

OIL ANALYSIS REPORT







DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

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

Fluid Condition

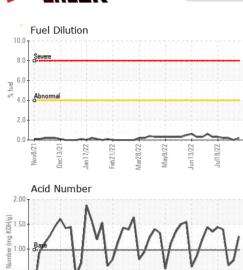
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

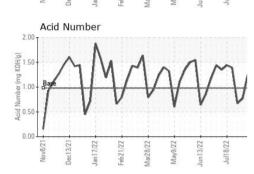
Sample Date Client Info 22 Aug 2022 15 Aug 2022 08 Aug 2022	RON CG 40 (145	GAL)	v2021 Dec20	21 Jan 2022 Feb 2022	Mar2022 May2022 Jun2022 .	Jul2022	
Sample Date Client Info 22 Aug 2022 15 Aug 2022 08 Aug 2022 16525 1163692 116525 1163692 116525 1163692 116525 1163692 116525 1163692 1163692 116325 1163692 116326 1163692 116325 1163692 116326 1163692 116326 1163692 116326 1163692	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 116692 116525 116360 11699 hrs Client Info 451 284 119 010 119 010 119 010 119 010 119 010 119 010 119 010 119 010 119 010	Sample Number		Client Info		WC0697932	WC0697937	WC0697945
Oil Changed Dil Changed Status hrs Client Info N/A	Sample Date		Client Info		22 Aug 2022	15 Aug 2022	08 Aug 2022
Cilient Info	Machine Age	hrs	Client Info		116692	116525	116360
ABNORMAL NORMAL NORMAL NORMAL	Oil Age	hrs	Client Info		451	284	119
Water	Oil Changed		Client Info		N/A	N/A	N/A
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 3 2 2 2 Chromium ppm ASTM D5185m >2 -1 -1 -1 -1 Nickel ppm ASTM D5185m >2 0 0 0 0 Silver ppm ASTM D5185m >10 2 2 4 Aluminum ppm ASTM D5185m >10 2 2 4 Copper ppm ASTM D5185m >10 2 2 4 Copper ppm ASTM D5185m >13 4 2 2 1 Tin ppm ASTM D5185m 0 0 0 0 0 Capper ppm ASTM D5185m 0 2 </td <td>Sample Status</td> <td></td> <td></td> <td></td> <th>ABNORMAL</th> <td>NORMAL</td> <td>NORMAL</td>	Sample Status				ABNORMAL	NORMAL	NORMAL
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >45 3 2 2 Chromium ppm ASTM D5185m >2 <1	CONTAMINATION	١	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >45 3 2 2 Chromium ppm ASTM D5185m >2 0 0 0 Nickel ppm ASTM D5185m 0 0 0 0 Silver ppm ASTM D5185m 0 0 0 0 Aluminum ppm ASTM D5185m >10 2 2 4 Lead ppm ASTM D5185m >10 2 1 1 Copper ppm ASTM D5185m >14 3 2 1 1 Copper ppm ASTM D5185m >13 4 2 2 2 1 Vanadium ppm ASTM D5185m 0 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 2 0 6 6 6 1 1	Water		WC Method	>0.1	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >2 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 0 0 Titanium ppm ASTM D5185m 0 0 0 Siliver ppm ASTM D5185m 0 0 0 Aluminum ppm ASTM D5185m >10 2 2 4 Lead ppm ASTM D5185m >5 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 0 0 0 0 0 Titanium ppm ASTM D5185m 0 0 0 0 Silver ppm ASTM D5185m 0 0 0 0 0 Aluminum ppm ASTM D5185m 0 0 0 0 0 Aluminum ppm ASTM D5185m >10 2 2 2 4 Lead ppm ASTM D5185m >10 2 2 2 4 Lead ppm ASTM D5185m >10 2 2 2 4 Lead ppm ASTM D5185m >10 2 2 1 Tin ppm ASTM D5185m >13 4 2 2 2 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 1 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 1 0 0 0 0 Molybdenum ppm ASTM D5185m 1 0 0 0 0 Molybdenum ppm ASTM D5185m 1 0 0 0 0 Molybdenum ppm ASTM D5185m 1 0 0 0 0 Molybdenum ppm ASTM D5185m 1 0 0 0 0 Molybdenum ppm ASTM D5185m 1 0 0 0 0 Molybdenum ppm ASTM D5185m 2 2 <1 <1 1 1 Manganesium ppm ASTM D5185m 2 2 <1 <1 1 1 Dalacium ppm ASTM D5185m 2 2 1 3041 2924 2631 Phosphorus ppm ASTM D5185m 292 300 274 268 Zinc ppm ASTM D5185m 292 300 274 268 Zinc ppm ASTM D5185m 2575 3500 3252 3137 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 1 0 0 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 1 0 0 <1 Potassium ppm ASTM D5185m 20 0 233 166 80 Sodium ppm ASTM D5185m 20 0 233 166 80 Sodium ppm ASTM D5185m 20 0 233 166 80 Sodium ppm ASTM D5185m 20 0 233 166 80 Sodium ppm ASTM D5185m 20 0 0 <1 Fuel % ASTM D7844 0.1 0.1 0.1 0.1 Nitration Abs/:mm 'ASTM D7844 0.1 0.1 0.1 0.1 Nitration Abs/:mm 'ASTM D7844 0.1 0.1 0.1 0.1 FULID DEGRADATION method limit/base current history1 history2 Dxidation Abs/:mm 'ASTM D7415 >30 21.4 19.5 17.3 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/:mm 'ASTM D7415 >20 6.1 2.3 10.9 9.4 Acid Number (AN) mg KOHg ASTM D8045 0.98 1.25 0.77 0.667	ron	ppm	ASTM D5185m	>45	3	2	2
