

OIL ANALYSIS REPORT

Sample Rating Trend







Machine Id HBKM01BE Component Biogas Engine Fluid SHELL MYSELLA S5 S (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

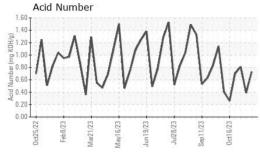
Fluid Condition

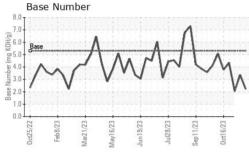
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

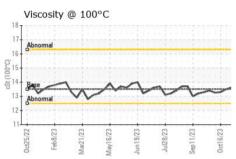
SAMPLE INFORMATION	6 (GAL)		t2022 Feb20	23 Mar2023 May2023	Jun2023 Jul2023 Sep2023	0 d 2023	
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 106575 106391 106230 Oil Age hrs Client Info 800 616 455 Oil Changed Client Info N/A Oil Added Oil Added Sample Status NCRMAL NORMAL NORMAL ABNORMAL CONTAMINATION method Immitbase current history1 history2 Fuel WC Method >4.0 <1.0	Sample Number		Client Info		WC0775444	WC0775437	WC0775434
Oil Age hrs Client Info 800 616 455 Oil Changed Client Info N/A Oil Added Oil	Sample Date		Client Info		15 Nov 2023	06 Nov 2023	30 Oct 2023
Oil Changed Sample Status Client Info Sample Status N/A NORMAL NORMAL NORMAL ABNORMAL ABNORMAL ABNORMAL NORMAL NORMAL ABNORMAL ABNORMAL ABNORMAL NORMAL ABNORMAL ABNORMAL OCTION (NORMAL NORMAL ABNORMAL ABNORMAL ABNORMAL OCTION (NORMAL NORMAL ABNORMAL ABNORMAL ABNORMAL OCTION (NORMAL NORMAL ABNORMAL ABNORMAL OCTION (NORMAL NORMAL NORMAL ABNORMAL OCTION (NORMAL NORMAL ABNORMAL OCTION (NORMAL NORMAL	Machine Age	hrs	Client Info		106575	106391	106230
Sample Status	Oil Age	hrs	Client Info		800	616	455
Fuel	Oil Changed		Client Info		N/A	Oil Added	Oil Added
Fuel WC Method >4.0 <1.0 <1.0 <1.0 <1.0 Water WC Method NEG NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >15 3 2 6 Chromium ppm ASTM D5185m >4 <1 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 0 <1 <1 Silver ppm ASTM D5185m >2 0 0 <1 Silver ppm ASTM D5185m >5 0 0 0 <1 Silver ppm ASTM D5185m >6 3 3 5 1 Lead ppm ASTM D5185m >6 <1 0 2 2 Tin ppm ASTM D5185m <th< td=""><td>Sample Status</td><td></td><td></td><td></td><th>NORMAL</th><td>NORMAL</td><td>ABNORMAL</td></th<>	Sample Status				NORMAL	NORMAL	ABNORMAL
Water Glycol WC Method WC Method >0.1 NEG NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >15 3 2 6 Chromium ppm ASTM D5185m >4 <1 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 0 <1	CONTAMINATION	١	method	limit/base	current	history1	history2
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >15 3 2 6 Chromium ppm ASTM D5185m >4 <1	Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >15 3 2 6 Chromium ppm ASTM D5185m >4 -1 <1	Water		WC Method	>0.1	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >4 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 0 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 0 0 <1 Titanium ppm ASTM D5185m 0 0 <1	Iron	ppm	ASTM D5185m	>15	3	2	6
Titanium	Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>2	0	0	<1
Aluminum ppm ASTM D5185m >6 3 3 5 Lead ppm ASTM D5185m >9 0 0 <1	Titanium	ppm	ASTM D5185m		0	0	<1
Lead ppm ASTM D5185m >9 0 0 <1 Copper ppm ASTM D5185m >6 <1 0 2 Tin ppm ASTM D5185m >4 5 2 5 Vanadium ppm ASTM D5185m 0 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 5 5 4 Barium ppm ASTM D5185m 0 0 <1 Molybdenum ppm ASTM D5185m 4 4 7 Mangaese ppm ASTM D5185m 4 4 7 Magnesium ppm ASTM D5185m 18 17 26 Calcium ppm ASTM D5185m 300 339 148 389 Zinc ppm ASTM D5185m <td>Silver</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>5</td> <th>0</th> <td>0</td> <td>0</td>	Silver	ppm	ASTM D5185m	>5	0	0	0
Copper ppm ASTM D5185m >6 <1 0 2 Tin ppm ASTM D5185m >4 5 2 5 Vanadium ppm ASTM D5185m 0 0 <1	Aluminum	ppm	ASTM D5185m	>6	3	3	5
Tin ppm ASTM D5185m >4 5 2 5 Vanadium ppm ASTM D5185m 0 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 5 5 4 Barium ppm ASTM D5185m 0 0 <1 Molybdenum ppm ASTM D5185m 4 4 7 Manganese ppm ASTM D5185m 4 4 7 Magnesium ppm ASTM D5185m 18 17 26 Calcium ppm ASTM D5185m 1530 1429 1692 Phosphorus ppm ASTM D5185m 409 383 489 Zinc ppm ASTM D5185m 2874 2792 4091 CONTAMINANTS method limit/base current history1 hi	Lead	ppm	ASTM D5185m	>9	0	0	<1
Vanadium ppm ASTM D5185m 0 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 5 5 4 Barium ppm ASTM D5185m 0 0 <1 Molybdenum ppm ASTM D5185m 4 4 7 Manganese ppm ASTM D5185m <1 0 0 Magnesium ppm ASTM D5185m <1530 1429 1692 Phosphorus ppm ASTM D5185m 1530 1429 1692 Phosphorus ppm ASTM D5185m 409 383 489 Sulfur ppm ASTM D5185m 2874 2792 4091 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 0	Copper	ppm	ASTM D5185m	>6	<1	0	2
Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 5 5 4 Barium ppm ASTM D5185m 0 0 <1	Tin	ppm	ASTM D5185m	>4	5	2	5
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron ppm ASTM D5185m 5 5 4 Barium ppm ASTM D5185m 0 0 <1 Molybdenum ppm ASTM D5185m 4 4 7 Manganese ppm ASTM D5185m <1 0 0 Magnesium ppm ASTM D5185m 18 17 26 Calcium ppm ASTM D5185m 1530 1429 1692 Phosphorus ppm ASTM D5185m 300 339 148 389 Zinc ppm ASTM D5185m 409 383 489 Sulfur ppm ASTM D5185m 2874 2792 4091 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 174 126 191 Sodium ppm ASTM D5185m >20 0 0 3 Potassium ppm ASTM D5185m	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium ppm ASTM D5185m 0 0 <1 Molybdenum ppm ASTM D5185m 4 4 7 Manganese ppm ASTM D5185m <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 4 4 7 Manganese ppm ASTM D5185m <1 0 0 Magnesium ppm ASTM D5185m 18 17 26 Calcium ppm ASTM D5185m 1530 1429 1692 Phosphorus ppm ASTM D5185m 300 339 148 389 Zinc ppm ASTM D5185m 409 383 489 Sulfur ppm ASTM D5185m 2874 2792 4091 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 174 126 191 Sodium ppm ASTM D5185m >20 0 0 3 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot %	Boron	ppm	ASTM D5185m		5	5	4
Manganese ppm ASTM D5185m <1 0 0 Magnesium ppm ASTM D5185m 18 17 26 Calcium ppm ASTM D5185m 1530 1429 1692 Phosphorus ppm ASTM D5185m 300 339 148 389 Zinc ppm ASTM D5185m 409 383 489 Sulfur ppm ASTM D5185m 2874 2792 4091 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 174 126 191 Sodium ppm ASTM D5185m >20 0 0 3 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration	Barium	ppm	ASTM D5185m		0	0	<1
Magnesium ppm ASTM D5185m 18 17 26 Calcium ppm ASTM D5185m 1530 1429 1692 Phosphorus ppm ASTM D5185m 300 339 148 389 Zinc ppm ASTM D5185m 409 383 489 Sulfur ppm ASTM D5185m 2874 2792 4091 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 174 126 191 Sodium ppm ASTM D5185m 0 0 3 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/:mm *ASTM D7624 >20 4.7 4.4 4.7 Sulfation <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>4</th> <td>4</td> <td>7</td>	Molybdenum	ppm	ASTM D5185m		4	4	7
Calcium ppm ASTM D5185m 1530 1429 1692 Phosphorus ppm ASTM D5185m 300 339 148 389 Zinc ppm ASTM D5185m 409 383 489 Sulfur ppm ASTM D5185m 2874 2792 4091 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 174 126 191 Sodium ppm ASTM D5185m >0 0 3 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/:mm *ASTM D7415 >30 20.6 19.6 20.4 FLUID DEGRADATION method limit/base current history1 history2	Manganese	ppm	ASTM D5185m		<1	0	0
Phosphorus ppm ASTM D5185m 300 339 148 389 Zinc ppm ASTM D5185m 409 383 489 Sulfur ppm ASTM D5185m 2874 2792 4091 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 174 126 191 Sodium ppm ASTM D5185m 0 0 3 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 4.7 4.4 4.7 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 19.6 20.4 FLUID DEGRADATION method limit/base current history1 his	Magnesium	ppm	ASTM D5185m		18	17	26
Zinc ppm ASTM D5185m 409 383 489 Sulfur ppm ASTM D5185m 2874 2792 4091 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 174 126 191 Sodium ppm ASTM D5185m 0 0 3 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 4.7 4.4 4.7 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 19.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 12.8	Calcium	ppm	ASTM D5185m		1530	1429	1692
Sulfur ppm ASTM D5185m 2874 2792 4091 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 174 126 191 Sodium ppm ASTM D5185m 0 0 3 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 4.7 4.4 4.7 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 19.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 12.8 13.4 Acid Number (AN) mg KOH/g ASTM D8045 0.73 0.39 <td>Phosphorus</td> <td>ppm</td> <td>ASTM D5185m</td> <td>300</td> <th>339</th> <td>148</td> <td>389</td>	Phosphorus	ppm	ASTM D5185m	300	339	148	389
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 174 126 ▲ 191 Sodium ppm ASTM D5185m 0 0 3 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 4.7 4.4 4.7 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 19.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 12.8 13.4 Acid Number (AN) mg KOH/g ASTM D8045 0.73 0.39 0.81	Zinc	ppm	ASTM D5185m		409	383	489
Silicon ppm ASTM D5185m >181 174 126 ▲ 191 Sodium ppm ASTM D5185m 0 0 3 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 4.7 4.4 4.7 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 19.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 12.8 13.4 Acid Number (AN) mg KOH/g ASTM D8045 0.73 0.39 0.81	Sulfur	ppm	ASTM D5185m		2874	2792	4091
Sodium ppm ASTM D5185m 0 0 3 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 4.7 4.4 4.7 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 19.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 12.8 13.4 Acid Number (AN) mg KOH/g ASTM D8045 0.73 0.39 0.81	CONTAMINANTS		method	limit/base	current	history1	history2
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INFRA-RED	Sodium	ppm	ASTM D5185m		0	0	3
Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 4.7 4.4 4.7 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 19.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 12.8 13.4 Acid Number (AN) mg KOH/g ASTM D8045 0.73 0.39 0.81	Potassium	ppm	ASTM D5185m	>20	0	0	2
Nitration Abs/cm *ASTM D7624 >20 4.7 4.4 4.7 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 19.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 12.8 13.4 Acid Number (AN) mg KOH/g ASTM D8045 0.73 0.39 0.81	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 20.6 19.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 12.8 13.4 Acid Number (AN) mg KOH/g ASTM D8045 0.73 0.39 0.81	Soot %	%	*ASTM D7844		0	0	0
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 12.8 13.4 Acid Number (AN) mg KOH/g ASTM D8045 0.73 0.39 0.81	Nitration	Abs/cm	*ASTM D7624	>20	4.7	4.4	4.7
Oxidation Abs/.1mm *ASTM D7414 > 25 13.5 12.8 13.4 Acid Number (AN) mg KOH/g ASTM D8045 0.73 0.39 0.81	Sulfation	Abs/.1mm	*ASTM D7415	>30	20.6	19.6	20.4
Acid Number (AN) mg KOH/g ASTM D8045 0.73 0.39 0.81	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN) mg KOH/g ASTM D8045 0.73 0.39 0.81	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.5	12.8	13.4
		mg KOH/g	ASTM D8045				0.81
East Harrison (E14) highery nothin below 0.0 Lill 0.07 2.04	Base Number (BN)	mg KOH/g	ASTM D2896	5.3	2.22	3.37	2.04



OIL ANALYSIS REPORT



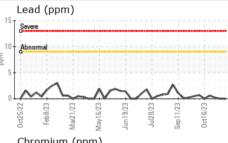


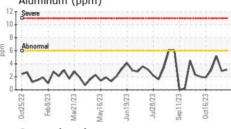


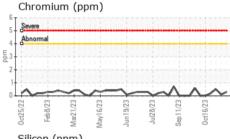
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

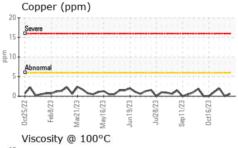
FLUID PROPER	TIES	metnoa	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	13.5	13.6	13.5	13.6

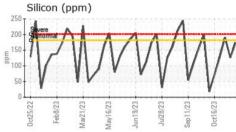
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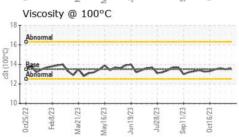


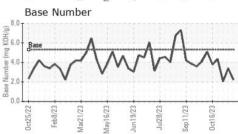
















Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : MOB 2

: WC0775444 : 06011077 : 10750221

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 17 Nov 2023 Diagnosed : 20 Nov 2023 Diagnostician : Sean Felton

EDL NA Recips-Honeybrook

Honey Brook Powerstation, 481 S. Churchtown Road Narvon, PA

US 17555-9574 Contact: Christian Adames

Christian.Adames@edlenergy.com T:

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)

Report Id: EDLNAR [WUSCAR] 06011077 (Generated: 11/20/2023 18:01:40) Rev: 1

Submitted By: Samantha Gauger

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