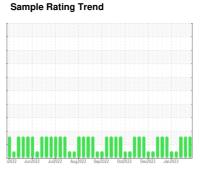


OIL ANALYSIS REPORT







DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. (Customer Sample Comment: Total oil added106 gal

Wear

All component wear rates are normal.

Contamination

Fuel content negligible. Elemental level of silicon (Si) above normal.

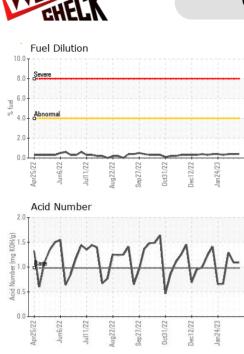
Fluid Condition

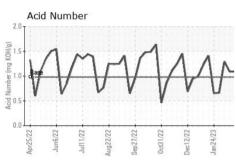
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

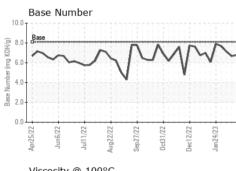
Sample Date Machine Age Min Age Oil Age Oil Changed Sample Status CONTAMINATION Water Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium Ppm ADDITIVES Boron Barium Molybdenum Molybdenum Ppm Manganese Magnesium Phosphorus Zinc Sulfur Ppm A CONTAMINANTS Silicon Ppm A CONTAMINANTS Silicon Ppm A CONTAMINANTS CONTAMINANTS Coli Age Age Age Age Age Age Age Age	method Client Info Method WC Method WC Method WC Method ASTM D5185m	limit/base limit/base >0.1 limit/base >45 >2 >5 >10 >5 >14 >13 limit/base 0	Current WC0699083 21 Feb 2023 120992 729 N/A ABNORMAL Current NEG NEG Current 6 0 0 0 2 <1 2 6 <1 0 Current	history1 WC0699078 13 Feb 2023 120818 555 N/A ABNORMAL history1 NEG NEG history1 4 <1 1 21 0 2 2 2 5 0 0	history2 WC0699076 06 Feb 2023 120654 391 N/A ABNORMAL history2 NEG NEG c1 1 <1 0 2 <1 2 4 0 0
Sample Date Machine Age Oil Age Oil Age Oil Changed Sample Status CONTAMINATION Water Glycol WEAR METALS Iron Chromium Ppm Aluminum Ppm Aluminum Lead Ppm Copper Tin Vanadium Cadmium Ppm ADDITIVES Boron Barium Molybdenum Manganese Magnesium Phosphorus Phosphorus Pilicon Ppm A CONTAMINANTS Silicon Ppm A CONTAMINANTS Silicon Ppm A CONTAMINANTS Silicon Ppm A CONTAMINANTS Silicon Ppm A CONTAMINANTS CONTAMINANTS CONTAMINANTS	Client Info Client Info Client Info Client Info Client Info Client Info MC Method WC Method WC Method WC Method ASTM D5185m	>0.1 limit/base >45 >2 >2 >5 >10 >5 >14 >13	21 Feb 2023 120992 729 N/A ABNORMAL	13 Feb 2023 120818 555 N/A ABNORMAL history1 NEG NEG history1 4 <1 1 0 2 2 2 2 5 0 0	06 Feb 2023 120654 391 N/A ABNORMAL history2 NEG NEG
Machine Age hrs Oil Age Oil Age Oil Changed Sample Status CONTAMINATION Water Glycol WEAR METALS Iron Chromium Ppm Andium Chromium Ppm Aluminum Lead Copper Tin Vanadium Cadmium Ppm ADDITIVES Boron Barium Molybdenum Manganese Magnesium Phosphorus Phosphorus Zinc Sulfur Ppm A CONTAMINANTS Silicon Ppm A CONTAMINANTS Silicon Ppm A COIL Age A COIL	Client Info Client Info Client Info Client Info Method WC Method WC Method MSTM D5185m ASTM D5185m Method	>0.1 limit/base >45 >2 >2 >5 >10 >5 >14 >13	120992 729 N/A ABNORMAL	120818 555 N/A ABNORMAL history1 NEG NEG history1 4 <1 1 <1 0 2 2 2 2 5 0 0	120654 391 N/A ABNORMAL history2 NEG NEG colored history2 6 <1 1 <1 0 2 <1 2 4 0
Oil Age Oil Changed Sample Status CONTAMINATION Water Glycol WEAR METALS Iron Chromium Ppm Aluminum Lead Copper Tin Ppm Aluminum Cadmium Ppm ADDITIVES Boron Barium Molybdenum Manganese Magnesium Phosphorus Phosphorus Pilicon Ppm A CONTAMINANTS Silicon Ppm A CONTAMINANTS CONTAMINANTS Silicon Phospm A Colicium Ppm A CONTAMINANTS CONTAMINANTS CONTAMINANTS CONTAMINANTS CONTAMINANTS	Client Info Client Info Client Info method WC Method WC Method M	>0.1 limit/base >45 >2 >2 >5 >10 >5 >14 >13	729 N/A ABNORMAL	555 N/A ABNORMAL history1 NEG NEG history1 4 <1 1 2 2 2 2 5 0 0	391 N/A ABNORMAL history2 NEG NEG colored history2 6 colored c
Oil Age Oil Age Oil Changed Sample Status CONTAMINATION Water Glycol WEAR METALS Iron Chromium Ppm Aluminum Lead Copper Tin Ppm Aluminum Cadmium Ppm ADDITIVES Boron Barium Molybdenum Manganese Magnesium Phosphorus Pilicon Ppm A CONTAMINANTS Silicon Ppm A CONTAMINANTS Silicon Ppm A Contamination A CONTAMINANTS Silicon A CONTAMINANTS CONTAMINANTS CONTAMINANTS CONTAMINANTS CONTAMINANTS	method WC Method WC Method WC Method Method Method MSTM D5185m ASTM D5185m Method	>0.1 limit/base >45 >2 >2 >5 >10 >5 >14 >13	N/A ABNORMAL current NEG NEG current 6 0 0 0 2 <1 2 6 <1 0 current	N/A ABNORMAL history1 NEG NEG history1 4 <1 1 21 0 2 2 2 2 5 0 0	N/A ABNORMAL history2 NEG NEG history2 6 <1 1 <1 0 2 <1 2 4 0
