

# **OIL ANALYSIS REPORT**

## Sample Rating Trend









### DIVCNOSIS

## Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: Total oil added 7 gal)

#### Wear

All component wear rates are normal.

## Contamination

There is no indication of any contamination in the oil.

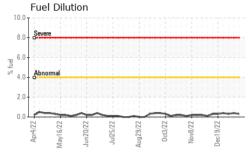
## **Fluid Condition**

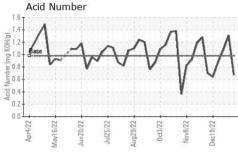
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

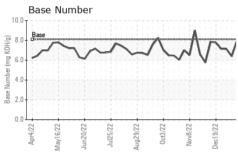
Sample Number Client Info WC0699005 WC069996 WC069996 WC069996 Sample Date Client Info 24 Jan 2023 17 Jan 2023 03 Jan 20 04 Jan 20 03 Jan 20 04 Jan 20 <th>RON CG 40 (</th> <th>GAL)</th> <th>r2022 May20</th> <th>22 Jun2022 Jul2022</th> <th>Aug2022 Oct2022 Nov2022</th> <th>Dec2022</th> <th></th>	RON CG 40 (	GAL)	r2022 May20	22 Jun2022 Jul2022	Aug2022 Oct2022 Nov2022	Dec2022	
Sample Date   Client Info   24 Jan 2023   17 Jan 2023   03 Jan 2023   Machine Age   hrs   Client Info   111738   111605   111268   Client Info   Oil Age   hrs   Client Info   Oil Age   hrs   Client Info   Oil Changed   Client Info   N/A	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Machine Age   hrs   Client Info   111738   111605   111268   Oil Age   hrs   Client Info   96   998   661   Oil Changed   Client Info   N/A	Sample Number		Client Info		WC0699005	WC0698996	WC0699012
Oil Age	Sample Date		Client Info		24 Jan 2023	17 Jan 2023	03 Jan 2023
Dil Age		hrs	Client Info		111738	111605	111268
Client Info   N/A   N/A   ABNORMAL   ABNOR		hrs	Client Info		96	998	661
CONTAMINATION   method   limit/base   current   history1   history1   history1   history1   history1   history2   history4   hist			Client Info		N/A	N/A	N/A
Water WC Method >0.1 NEG NEG NEG   Glycol WC Method Imit/base current history1 history1   WEAR METALS method limit/base current history1 history1   Iron ppm ASTM D5185m >45 3 17 10   Chromium ppm ASTM D5185m >2 <1 <1 <1   Nickel ppm ASTM D5185m >2 <1 <1 <1 <1   Silver ppm ASTM D5185m >2 <1 <1 <1 <1   Silver ppm ASTM D5185m >5 0 0 0   Silver ppm ASTM D5185m >5 2 5 2 5 2   Copper ppm ASTM D5185m >10 1 4 3 3   Tin ppm ASTM D5185m >13 2 11 5   Vanadium ppm A	-				NORMAL	ABNORMAL	ABNORMAL
WEAR METALS	CONTAMINATION	١	method	limit/base	current	history1	history2
WEAR METALS	Water		WC Method	>0.1	NEG	NEG	NEG
Action	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >2 <1 1 <1   Nickel ppm ASTM D5185m >2 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>45	3	17	10
Titanium	Chromium	ppm	ASTM D5185m	>2	<1	1	<1
Silver	Nickel	ppm	ASTM D5185m	>2	<1	<1	0
Silver	Titanium	ppm	ASTM D5185m		<1	<1	<1
Aluminum	Silver		ASTM D5185m	>5	0	0	0
Lead ppm ASTM D5185m >5 2 5 2   Copper ppm ASTM D5185m >14 <1 4 3   Tin ppm ASTM D5185m >13 2 11 5   Vanadium ppm ASTM D5185m 0 0 0 0   Cadmium ppm ASTM D5185m 0 0 0 0   Boron ppm ASTM D5185m 0 0 0 0   Barium ppm ASTM D5185m 1 0 0 0   Barium ppm ASTM D5185m 2 1 2 2   Barium ppm ASTM D5185m 2 1 2 1 2 2   Magnesium ppm ASTM D5185m 2 1 1 1 1 1 1 1 1 2 1 2 1 2 1 2 1 2 1 2 1<	Aluminum		ASTM D5185m	>10			
Copper ppm ASTM D5185m >14 <1 4 3   Tin ppm ASTM D5185m >13 2 11 5   Vanadium ppm ASTM D5185m 0 0 0 0   Cadmium ppm ASTM D5185m 0 0 0 0   ADDITIVES method limit/base current history1 history1   Boron ppm ASTM D5185m 0 0 0 0   Barium ppm ASTM D5185m 1 0 0 0   Molybdenum ppm ASTM D5185m 2 <1							
Tin							
Vanadium ppm ASTM D5185m 0 0 0   Cadmium ppm ASTM D5185m 0 0 0   ADDITIVES method limit/base current history1 history1   Boron ppm ASTM D5185m 0 0 0 0   Barium ppm ASTM D5185m 1 0 0 0   Molybdenum ppm ASTM D5185m 2 <1 2 2   Manganese ppm ASTM D5185m 9 15 19 12   Calcium ppm ASTM D5185m 29 3042 3745 3078   Phosphorus ppm ASTM D5185m 292 307 377 288   Zinc ppm ASTM D5185m 292 364 461 338   Sulfur ppm ASTM D5185m 2575 3867 5245 3737   CONTAMINANTS method limit/base current history1 history1							
Cadmium ppm ASTM D5185m 0 0 0   ADDITIVES method limit/base current history1 history1   Boron ppm ASTM D5185m 0 0 0 0   Barium ppm ASTM D5185m 1 0 0 0   Molybdenum ppm ASTM D5185m 2 <1				>10			
ADDITIVES							
Boron	ADDITIVES		method	limit/base	current	historv1	history2
Barium ppm ASTM D5185m 1 0 0 0   Molybdenum ppm ASTM D5185m 2 <1		mag				· · · · · · · · · · · · · · · · · · ·	•
Molybdenum ppm ASTM D5185m 2 <1 2 2   Manganese ppm ASTM D5185m 1 <1	Barium			1			0
Manganese ppm ASTM D5185m 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td>					-		
