 20 20 20 20 20 20 20 20 20 20 20	<1 1 1 <1 1 2805 262 322 3671 Current 115 0 0 0 0.1 Current 0.1 4.5 16.7	0 2 <1 14 3044 279 345 3941 ► 1471 0 0 0 0.2 ► 15.3 22.2	0 2 <1 11 2884 265 323 3375 history2 ▲ 417 2 0 0.2 history2 0.1 5.1 20.9	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7624 *ASTM D7415	1 2 1 2 1 9 2712 292 342 2575	<1 1 1 <1 14 2805 262 322 3671 current 115 0 0 0 0.1 current 0.1 4.5 16.7 current	0 2 <1 14 3044 279 345 3941 history1 ▲ 471 0 0 0.1 5.3 22.2 history1	0 2 <1 11 2884 265 323 3375 history2 ▲ 417 2 0 0.0.2 history2 0.1 5.1 20.9 history2	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D3524 ASTM D3524 ASTM D7844 *ASTM D7624 *ASTM D7624 *ASTM D7415	1 2 1 9 2712 292 342 2575 imit/base >200 20 20 20 20 20 20 20 20 20 20 20 20	<1 1 1 <1 14 2805 262 322 3671 current 115 0 0 0 0.1 current 0.1 4.5 16.7 current 8.5	0 2 <1 14 3044 279 345 3941 history1 ▲ 471 0 0 0.2 history1 0.1 5.3 22.2 history1 10.4	0 2 (1 11 2884 265 323 3375 history2 ▲ 417 2 0 0.1 0.2 history2 0.1 5.1 20.9 history2 9.7	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7624 *ASTM D7415	1 2 1 9 2712 292 342 2575 imit/base >200 >20 >20 >20 >30 imit/base	<1 1 1 <1 14 2805 262 322 3671 current 115 0 0 0 0.1 current 0.1 4.5 16.7 current	0 2 <1 14 3044 279 345 3941 history1 ▲ 471 0 0 0.1 5.3 22.2 history1	0 2 (1 11 2884 265 323 3375 history2 ▲ 417 2 0 0.1 0.2 history2 0.1 5.1 20.9	

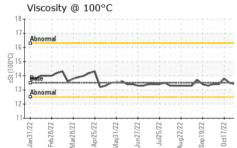


OIL ANALYSIS REPORT









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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
			*Visual	NONE	NONE	NONE	NONE
	Sand/Dirt	scalar			-		
May31/22 Jun27/22 Jul25/22 Aug22/22 Sep19/22 Oct17/22	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
M Au Ss	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
1001	FLUID PROPERT		method	limit/base	current	history1	history2
~ ~ ~ ~ /	Visc @ 100°C	cSt	ASTM D445	13.5	13.4	13.5	13.8
	GRAPHS						
	Iron (ppm)				Lead (ppm)		
22 - 22 - 22 - 22 - 22 -	80 - Severe				8 Severe		+ + + + + + + + + + + + + + + + + + + +
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$\vee - \sim \vee$	Jan Feb Mar	Jun	Jul Aug Sep	Oct	Jan Feb Mar	May Jun Jul	Sep Oct
	Aluminum (ppm)				Chromium (pp	m)	
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	15				4 		
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		ημ	Au Se	0		Ma Ju	Au Se
	Copper (ppm)			60	Silicon (ppm)		
	25			50			
	20	~		40	0	11	AA
	E 15 - Abnormal	(7		특 30		111	1/1/1
			1 -	20		11	VVI
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	Jan 31/22 Feb 28/22 Mar 28/22 Apr 25/22	Jun27/22	Jul25/22 Aug22/22 Sep19/22	0ct17/22	Jan 31/22 Feb 28/22 Mar 28/22 Apr 25/22	May31/22 Jun27/22 Jul25/22	Aug22/22 Sep19/22 Oct17/22
	Viscosity @ 100°C		4		Base Number	£ '	
	¹⁸ T	Natadara	11111111111111		or the second		
	Abnormal			Base Number (mg KOH/g) 8 9 9 8	0 - Base	\sim	~~~~
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	Abnormal			Japen 4	0		
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	10		<u>ininini</u>	0			
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	: WearCheck USA - 501			FINLEY BIOENERGY 74265 Bombing Range Road			
Sample No. Lab Number	: WC0699063 : <mark>05683338</mark>	Recei Teste		2 Nov 2022 1 Nov 2022		14202 ROUDI	ng Range Road Boardman, OR
		Diagr		F NOV 2022 Nov 2022 - Ang	iela Borella		US 97818
	: MOB 2 (Additional Te					Contact:	Blain Middleton
To discuss this sample report							archaea.energy
* - Denotes test methods that							(541)481-3232
Statements of conformity to s							F:

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