Description	Chromium	ppm	ASTM D5185m	>2	<1	<1	<1
Description	Nickel	ppm	ASTM D5185m	>2	0	0	0
Silver	Titanium	ppm	ASTM D5185m		0	0	0
Lead ppm ASTM D5185m >5 <1 <1 1 Copper ppm ASTM D5185m >14 3 2 1 Tin ppm ASTM D5185m >13 4 2 2 Vanadium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 0 6 Barium ppm ASTM D5185m 1 0 0 0 Molybdenum ppm ASTM D5185m 2 <1 <1 1 Magnesium ppm ASTM D5185m 2 <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	Silver	ppm	ASTM D5185m		0	0	0
Copper ppm ASTM D5185m >14 3 2 1 Tin ppm ASTM D5185m >13 4 2 2 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 2 0 6 Barium ppm ASTM D5185m 1 0 0 0 Molybdenum ppm ASTM D5185m 2 <1	Aluminum	ppm	ASTM D5185m	>10	2	2	4
Trin	_ead	ppm	ASTM D5185m	>5	<1	<1	1
Trin	Copper	ppm	ASTM D5185m	>14	3	2	1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 0 6 Barium ppm ASTM D5185m 1 0 0 0 Molybdenum ppm ASTM D5185m 2 <1	Tin	ppm	ASTM D5185m	>13	4	2	2
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 0 6 Barium ppm ASTM D5185m 1 0 0 0 Molybdenum ppm ASTM D5185m 2 <1	Vanadium		ASTM D5185m		0	0	0
Boron	Cadmium		ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 1 0 0 0 Molybdenum ppm ASTM D5185m 2 <1 <1 1 Manganese ppm ASTM D5185m 1 <1 <1 0 Magnesium ppm ASTM D5185m 9 13 11 15 Calcium ppm ASTM D5185m 2712 3041 2924 2631 Phosphorus ppm ASTM D5185m 292 300 274 268 Zinc ppm ASTM D5185m 292 357 340 313 Sulfur ppm ASTM D5185m 2575 3500 3252 3137 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >200 233 166 80 Sodium ppm ASTM D5185m >20 0 0 <1 Fuel % ASTM D5185m >20	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 2 <1 <1 1 Manganese ppm ASTM D5185m 1 <1 <1 0 Magnesium ppm ASTM D5185m 9 13 11 15 Calcium ppm ASTM D5185m 2712 3041 2924 2631 Phosphorus ppm ASTM D5185m 292 300 274 268 Zinc ppm ASTM D5185m 292 300 274 268 Zinc ppm ASTM D5185m 292 357 340 313 Sulfur ppm ASTM D5185m 2575 3500 3252 3137 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >200 233 166 80 Sodium ppm ASTM D5185m >20 0 0 <1 Potassium ppm ASTM D5185m	Boron	ppm	ASTM D5185m	0	2	0	6
Manganese ppm ASTM D5185m 1 <1 <1 0 Magnesium ppm ASTM D5185m 9 13 11 15 Calcium ppm ASTM D5185m 2712 3041 2924 2631 Phosphorus ppm ASTM D5185m 292 300 274 268 Zinc ppm ASTM D5185m 342 357 340 313 Sulfur ppm ASTM D5185m 2575 3500 3252 3137 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >200 233 166 80 Sodium ppm ASTM D5185m >20 0 0 <1	Barium	ppm	ASTM D5185m	1	0	0	0
Magnesium ppm ASTM D5185m 9 13 11 15 Calcium ppm ASTM D5185m 2712 3041 2924 2631 Phosphorus ppm ASTM D5185m 292 300 274 268 Zinc ppm ASTM D5185m 292 357 340 313 Sulfur ppm ASTM D5185m 2575 3500 3252 3137 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >200 233 166 80 Sodium ppm ASTM D5185m >20 0 0 <1 Potassium ppm ASTM D5185m >20 0 0 <1 Fuel % ASTM D5185m >20 0 0 <1 Fuel % ASTM D5185m >20 0 0 <1 Fuel % ASTM D5185m >20 <t< td=""><td>Molybdenum</td><td>ppm</td><td>ASTM D5185m</td><td>2</td><th><1</th><td><1</td><td>1</td></t<>	Molybdenum	ppm	ASTM D5185m	2	<1	<1	1
Calcium ppm ASTM D5185m 2712 3041 2924 2631 Phosphorus ppm ASTM D5185m 292 300 274 268 Zinc ppm ASTM D5185m 342 357 340 313 Sulfur ppm ASTM D5185m 2575 3500 3252 3137 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >200 233 166 80 Sodium ppm ASTM D5185m >20 0 0 <1	Manganese	ppm	ASTM D5185m	1	<1	<1	0
Phosphorus ppm ASTM D5185m 292 300 274 268 Zinc ppm ASTM D5185m 342 357 340 313 Sulfur ppm ASTM D5185m 2575 3500 3252 3137 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >200 233 166 80 Sodium ppm ASTM D5185m >20 0 0 <1	Magnesium	ppm	ASTM D5185m	9	13	11	15
Zinc ppm ASTM D5185m 342 357 340 313 Sulfur ppm ASTM D5185m 2575 3500 3252 3137 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >200 233 166 80 Sodium ppm ASTM D5185m 1 0 <1 0 <1 Potassium ppm ASTM D5185m >20 0 0 <1 0 <1 Fuel % ASTM D5185m >20 0 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <	Calcium	ppm	ASTM D5185m	2712	3041	2924	2631
Sulfur ppm ASTM D5185m 2575 3500 3252 3137 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >200 233 166 80 Sodium ppm ASTM D5185m 1 0 <1	Phosphorus	ppm	ASTM D5185m	292	300	274	268
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >200 233 166 80 Sodium ppm ASTM D5185m 1 0 <1	Zinc	ppm	ASTM D5185m	342	357	340	313
Silicon ppm ASTM D5185m >200 ▲ 233 166 80 Sodium ppm ASTM D5185m 1 0 <1 Potassium ppm ASTM D5185m >20 0 0 <1 Fuel % ASTM D5185m >20 0 0 <1 Fuel % ASTM D5185m >20 0 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 6.1 5.6 4.9 Sulfation Abs/.1mm *ASTM D7415 >30 21.4 19.5 17.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.3 10.9 9.4 Acid Number (AN) mg KOH/g ASTM D8045 0	Sulfur	ppm	ASTM D5185m	2575	3500	3252	3137
Sodium	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 0 <1 Fuel % ASTM D3524 >4.0 0.2 0.0 0.2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 6.1 5.6 4.9 Sulfation Abs/.1mm *ASTM D7415 >30 21.4 19.5 17.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.3 10.9 9.4 Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.25 0.77 0.67	Silicon	ppm	ASTM D5185m	>200	<u>^</u> 233	166	80
Fuel % ASTM D3524 >4.0 0.2 0.0 0.2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 6.1 5.6 4.9 Sulfation Abs/.1mm *ASTM D7415 >30 21.4 19.5 17.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.3 10.9 9.4 Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.25 0.77 0.67	Sodium	ppm	ASTM D5185m		1	0	<1
INFRA-RED	Potassium	ppm	ASTM D5185m	>20		0	
Soot % % *ASTM D7844 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 6.1 5.6 4.9 Sulfation Abs/.1mm *ASTM D7415 >30 21.4 19.5 17.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.3 10.9 9.4 Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.25 0.77 0.67	Fuel	%	ASTM D3524	>4.0	0.2	0.0	0.2
Nitration Abs/cm *ASTM D7624 >20 6.1 5.6 4.9 Sulfation Abs/.1mm *ASTM D7615 >30 21.4 19.5 17.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.3 10.9 9.4 Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.25 0.77 0.67	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 21.4 19.5 17.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.3 10.9 9.4 Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.25 0.77 0.67	Soot %	%	*ASTM D7844		0.1	0.1	0.1
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.3 10.9 9.4 Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.25 0.77 0.67	Vitration	Abs/cm	*ASTM D7624	>20	6.1	5.6	4.9
Oxidation Abs/.1mm *ASTM D7414 >25 12.3 10.9 9.4 Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.25 0.77 0.67	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.4	19.5	17.3
Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.25 0.77 0.67	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 8.1 6.43 7.11 7.27			*ASTM D7414	>25	12.3	10.9	9.4
	Oxidation	Abs/.1mm					

