

## **OIL ANALYSIS REPORT**

Sample Rating Trend

DIRT



Recommendation

Contamination

(Si) above normal. Fluid Condition

suitable for further service.

gallons ) **Wear**  Machine Id GZJ00403 Component

Fluic

No corrective action is recommended at this time. Resample at the next service interval to monitor. ( Customer Sample Comment: Total oil added 114

Fuel content negligible. Elemental level of silicon

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

All component wear rates are normal.

Biogas Engine

PETRO CANADA SENTRON CG 40 (--- GAL)

## diazz Gredez Janilez Frederz Anytozz Manilez Janilez Janilez Frederz

SAMPLE INFORM	<b>/IATION</b>	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0836449	WC0799210	WC0799207
Sample Date		Client Info		15 Aug 2023	07 Aug 2023	31 Jul 2023
Machine Age	hrs	Client Info		116580	116387	116218
Oil Age	hrs	Client Info		983	790	621
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				ABNORMAL	ABNORMAL	ABNORMAL
CONTAMINATIO	N	method	limit/base	current	history1	history2
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>45	11	8	8
Chromium	ppm	ASTM D5185m	>2	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	1	0	0
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>10	4	2	2
Lead	ppm	ASTM D5185m	>5	5	2	1
Copper	ppm	ASTM D5185m	>14	2	2	1
Tin	ppm	ASTM D5185m	>13	8	6	4
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	0	0	0
	ppm ppm	ASTM D5185m ASTM D5185m		0 1	0	0
Barium						
Barium Molybdenum	ppm	ASTM D5185m	1 2	1	0	0
Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m	1 2	1 2	0 <1	0 1
Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1	1 2 <1	0 <1 <1	0 1 <1
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1 9	1 2 <1 11	0 <1 <1 15	0 1 <1 15
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1 9 2712	1 2 <1 11 3254	0 <1 <1 15 3099	0 1 <1 15 3036
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1 9 2712 292 342	1 2 <1 11 3254 307	0 <1 <1 15 3099 308	0 1 <1 15 3036 303
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	1 2 1 9 2712 292 342	1 2 <1 11 3254 307 393	0 <1 <1 15 3099 308 376	0 1 <1 15 3036 303 375
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	1 2 1 9 2712 292 342 2575 limit/base	1 2 <1 11 3254 307 393 3953	0 <1 <1 15 3099 308 376 4201	0 1 <1 3036 303 375 4232
Barium 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 ASTM D5185m	1 2 1 9 2712 292 342 2575 limit/base	1 2 <1 11 3254 307 393 3953 current	0 <1 <1 15 3099 308 376 4201 history1	0 1 <1 3036 303 375 4232 history2
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 <b>method</b> ASTM D5185m	1 2 1 9 2712 292 342 2575 limit/base	1 2 <1 11 3254 307 393 3953 <u>current</u> ▲ 473	0 <1 <1 15 3099 308 376 4201 history1 ▲ 404	0 1 <1 3036 303 375 4232 history2 ▲ 369
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 <b>method</b> ASTM D5185m ASTM D5185m	1 2 1 9 2712 292 342 2575 limit/base >200	1 2 <1 11 3254 307 393 3953 current ▲ 473 0	0 <1 <1 15 3099 308 376 4201 history1 ▲ 404 1	0 1 <1 15 3036 303 375 4232 history2 ▲ 369 <1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	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	1 2 <1 11 3254 307 393 3953 <u>current</u> ▲ 473 0 1	0 <1 <1 15 3099 308 376 4201 history1 ▲ 404 1 0	0 1 <1 15 3036 303 375 4232 history2 ▲ 369 <1 0
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel	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 >4.0	1 2 <1 11 3254 307 393 393 3953 current ▲ 473 0 1 0.0 current 0	0 <1 <1 15 3099 308 376 4201 history1 ▲ 404 1 0 0.3	0 1 <1 15 3036 303 375 4232 history2 ▲ 369 <1 0 0.4
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED	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 >4.0 limit/base	1 2 <1 11 3254 307 393 393 3953 current ▲ 473 0 1 0.0 current	0 <1 <1 15 3099 308 376 4201	0 1 <1 15 3036 303 375 4232 history2 ▲ 369 <1 0 0.4 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	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 >4.0 limit/base	1 2 <1 11 3254 307 393 393 3953 current ▲ 473 0 1 0.0 current 0	0 <1 <1 15 3099 308 376 4201 ▲ 404 1 0 0.3 ► 404 1 0 0.3	0 1 <1 3036 303 375 4232 history2 ▲ 369 <1 0 0.4 history2 0
Barium 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 D3524 <b>method</b> *ASTM D7844 *ASTM D7844	1 2 1 9 2712 292 342 2575 limit/base >200 >20 >4.0 limit/base	1 2 <1 11 3254 307 393 3953 current ▲ 473 0 1 0.0 current 0 6.3	0 <1 <1 15 3099 308 376 4201 ▲ 404 1 0 0.3 → history1 0 0.3	0 1 <1 15 3036 303 375 4232 history2 ▲ 369 <1 0 0.4 history2 0 5.7
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	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 >4.0 limit/base	1 2 <1 11 3254 307 393 3953 current ▲ 473 0 1 0.0 current 0 6.3 23.3	0 <1 <1 15 3099 308 376 4201	0 1 <1 15 3036 303 375 4232 history2 369 <1 0 0.4 history2 0 5.7 21.2
Barium 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 <b>method</b> *ASTM D7844 *ASTM D7624 *ASTM D7615	1 2 1 9 2712 292 342 2575 limit/base >200 >20 >4.0 limit/base >20 >30 limit/base >20	1 2 <1 11 3254 307 393 3953 current ▲ 473 0 1 0.0 current 0 6.3 23.3 current	0 <1 <1 3099 308 376 4201 history1 ▲ 404 1 0 0.3 history1 0 6.0 22.4 history1	0 1 <1 15 3036 303 375 4232 history2 ▲ 369 <1 0 0.4 history2 0 5.7 21.2 history2



