

# **OIL ANALYSIS REPORT**

## Sample Rating Trend







# Machine Id GZJ00314 Component Biogas Engine Fluid PETRO CANADA SENT

### DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: Total oil added 11 gallons)

### Wear

All component wear rates are normal.

### Contamination

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

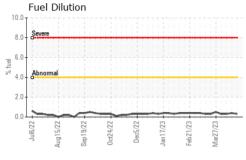
### **Fluid Condition**

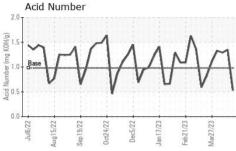
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

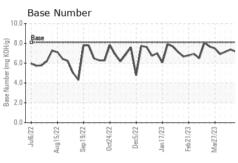
-	GAL)	12022 Aug20	ZZ SepZUZZ UCTZUZZ	Dec2022 Jan2023 Feb2023	Mar2023	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0799197	WC0799196	WC079920
Sample Date		Client Info		24 Apr 2023	17 Apr 2023	10 Apr 2023
Machine Age	hrs	Client Info		122458	122295	122127
Oil Age	hrs	Client Info		139	953	785
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	ABNORMAL	ABNORMA
CONTAMINATION	N	method	limit/base	current	history1	history2
Water			>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
ron	ppm	ASTM D5185m	>45	4	6	5
Chromium	ppm	ASTM D5185m	>2	<1	<1	0
Nickel	ppm	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>10	2	2	2
_ead	ppm	ASTM D5185m	>5	0	0	<1
Copper	ppm	ASTM D5185m	>14	<1	2	1
Γin	ppm	ASTM D5185m	>13	1	6	6
/anadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	0	0	<1
Barium	ppm	ASTM D5185m	1	0	0	0
Molybdenum	ppm	ASTM D5185m	2	<1	1	2
Manganese	nnm	ACTM DE10E-	4	4	4	4
	ppm	ASTM D5185m	1	<1	<1	<1
Magnesium	ppm	ASTM D5185m	9	<1 15	16	19
-						
Magnesium Calcium Phosphorus	ppm	ASTM D5185m	9	15	16	19
Calcium	ppm	ASTM D5185m ASTM D5185m	9 2712	15 2823	16 3238	19 3201
Calcium Phosphorus	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	9 2712 292	15 2823 284	16 3238 327	19 3201 302
Calcium Phosphorus Zinc	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	9 2712 292 342	15 2823 284 340	16 3238 327 385	19 3201 302 373
Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	9 2712 292 342 2575	15 2823 284 340 3925	16 3238 327 385 3947	19 3201 302 373 3727
Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	9 2712 292 342 2575 limit/base	15 2823 284 340 3925 current	16 3238 327 385 3947 history1	19 3201 302 373 3727 history2
Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m MSTM D5185m method ASTM D5185m	9 2712 292 342 2575 limit/base	15 2823 284 340 3925 current	16 3238 327 385 3947 history1 ▲ 461	19 3201 302 373 3727 history2
Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	9 2712 292 342 2575 limit/base >200	15 2823 284 340 3925 current 112 <1	16 3238 327 385 3947 history1  461 2	19 3201 302 373 3727 history2  404 <1
Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm	ASTM D5185m	9 2712 292 342 2575 limit/base >200	15 2823 284 340 3925 current 112 <1	16 3238 327 385 3947 history1 ▲ 461 2	19 3201 302 373 3727 history2  404 <1 0 0.3
Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m	9 2712 292 342 2575 limit/base >200 >4.0	15 2823 284 340 3925 current 112 <1 0	16 3238 327 385 3947 history1 ▲ 461 2 0	19 3201 302 373 3727 history2 ▲ 404 <1 0
Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	9 2712 292 342 2575 limit/base >200 >4.0	15 2823 284 340 3925 current 112 <1 0 0.3	16 3238 327 385 3947 history1  461 2 0 0.4 history1	19 3201 302 373 3727 history2  404 <1 0 0.3
Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m  Method ASTM D5185m ASTM D3524	9 2712 292 342 2575 limit/base >200 >4.0 limit/base	15 2823 284 340 3925 current 112 <1 0 0.3 current	16 3238 327 385 3947 history1  461 2 0 0.4 history1 0	19 3201 302 373 3727 history2  404 <1 0 0.3 history2
Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m  Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7844	9 2712 292 342 2575 limit/base >200 >4.0 limit/base	15 2823 284 340 3925 current 112 <1 0 0.3 current 0	16 3238 327 385 3947 history1  461 2 0 0.4 history1 0 6.3	19 3201 302 373 3727 history2  404 <1 0 0.3 history2 0 6.2 22.6
Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7614	9 2712 292 342 2575 limit/base >200 >4.0 limit/base >20 >30	15 2823 284 340 3925 current 112 <1 0 0.3 current 0 4.4 14.5	16 3238 327 385 3947 history1  ▲ 461 2 0 0.4 history1 0 6.3 21.5	19 3201 302 373 3727 history2  404 <1 0 0.3 history2 0 6.2 22.6
Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm % Abs/cm Abs/.1mm	ASTM D5185m ASTM D7824  *ASTM D7844  *ASTM D7624  *ASTM D7415  method	9 2712 292 342 2575 limit/base >200 >4.0 limit/base >20 >30 limit/base	15 2823 284 340 3925 current 112 <1 0 0.3 current 0 4.4 14.5	16 3238 327 385 3947 history1  ▲ 461 2 0 0.4 history1 0 6.3 21.5 history1	19 3201 302 373 3727 history2  404 <1 0 0.3 history2  0 6.2 22.6 history2

