

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Machine Id HBKM02BE

Component Biogas Engine Fluid

SHELL MYSELLA S5 S (48 GAL)

Birtanteele

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: Top Up Amount: 30 GAL)

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

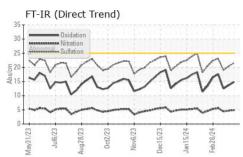
Fluid Condition

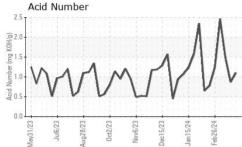
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

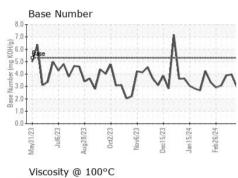
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0775501	WC0775503	WC0775497
Sample Date		Client Info		02 Apr 2024	26 Mar 2024	15 Mar 2024
Machine Age	hrs	Client Info		105749	105574	105475
Oil Age	hrs	Client Info		455	280	181
Oil Changed		Client Info		Oil Added	N/A	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	٧	method	limit/base	current	history1	history2
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method		NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>14	4	4	2
Chromium	ppm	ASTM D5185m	>3	0	0	<1
Nickel	ppm	ASTM D5185m		0	<1	0
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m		0	0	<1
Aluminum	ppm	ASTM D5185m	>5	4	3	3
Lead	ppm	ASTM D5185m	>8	0	0	<1
Copper	ppm	ASTM D5185m	>5	2	<1	1
Tin	ppm	ASTM D5185m	>3	3	2	2
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 7	history1 7	history2 8
	ppm ppm		limit/base			
Boron		ASTM D5185m	limit/base	7	7	8
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	7 0	7 0	8
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	7 0 4 0 16	7 0 4	8 1 4 0 17
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		7 0 4 0 16 1609	7 0 4 0 13 1481	8 1 4 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	7 0 4 0 16 1609 310	7 0 4 0 13 1481 301	8 1 4 0 17 1560 321
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		7 0 4 0 16 1609 310 428	7 0 4 0 13 1481 301 390	8 1 4 0 17 1560 321 424
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		7 0 4 0 16 1609 310	7 0 4 0 13 1481 301	8 1 4 0 17 1560 321
Boron 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 ASTM D5185m		7 0 4 0 16 1609 310 428	7 0 4 0 13 1481 301 390 3291 history1	8 1 4 0 17 1560 321 424
Boron 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 ASTM D5185m	300 limit/base >180	7 0 4 0 16 1609 310 428 3455	7 0 4 0 13 1481 301 390 3291 history1 123	8 1 4 0 17 1560 321 424 3336 history2 84
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	300 300 limit/base >180 >20	7 0 4 0 16 1609 310 428 3455 current	7 0 4 0 13 1481 301 390 3291 history1	8 1 4 0 17 1560 321 424 3336 history2 84 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	300 300 limit/base >180 >20	7 0 4 0 16 1609 310 428 3455 current 158	7 0 4 0 13 1481 301 390 3291 history1 123	8 1 4 0 17 1560 321 424 3336 history2 84
Boron 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 method ASTM D5185m	300 300 limit/base >180 >20	7 0 4 0 16 1609 310 428 3455 <u>current</u> 158 1	7 0 4 0 13 1481 301 390 3291 history1 123 2	8 1 4 0 17 1560 321 424 3336 history2 84 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	300 limit/base >180 >20 >20	7 0 4 0 16 1609 310 428 3455 <u>current</u> 158 1 0	7 0 4 0 13 1481 301 390 3291 history1 123 2 0	8 1 4 0 17 1560 321 424 3336 history2 84 0 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	300 limit/base >180 >20 >20	7 0 4 0 16 1609 310 428 3455 <u>current</u> 158 1 0 <u>current</u> 0.1 4.9	7 0 4 0 13 1481 301 390 3291 history1 123 2 0 0 history1	8 1 4 0 17 1560 321 424 3336 history2 84 0 3 history2 0.1 4.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	300 limit/base >180 >20 >20	7 0 4 0 16 1609 310 428 3455 <u>current</u> 158 1 0 <u>current</u> 0.1	7 0 4 0 13 1481 301 390 3291 history1 123 2 0 history1 0	8 1 4 0 17 1560 321 424 3336 history2 84 0 3 history2 0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	300 limit/base >180 >20 >20	7 0 4 0 16 1609 310 428 3455 <u>current</u> 158 1 0 <u>current</u> 0.1 4.9	7 0 4 0 13 1481 301 390 3291 history1 123 2 0 history1 0 4.7	8 1 4 0 17 1560 321 424 3336 history2 84 0 3 history2 0.1 4.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	300 limit/base >180 >20 >20 >20 limit/base	7 0 4 0 16 1609 310 428 3455 <u>current</u> 158 1 0 <u>current</u> 0.1 4.9 21.5	7 0 4 0 13 1481 301 390 3291 history1 123 2 0 history1 0 history1 0 4.7 20.4	8 1 4 0 17 1560 321 424 3336 history2 84 0 3 history2 0.1 4.4 19.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	300 limit/base >180 >20 >20 >20 limit/base	7 0 4 0 16 1609 310 428 3455 current 158 1 0 current 0.1 4.9 21.5	7 0 4 0 13 1481 301 390 3291 history1 123 2 0 history1 0 4.7 20.4 history1	8 1 4 0 17 1560 321 424 3336 history2 84 0 3 history2 0.1 4.4 19.0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Solicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	300 imit/base >180 >20 >20 imit/base imit/base	7 0 4 0 16 1609 310 428 3455 Current 158 1 0 Current 0.1 4.9 21.5 Current 14.8	7 0 4 0 13 1481 301 390 3291 history1 123 2 0 history1 0 4.7 20.4 history1 13.7	8 1 4 0 17 1560 321 424 3336 history2 84 0 3 history2 0.1 4.4 19.0 history2 12.5

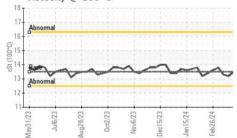


OIL ANALYSIS REPORT









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		NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	13.5	13.5	13.2	13.3
GRAPHS						
Iron (ppm)			1	Lead (ppm)		
20 - Severe			1. I. I. V.	Severe		
15 - Abnormal			1 E	0 - Abnormal		
5 - Abnormal			Wd	5		
5	1r	And	r			
	12		<u>, 11, 12</u>			×***
May31/23 Jul6/23 Aug28/23 Oct2/23	Nov6/23	Dec15/23 - Jan15/24 - Feh26/24 -		May31/23 Jul6/23 Aug28/23	Oct2/23 - Nov6/23 - Dec15/23 -	Jan 15/24 Feb 26/24
Ma	2	Ja Fe		_		Ja Fe
Aluminum (ppm)		1333555555553		Chromium (p	pm)	
10 Severe				4 Severe		
8				3 Abnormal		
6 Abnormal			udd	2		
	N	W	と	1		
		· · · · ·				
May31/23 Jul6/23 Aug28/23	Nov6/23	Dec15/23 Jan15/24 Feh26/24		May31/23 Jul6/23 Aug28/23	0ct2/23 Nov6/23 Dec15/23	Jan 15/24 Feb 26/24
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Copper (ppm)		1.1.1.1.1.1.1.1.1.1.1.1.1	25	Silicon (ppm)		
Smore			20	Severe		- A
					111	$//\Lambda$
10-			15 10		1/1/	VVV
5 - Abnormal			5	VV	VV	V V Y
0	1	Z	\sim	o Li		
May31/23 Jul6/23 Aug28/23 Oct2/23	Nov6/23	Dec15/23 Jan15/24 Feh26/24		May31/23 Jul6/23 Aug28/23	0ct2/23 Nov6/23 Dec15/23	Jan 15/24 Feb 26/24
May: Ju Aug2 Oct	Nov	Decl Jan 1				Jan 1 Feb 2
Viscosity @ 100°C	8		610	Base Number	5	
Abnormal			(B/H	°T 10000 FORM 13		
6 - 0			IOX B.	0- Base		A
14 Base			(B)(HOX Base Number (MB) 5.	1m	MM	LAA
Abnormal			Mumb J	0	v v v	501
to other a second			ase B			
1/23 5/23 5/23 5/23	3/23 -	5/23 -	0.	0++++-	2/23 -	5/24 -
May31/23 Jul6/23 Aug28/23 Oct2/23	Nov6/23	Dec15/23 Jan15/24 Feh26/24		May31/23 Jul6/23 Aug28/23	0ct2/23 Nov6/23 Dec15/23	Jan 15/24 Feb 26/24
A			537	4		1.0

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 **EDL NA Recips-Honeybrook** Sample No. : WC0775501 Received : 04 Apr 2024 Honey Brook Powerstation, 481 S. Churchtown Road Lab Number : 06138718 Tested : 05 Apr 2024 Narvon, PA Unique Number : 10963526 Diagnosed : 06 Apr 2024 - Don Baldridge US 17555-9574 Test Package : MOB 2 **Contact: Christian Adames** Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. Christian.Adames@edlenergy.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T:

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

Report Id: EDLNAR [WUSCAR] 06138718 (Generated: 04/06/2024 12:51:17) Rev: 1

Submitted By: Samantha Gauger Page 2 of 2

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