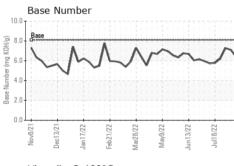


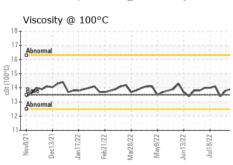
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OIL ANALYSIS REPORT





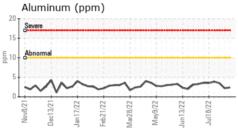


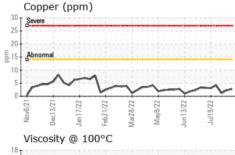


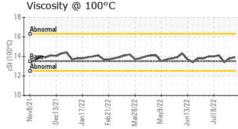
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

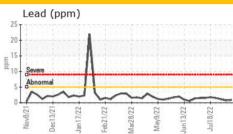
FLUID PROPER	TIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	13.5	13.9	13.8	13.4

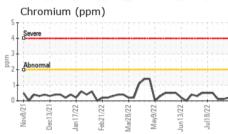
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60 Abno	ormal							
40 - 20 -								
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Nov8/2	Dec13/21	Jan 17/22	Feb21/22	Mar28/22	May9/22	Jun13/22	Jul18/22	
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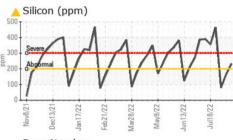


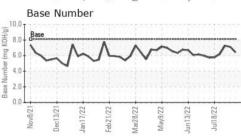














Laboratory Sample No. Lab Number : 05626396 Unique Number : 10110917

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0697932

Received

Tested : 26 Aug 2022 Diagnosed

: 26 Aug 2022 - Don Baldridge

: 24 Aug 2022

Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369.

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

* - 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)

FINLEY BIOENERGY

74265 Bombing Range Road Boardman, OR

US 97818 Contact: Blain Middleton bmiddleton@archaea.energy

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