CONTAMINATION Water Glycol WEAR METALS Iron ppm A Chromium ppm A Nickel ppm A Ititanium ppm A Silver ppm A Aluminum ppm A Lead ppm A Copper ppm A Tin ppm A Vanadium ppm A Cadmium ppm A ADDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Manganese ppm A Manganese ppm A Calcium	method WC Method WC Method Method Method MSTM D5185m ASTM D5185m	>0.1 limit/base >45 >2 >2 >5 >10 >5 >14 >13	ABNORMAL current NEG NEG current 6 0 0 2 <1 2 6 <1 0 current	ABNORMAL history1 NEG NEG history1 4 <1 1 0 2 2 2 2 5 0 0	ABNORMAL history2 NEG NEG history2 6 <1 1 <1 0 2 <1 2 4 0
CONTAMINATION Water Glycol V WEAR METALS Iron ppm A Chromium ppm A Nickel ppm A Aluminum ppm A Lead ppm A Copper ppm A Vanadium ppm A Cadmium ppm A ADDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Manganese ppm A Calcium ppm A Phosphorus ppm A CONTAMINANTS Silicon ppm A CONTAMINANTS	WC Method WC Method Method Method MSTM D5185m ASTM D5185m	>0.1 limit/base >45 >2 >2 >5 >10 >5 >14 >13	current NEG NEG current 6 0 0 2 <1 2 6 <1 0 current	history1 NEG NEG history1 4 <1 1 21 0 2 2 2 5 0 0	history2 NEG NEG history2 6 <1 1 <1 0 2 <1 2 4 0
Water Glycol WEAR METALS Iron ppm A Chromium ppm A Nickel ppm A Silver ppm A Aluminum ppm A Lead ppm A Copper ppm A Tin ppm A Vanadium ppm A Cadmium ppm A DDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Manganese ppm A Manganese ppm A Manganese ppm A Silver ppm A Calcium ppm	WC Method WC Method Method Method MSTM D5185m ASTM D5185m	>0.1 limit/base >45 >2 >2 >5 >10 >5 >14 >13	NEG NEG current 6 0 0 0 2 <1 2 6 <1 0 current	NEG NEG history1 4 <1 1 <1 0 2 2 2 5 0 0	NEG NEG history2 6 <1 1 <1 0 2 <1 2 4 0
Glycol WEAR METALS Iron ppm A Chromium ppm A Nickel ppm A Silver ppm A Aluminum ppm A Lead ppm A Copper ppm A Vanadium ppm A Cadmium ppm A ADDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Manganese ppm A Calcium ppm A Contaminants	method Method Method ASTM D5185m Method	limit/base >45 >2 >2 >2 >5 >10 >5 >14 >13	NEG current 6 0 0 0 2 <1 2 6 <1 0 current	NEG history1 4 <1 1 <1 0 2 2 2 5 0 0	NEG history2 6 <1 1 <1 0 2 <1 2 4 0
WEAR METALS Iron ppm A Chromium ppm A Nickel ppm A Titanium ppm A Aluminum ppm A Lead ppm A Copper ppm A Tin ppm A Vanadium ppm A ADDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Magnesium ppm A Calcium ppm	method ASTM D5185m	>45 >2 >2 >5 >10 >5 >14 >13	current 6 0 0 0 0 2 <1 2 6 <1 0 current	history1 4 <1 1 <1 0 2 2 2 5 0 0	history2 6 <1 1 1 <1 0 2 <1 2 4 0
Iron ppm A Chromium ppm A Nickel ppm A Titanium ppm A Silver ppm A Aluminum ppm A Lead ppm A Copper ppm A Vanadium ppm A Cadmium ppm A ADDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Magnesium ppm A Calcium	ASTM D5185m ASTM D5185m	>45 >2 >2 >5 >10 >5 >14 >13	6 0 0 0 0 2 <1 2 6 <1 0	4 <1 1 1 0 2 2 2 5 0 0 0	6 <1 1 1 <1 0 2 <1 2 4 0 0
Chromium ppm A Nickel ppm A Nickel ppm A Titanium ppm A Silver ppm A Aluminum ppm A Lead ppm A Copper ppm A Tin ppm A Vanadium ppm A Cadmium ppm A ADDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Molybdenum ppm A Manganese ppm A Magnesium ppm A Calcium ppm A Calciu	ASTM D5185m ASTM D5185m	>2 >2 >5 >10 >5 >14 >13	0 0 0 0 2 <1 2 6 <1 0	<1 1 <1 0 2 2 2 2 5 0	<1 1 <1 0 2 <1 2 4
Nickel ppm A Fitanium ppm A Silver ppm A Aluminum ppm A Lead ppm A Copper ppm A Vanadium ppm A Cadmium ppm A ADDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Calcium ppm A Chosphorus ppm A Calcium	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>2 >5 >10 >5 >14 >13	0 0 0 2 <1 2 6 <1 0	1 <1 0 2 2 2 5 0 0 0	1 <1 0 2 <1 2 4 0