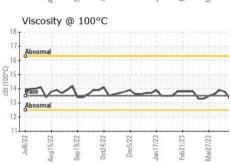


# **OIL ANALYSIS REPORT**





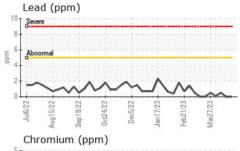


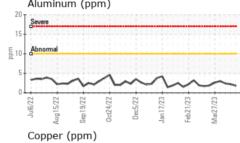


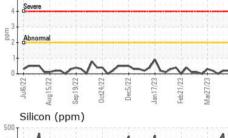
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

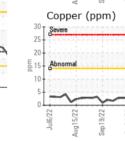
FLUID PROPER	HES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	13.5	13.3	13.8	13.9

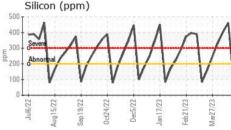
80 - Seve	ere						
60							
Abn	ormal	11111	11 11	11,11	11:11	11 11	11,111
40							
20-					11:11		
0	$\sim$		$\sim$	<u> </u>	$\sim$	~	
/22	5/22	9/22	4/22	5/22	7/23	1/23	7/23
	Aug15/	Sep 19/	0ct24/2	Dec5/	all	-eb21/	Mar27,
Jul6/22	=						

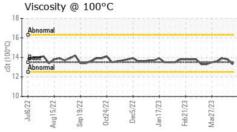


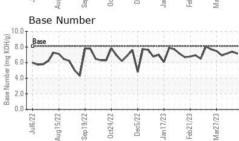
















Certificate L2367

Laboratory Sample No. Lab Number : 05830764 Unique Number : 10444257

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0799197

Received **Tested** 

: 26 Apr 2023 : 28 Apr 2023 Diagnosed

: 28 Apr 2023 - Don Baldridge

Test Package : MOB 2 ( Additional Tests: FuelDilution, PercentFuel ) To discuss this sample report, contact Customer Service at 1-800-237-1369.

Contact: Blain Middleton bmiddleton@archaea.energy T: (541)481-3232

**FINLEY BIOENERGY** 

Boardman, OR

US 97818

F:

74265 Bombing Range Road

\* - 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)