Magnesium ppm ASTM D5185m 9 15 19 12   Calcium ppm ASTM D5185m 2712 3042 3745 3078   Phosphorus ppm ASTM D5185m 292 307 377 288   Zinc ppm ASTM D5185m 292 364 461 338   Sulfur ppm ASTM D5185m 2575 3867 5245 3737   CONTAMINANTS method limit/base current history1 history1   Silicon ppm ASTM D5185m >200 81 564 339   Sodium ppm ASTM D5185m >20 <1	•						
Calcium ppm ASTM D5185m 2712 3042 3745 3078   Phosphorus ppm ASTM D5185m 292 307 377 288   Zinc ppm ASTM D5185m 342 364 461 338   Sulfur ppm ASTM D5185m 2575 3867 5245 3737   CONTAMINANTS method limit/base current history1 history1 history1   Silicon ppm ASTM D5185m >200 81 ▲ 564 ▲ 339   Sodium ppm ASTM D5185m >20 <1	-						
Phosphorus ppm ASTM D5185m 292 307 377 288   Zinc ppm ASTM D5185m 342 364 461 338   Sulfur ppm ASTM D5185m 2575 3867 5245 3737   CONTAMINANTS method limit/base current history1 history1 history1   Soliicon ppm ASTM D5185m >200 81 ▲ 564 ▲ 339   Sodium ppm ASTM D5185m >20 <1 2 <1 0   Potassium ppm ASTM D5185m >20 <1 <1 0   Fuel % ASTM D5185m >20 <1 <1 0   Fuel % ASTM D5185m >20 <1 <1 0   Fuel % ASTM D5185m >20 <1 <1 0   Soot % *ASTM D3524 >4.0 0.3 0.4 0.3   Soot % *ASTM D7624 >20							
Zinc ppm ASTM D5185m 342 364 461 338   Sulfur ppm ASTM D5185m 2575 3867 5245 3737   CONTAMINANTS method limit/base current history1 history1   Silicon ppm ASTM D5185m >200 81 ▲ 564 ▲ 339   Sodium ppm ASTM D5185m >20 <1 2 <1 0   Potassium ppm ASTM D5185m >20 <1 <1 0    Fuel % ASTM D5185m >20 <1 <1 0    Fuel % ASTM D5185m >20 <1 <1 0    Fuel % ASTM D3524 >4.0 0.3 0.4 0.3   INFRA-RED method limit/base current history1 history1   Sout % % *ASTM D7624 >20 3.9 5.7 5.2   Sulfation							
Sulfur ppm ASTM D5185m 2575 3867 5245 3737   CONTAMINANTS method limit/base current history1 history1 history1 history1 history1 history1 history2 history2 history2 history2 history2 history2 history2 number (all parts)	•						
CONTAMINANTS method limit/base current history1 history1   Silicon ppm ASTM D5185m >200 81 ▲ 564 ▲ 339   Sodium ppm ASTM D5185m <1							
Silicon ppm ASTM D5185m >200 81 ▲ 564 ▲ 339   Sodium ppm ASTM D5185m <1	CONTAMINANTS		method	limit/base	current	historv1	history2
Sodium						•	
Potassium ppm ASTM D5185m >20 <1 <1 0   Fuel % ASTM D3524 >4.0 0.3 0.4 0.3   INFRA-RED method limit/base current history1 history1   Soot % *ASTM D7844 0 0.1 0.1   Nitration Abs/cm *ASTM D7624 >20 3.9 5.7 5.2   Sulfation Abs/.1mm *ASTM D7415 >30 14.6 21.5 19.4   FLUID DEGRADATION method limit/base current history1 history1 history1   Oxidation Abs/.1mm *ASTM D7414 >25 7.7 12.4 10.5   Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.67 1.31 1.08		• •					
Fuel % ASTM D3524 >4.0 0.3 0.4 0.3   INFRA-RED method limit/base current history1 history1   Soot % % *ASTM D7844 0 0.1 0.1   Nitration Abs/cm *ASTM D7624 >20 3.9 5.7 5.2   Sulfation Abs/.1mm *ASTM D7415 >30 14.6 21.5 19.4   FLUID DEGRADATION method limit/base current history1 history1 history2   Oxidation Abs/.1mm *ASTM D7414 >25 7.7 12.4 10.5   Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.67 1.31 1.08				>20			
Soot % *ASTM D7844 0 0.1 0.1   Nitration Abs/cm *ASTM D7624 >20 3.9 5.7 5.2   Sulfation Abs/.1mm *ASTM D7415 >30 14.6 21.5 19.4   FLUID DEGRADATION method limit/base current history1 history1 history1 history1 history1   Oxidation Abs/.1mm *ASTM D7414 >25 7.7 12.4 10.5   Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.67 1.31 1.08							
Soot % % *ASTM D7844 0 0.1 0.1   Nitration Abs/cm *ASTM D7624 >20 3.9 5.7 5.2   Sulfation Abs/.1mm *ASTM D7415 >30 14.6 21.5 19.4   FLUID DEGRADATION method limit/base current history1 history1 history1 history1 history1   Oxidation Abs/.1mm *ASTM D7414 >25 7.7 12.4 10.5   Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.67 1.31 1.08	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 3.9 5.7 5.2   Sulfation Abs/.1mm *ASTM D7415 >30 14.6 21.5 19.4   FLUID DEGRADATION method limit/base current history1 history1 history1 history1   Oxidation Abs/.1mm *ASTM D7414 >25 7.7 12.4 10.5   Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.67 1.31 1.08		%					
Sulfation Abs/.1mm *ASTM D7415 >30 14.6 21.5 19.4   FLUID DEGRADATION method limit/base current history1 history1 history2   Oxidation Abs/.1mm *ASTM D7414 >25 7.7 12.4 10.5   Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.67 1.31 1.08				>20			
Oxidation Abs/.1mm *ASTM D7414 >25 7.7 12.4 10.5   Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.67 1.31 1.08							
Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.67 1.31 1.08	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.67 1.31 1.08	Oxidation	Abs/.1mm	*ASTM D7414	>25	7.7	12.4	10.5
, ,							
Base Number (BN) mg KOH/g ASTM D2896 8.1 <b>7.91</b> 6.39 7.12		0					