Titanium ppm A Silver ppm A Aluminum ppm A Lead ppm A Copper ppm A Vanadium ppm A Cadmium ppm A Cadmium ppm A ADDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Magnesium ppm A Calcium ppm A Contaminants	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m METhod	>5 >10 >5 >14 >13	0 0 2 <1 2 6 <1 0	<1 0 2 2 2 2 5 0	<1 0 2 <1 2 4
Silver ppm A Aluminum ppm A Aluminum ppm A Copper ppm A Vanadium ppm A Cadmium ppm A Calcium ppm A C	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	>10 >5 >14 >13	0 2 <1 2 6 <1 0	0 2 2 2 5 0	0 2 <1 2 4
Aluminum ppm A Lead ppm A Copper ppm A Vanadium ppm A Cadmium ppm A ADDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Magnesium ppm A Calcium ppm A Contaminants	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	>10 >5 >14 >13	2 <1 2 6 <1 0 current	2 2 2 5 0	2 <1 2 4 0
Lead ppm A Copper ppm A Copper ppm A Vanadium ppm A Cadmium ppm A ADDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Magnesium ppm A Calcium ppm A Chosphorus ppm A Calcium ppm A Chosphorus ppm A Calcium ppm A Chosphorus ppm A Calcium ppm A Contaminants	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method	>5 >14 >13	<1 2 6 <1 0 current	2 2 5 0	<1 2 4 0
Copper	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	>14 >13	2 6 <1 0	2 5 0	2 4 0
Fin ppm A Vanadium ppm A Cadmium ppm A ADDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Magnesium ppm A Calcium ppm A Phosphorus ppm A Calcium ppm A Contaminants Contaminants Contaminants	ASTM D5185m ASTM D5185m ASTM D5185m method	>13	6 <1 0 current	5 0 0	4
Vanadium ppm A Cadmium ppm A ADDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Magnesium ppm A Calcium ppm A Phosphorus ppm A Zinc ppm A CONTAMINANTS Silicon ppm A	ASTM D5185m ASTM D5185m method	limit/base	<1 0 current	0	0
ADDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Magnesium ppm A Calcium ppm A Chosphorus ppm A Cinc ppm A CONTAMINANTS Bilicon ppm A	ASTM D5185m method		0 current	0	
ADDITIVES Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Calcium ppm A Chosphorus ppm A Cinc ppm A Culfur ppm A CONTAMINANTS Billicon ppm A	method		current		0
Boron ppm A Barium ppm A Molybdenum ppm A Manganese ppm A Magnesium ppm A Calcium ppm A Chosphorus ppm A Zinc ppm A CONTAMINANTS Silicon ppm A				61.4	
Barium ppm A Molybdenum ppm A Manganese ppm A Magnesium ppm A Calcium ppm A Phosphorus ppm A Zinc ppm A Cultiur ppm A CONTAMINANTS Silicon ppm A	ASTM D5185m	0		history1	history2
Molybdenum ppm A Manganese ppm A Magnesium ppm A Calcium ppm A Phosphorus ppm A Zinc ppm A CONTAMINANTS Silicon ppm A			<1	0	<1
Manganese ppm A Magnesium ppm A Calcium ppm A Phosphorus ppm A Zinc ppm A CONTAMINANTS Silicon ppm A	ASTM D5185m	1	0	0	0
Magnesium ppm A Calcium ppm A Phosphorus ppm A Zinc ppm A CONTAMINANTS Silicon ppm A	ASTM D5185m	2	<1	1	1
Calcium ppm A Phosphorus ppm A Zinc ppm A Gulfur ppm A CONTAMINANTS Gilicon ppm A	ASTM D5185m	1	<1	<1	<1
Phosphorus ppm A Zinc ppm A Sulfur ppm A CONTAMINANTS Silicon ppm A	ASTM D5185m	9	17	17	15
Zinc ppm A Sulfur ppm A CONTAMINANTS Silicon ppm A	ASTM D5185m	2712	3033	3125	3102
Zinc ppm A Sulfur ppm A CONTAMINANTS Silicon ppm A	ASTM D5185m	292	284	318	295
CONTAMINANTS Silicon ppm A	ASTM D5185m	342	326	381	349
Silicon ppm A	ASTM D5185m	2575	3565	3710	3922
	method	limit/base	current	history1	history2
Sodium ppm A	ASTM D5185m	>200	△ 375	292	<u>^</u> 223
	ASTM D5185m		2	1	<1
Potassium ppm A	ASTM D5185m	>20	0	<1	0
Fuel % A	ASTM D3524	>4.0	0.4	0.4	0.4
INFRA-RED	method	limit/base	current	history1	history2
Soot % % *	*ASTM D7844		0.1	0.1	0.1
Nitration Abs/cm *		>20	6.2	5.8	5.6
	*ASTM D7624			20.8	19.5
FLUID DEGRADATION	*ASTM D7624 *ASTM D7415	>30	22.3		
Oxidation Abs/.1mm *		>30 limit/base	22.3	history1	history2
	*ASTM D7415				
Base Number (BN) mg KOH/g A	*ASTM D7415 method	limit/base	current	history1	history2