## **OIL ANALYSIS REPORT**

scalar

scalar

scalar

method

\*Visual

\*Visual

\*Visua

In12/23

nr3/7 1/LC Ha

limit/base

NONE

NONE

NONE

VISUAL

White Metal

Yellow Metal

Precipitate

Silt

Debris

Odor

100

60

20

0ct31/22

Sand/Dirt

Appearance

Free Water

Visc @ 100°C

GRAPHS

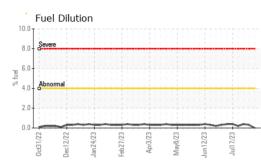
Iron (ppm)

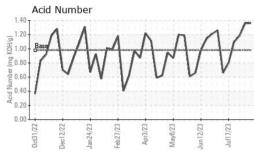
Aluminum (ppm)

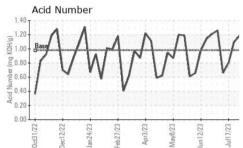
Severe 80

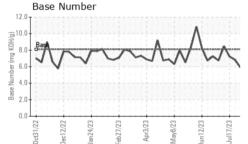
Abnorma 40

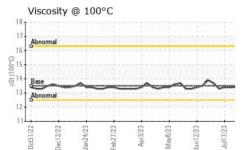
**Emulsified Water** 



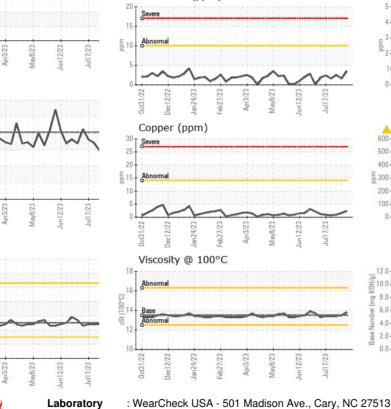


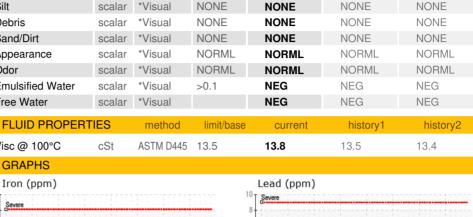










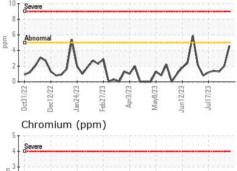


current

NONE

NONE

NONE



history1

NONE

NONE

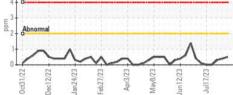
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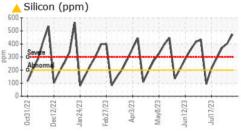
history2

NONE

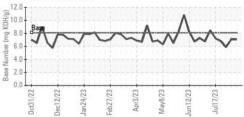
NONE

NONE





## Base Number



FINLEY BIOENERGY 74265 Bombing Range Road Boardman, OR US 97818 Contact: Blain Middleton bmiddleton@archaea.energy T: (541)481-3232 F:

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.

: WC0836449

: 05928875

: 10608822

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Received

Diagnosed

: MOB 2 (Additional Tests: FuelDilution, PercentFuel)

: 18 Aug 2023

: 22 Aug 2023

Diagnostician : Jonathan Hester

Certificate L2367

Sample No.

Lab Number

Unique Number

Test Package

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