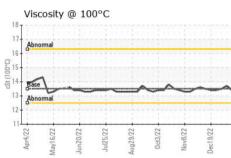


# **OIL ANALYSIS REPORT**





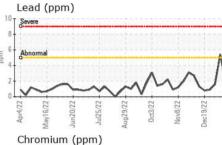


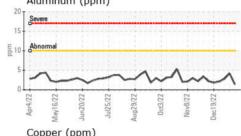


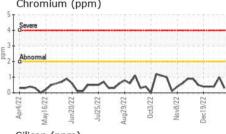
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

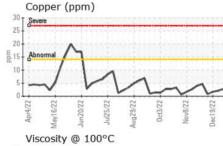
FLUID PROPER	HES	metnoa	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	13.5	13.4	13.7	13.5

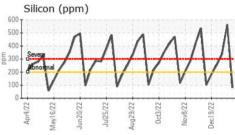
Iro	n (pp	m)						
80 Seve	ere							
60								
Abn Abn	ormal							-
20-					###			^
22	22	22	22	22	22	722	22	
Apr4/22	May16/2	Jun20/	Jul25/2	Aug29/2	0ct3/2:	Nov8/22	Dec19/22	
Δlu		m (pp	m)					

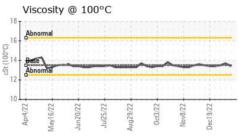


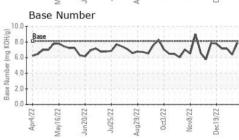
















Laboratory Sample No. Lab Number : 05752302 Unique Number: 10311906

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0699005

Received **Tested** 

: 27 Jan 2023 : 30 Jan 2023 Diagnosed

: 30 Jan 2023 - Sean Felton

Test Package : MOB 2 ( Additional Tests: FuelDilution, PercentFuel )

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)

Contact: Blain Middleton bmiddleton@archaea.energy

T: (541)481-3232

**FINLEY BIOENERGY** 

Boardman, OR

US 97818

74265 Bombing Range Road

Report Id: FINLEX [WUSCAR] 05752302 (Generated: 03/06/2024 16:49:47) Rev: 1

Submitted By: Blain Middleton