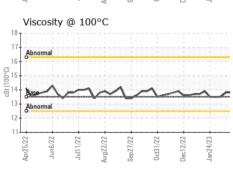


OIL ANALYSIS REPORT







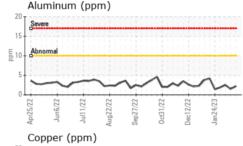


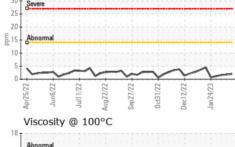
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

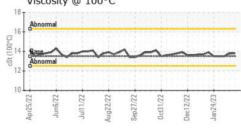
FLUID PROPER	THES	method	iiiiii/base	current	riistory i	HIStory
Visc @ 100°C	cSt	ASTM D445	13.5	13.8	13.8	13.5

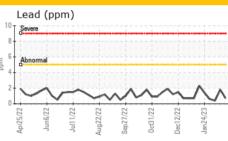
Iror	ı (ppr	n)						
Sever	e							
E 60 Abno	rmal							
20	~_				\sim	~	~	
Apr25/22	Jun6/22	Jul11/22	Aug22/22	Sep27/22	Oct31/22	Dec12/22	Jan24/23	
	:	n /nn	,					

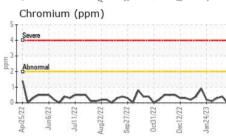
GRAPHS

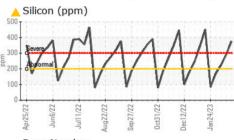


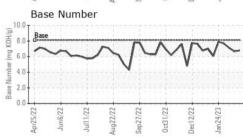














Certificate L2367

Laboratory Sample No. Lab Number : 05777630 Unique Number : 10352247

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0699083

Received **Tested** Diagnosed

: 27 Feb 2023 : 01 Mar 2023

: 01 Mar 2023 - Jonathan Hester Test Package : MOB 2 (Additional Tests: FuelDilution, PercentFuel)

US 97818 Contact: Blain Middleton bmiddleton@archaea.energy T: (541)481-3232

74265 Bombing Range Road

FINLEY BIOENERGY

Boardman, OR

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)

F: