

# **OIL ANALYSIS REPORT**

Sample Rating Trend

NORMAL



Machine Id MTNM01BE Component

Component Biogas Engine

# SHELL MYSELLA S5 N 40 (160 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.

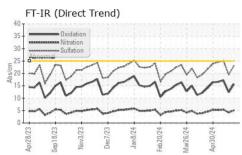
SAMPLE INFORM	1ATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0775194	WC0775226	WC0775230
Sample Date		Client Info		28 May 2024	21 May 2024	12 May 2024
Machine Age	hrs	Client Info		43106	42930	42794
Oil Age	hrs	Client Info		391	145	593
Oil Changed		Client Info		N/A	Changed	N/A
Sample Status				NORMAL	NORMAL	SEVERE
CONTAMINATION	١	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	3	5
Chromium	ppm	ASTM D5185m	>3	0	0	0
Nickel	ppm	ASTM D5185m		0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>5	3	3	3
Lead	ppm	ASTM D5185m	>8	0	<1	0
Copper	ppm	ASTM D5185m	>5	1	<1	1
Tin	ppm	ASTM D5185m	>3	4	2	<u> </u>
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 2	history1 4	history2 <1
	ppm ppm		limit/base			
Boron		ASTM D5185m	limit/base	2	4	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	2 0	4 0	<1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	2 0 1	4 0 1	<1 0 <1
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	2 0 1 <1	4 0 1 <1	<1 0 <1 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	2 0 1 <1 17	4 0 1 <1 14	<1 0 <1 <1 18
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		2 0 1 <1 17 1795	4 0 1 <1 14 1595	<1 0 <1 <1 18 1871
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 ASTM D5185m		2 0 1 <1 17 1795 392	4 0 1 <1 14 1595 332	<1 0 <1 <1 18 1871 381
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm 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	2 0 1 <1 17 1795 392 476	4 0 1 <1 14 1595 332 430	<1 0 <1 <1 18 1871 381 488 4090 history2
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 <b>method</b>	300 limit/base >180	2 0 1 <1 17 1795 392 476 4065 <i>current</i> 173	4 0 1 <1 14 1595 332 430 3835 history1 90	<1 0 <1 <1 18 1871 381 488 4090 history2 ▲ 221
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 ASTM D5185m <b>method</b> ASTM D5185m	300 limit/base >180 >20	2 0 1 <1 17 1795 392 476 4065 <u>current</u> 173 1	4 0 1 <1 14 1595 332 430 3835 history1 90 1	<1 0 <1 <1 18 1871 381 488 4090 history2 221 <1
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 <b>method</b>	300 limit/base >180	2 0 1 <1 17 1795 392 476 4065 <i>current</i> 173	4 0 1 <1 14 1595 332 430 3835 history1 90	<1 0 <1 <1 18 1871 381 488 4090 history2 ▲ 221
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	300 limit/base >180 >20	2 0 1 <1 17 1795 392 476 4065 <u>current</u> 173 1	4 0 1 <1 14 1595 332 430 3835 history1 90 1	<1 0 <1 <1 18 1871 381 488 4090 history2 221 <1
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 limit/base	2 0 1 <1 17 1795 392 476 4065 <i>current</i> 173 1 0 <i>current</i> 0.1	4 0 1 <1 14 1595 332 430 3835 history1 90 1 <1 <1 history1 0.1	<1 0 <1 18 1871 381 488 4090 bistory2  221 <1 0 bistory2 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 limit/base	2 0 1 <1 17 1795 392 476 4065 <i>current</i> 173 1 0 <i>current</i> 0.1 5.1	4 0 1 <1 14 1595 332 430 3835 history1 90 1 <1 <1 history1 0.1 4.2	<1 0 <1 1 18 1871 381 488 4090 bistory2  221 <100 bistory2 0.1 5.4
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 limit/base	2 0 1 <1 17 1795 392 476 4065 <i>current</i> 173 1 0 <i>current</i> 0.1	4 0 1 <1 14 1595 332 430 3835 history1 90 1 <1 <1 history1 0.1	<1 0 <1 18 1871 381 488 4090 bistory2  221 <1 0 bistory2 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 limit/base	2 0 1 <1 17 1795 392 476 4065 <i>current</i> 173 1 0 <i>current</i> 0.1 5.1	4 0 1 <1 14 1595 332 430 3835 history1 90 1 <1 <1 history1 0.1 4.2	<1 0 <1 1 18 1871 381 488 4090 bistory2  221 <100 bistory2 0.1 5.4
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 limit/base >16	2 0 1 <1 17 1795 392 476 4065 <i>current</i> 173 1 0 <i>current</i> 0.1 5.1 23.2	4 0 1 <1 14 1595 332 430 3835 history1 90 1 <1 <1 0.1 4.2 19.5	<1 0 <1 18 <18 1871 381 488 4090
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 D7844 *ASTM D7624 *ASTM D7415	300 imit/base >180 >20 >20 imit/base >16 imit/base	2 0 1 <1 17 1795 392 476 4065 <i>current</i> 173 1 0 <i>current</i> 0.1 5.1 23.2 <i>current</i>	4 0 1 <1 14 1595 332 430 3835 history1 90 1 <1 <1 0.1 4.2 19.5 history1	<1 0 <1 18 <18 1871 381 488 4090
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon 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 D7414	300 imit/base >180 >20 >20 imit/base >16 imit/base	2 0 1 <1 17 1795 392 476 4065 <i>current</i> 173 1 0 <i>current</i> 0.1 5.1 23.2 <i>current</i> 15.7	4 0 1 <1 14 1595 332 430 3835 history1 90 1 <1 <1 0.1 4.2 19.5 history1 12.4	<1 0 <1 18 <18 1871 381 488 4090

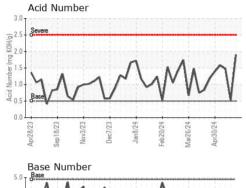
Report Id: EDLMOR [WUSCAR] 06195618 (Generated: 06/01/2024 11:26:42) Rev: 1

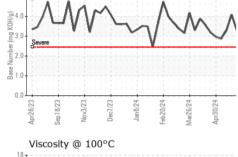
Page 1 of 2

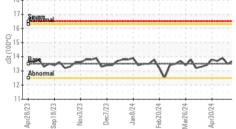


# **OIL ANALYSIS REPORT**









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
Ddor	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
/isc @ 100°C	cSt	ASTM D445	13.5	13.7	13.5	13.9
GRAPHS						
Iron (ppm)				Lead (ppm)		
Severe			1	Severe		
Abnormal	ALC: LET	da costatora	10	<u> </u>		
Aluminum (ppm)	Jan8/24	Feb20/24	uud .	Abnormal	Dec7/23	Mar26/24
Copper (ppm)		172222000	250	The second s	A	
Abnormal			201 E 151 101 51		VM	MA
Apr28/23 Sep18/23 Nov3/23 Dec7/23	Jan 8/24	Feb20/24 Mar26/24		Apr28/23 Sep18/23 Nov3/23	Dec7/23 - Jan8/24 - Feb20/24 -	Mar26/24
Viscosity @ 100°C			(6/HOX) Buy Base Number (mg, NHC) 1.1	Base Number	~_^	M/

0.0

Apr28/23 -Sep18/23 -Nov3/23 - Dec7/23

pr30/24

ar26/24

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 **EDL NA Recips-Morgantown** Sample No. : WC0775194 Received : 30 May 2024 Morgantown Powerstation, 950 Shiloh Lab Number : 06195618 Tested : 31 May 2024 Morgantown, PA US 19543 Unique Number : 11057741 Diagnosed : 01 Jun 2024 - Don Baldridge Test Package : MOB 2 Contact: ARON GUNN Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. aron.gunn@edlenergy.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: 

an8/24

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

4pr28/23

Sep18/23 Nov3/23 Dec7/23

Report Id: EDLMOR [WUSCAR] 06195618 (Generated: 06/01/2024 11:26:42) Rev: 1

Submitted By: LANDON WEBER

Feb20/24

Mar26/24 Apr30/24

lan 8/24

Page 2 of 2

F: