

### **OIL ANALYSIS REPORT**

#### Sample Rating Trend

### NORMAL

# Wayne unit 1

Component Landfill Biogas Engine Fluid

D-A Lubricant Blue Flame HB-8 40W (180 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.

AL)		\$2021 Jan203	22 May2022 Aug2022	Dec2022 Apr2023 Jul2023	0ec2023			
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2		
Sample Number		Client Info		WC0831461	WC0831463	WC0831456		
Sample Date		Client Info		25 Mar 2024	08 Mar 2024	11 Jan 2024		
Machine Age	hrs	Client Info		84022	83643	82421		
Oil Age	hrs	Client Info		1147	768	2045		
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd		
Sample Status				NORMAL	NORMAL	NORMAL		
CONTAMINATION	CONTAMINATION		limit/base	current	history1	history2		
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0		
Water		WC Method	>.2	NEG	NEG	NEG		
Glycol		WC Method		NEG	NEG	NEG		
WEAR METALS		method	limit/base	current	history1	history2		
Iron	ppm	ASTM D5185m	>20	6	3	7		
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1		
Nickel	ppm	ASTM D5185m	>2	<1	0	0		
Titanium	ppm	ASTM D5185m		<1	0	0		
Silver	ppm	ASTM D5185m	>5	0	0	0		
Aluminum	ppm	ASTM D5185m	>15	6	4	8		
Lead	ppm	ASTM D5185m	>20	<1	<1	<1		
Copper	ppm	ASTM D5185m	>15	2	<1	<1		
Tin	ppm	ASTM D5185m	>5	1	<1	1		
Vanadium	ppm	ASTM D5185m		<1	0	0		
Cadmium	ppm	ASTM D5185m		<1	0	0		
ADDITIVES		method	limit/base	current	history1	history2		
Boron	ppm	ASTM D5185m		7	2	2		
Barium	ppm	ASTM D5185m		0	0	0		
Molybdenum	ppm	ASTM D5185m		6	3	4		
Manganese	ppm	ASTM D5185m		<1	0	<1		
Magnesium	ppm	ASTM D5185m		34	20	29		
Calcium	ppm	ASTM D5185m		2375	2150	2290		
Phosphorus	ppm	ASTM D5185m		341	257	358		
	ppm	ASTM D5185m		420	355	433		
Sulfur	ppm	ASTM D5185m		3672	2827	3195		
CONTAMINANTS		method	limit/base	current	history1	history2		
Silicon	ppm	ASTM D5185m	>200	71	53	121		
Sodium	ppm	ASTM D5185m	>20	2	0	<1		
Potassium	ppm	ASTM D5185m	>20	2	1	0		
INFRA-RED		method	limit/base	current	history1	history2		
Soot %	%	*ASTM D7844	>2	0	0	0		
Nitration	Abs/cm	*ASTM D7624	>20	5.7	5.4	6.6		
Sulfation	Abs/.1mm *ASTM D7415 >30		>30	16.3	15.6	17.3		
FLUID DEGRADA	TION	method	limit/base	current	history1	history2		
Oxidation	Abs/.1mm	*ASTM D7414	>25	10.0	9.5	11.5		
Acid Number (AN)	mg KOH/g	ASTM D8045		0.64	0.58	0.715		
Base Number (BN)	mg KOH/g	ASTM D2896	8	6.76	6.96	6.63		

Submitted By: JASON CHENEY



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; 10			eerst		VISUAL		method	limit/base	current		history		his	story2
					White Metal	scalar	*Visual	NONE	NONE	Ν	ONE		NOI	NE
					Yellow Metal	scalar	*Visual	NONE	NONE	N	ONE		NO	NE
-					Precipitate	scalar	*Visual	NONE	NONE	N	ONE		NO	NE
111					Silt	scalar	*Visual	NONE	NONE	N	ONE		ION	NE
1	-~	~	2	۸A	Debris	scalar	*Visual	NONE	NONE	N	ONE		ION	NE
	~	1.1.1	-	~~	Sand/Dirt	scalar	*Visual	NONE	NONE	N	ONE		NO	NE
77/7	2/22	1/23	4/23	5/23	Appearance	scalar	*Visual	NORML	NORML	N	ORML		NO	RML
78ng	Dec1	Aprl	Jul2	Dec	Odor	scalar	*Visual	NORML	NORML	N	ORML		NO	RML
					Emulsified Water	scalar	*Visual	>.2	NEG	N	EG		NEC	G
; 1 1					Free Water	scalar	*Visual		NEG	Ν	EG		NEC	Э.
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		A.	$\sim$	~~		01							10.4	story Z
	~~~				Visc @ 100°C	cSt	ASTM D44	5 14.5	13.3	1	3.3		13.6	j
					GRAPHS									
					Iron (ppm)			50	Lead (ppm	)				
- 77	22	23	23 -	23	40 - Severe	1241220	Cherry States	40	Severe		in hi			
/77Bn	Dec12/	Apr11/	Jul24	Dec5/	_ 30-			_ 30						
-4	1	-	-		20 Abnormal			E 20	Abnormal	+++++++++++++++++++++++++++++++++++++++				
С					10-1			10	,					
						~~~	-	Ý,						
<u>i</u> i i					:25/21 (24/22 w2/22	12/22	11/23	ec5/23	24/22	22/22	:12/22	r11/23	124/23	ec5/23
					Jan Ma	Dec	Api	Ď	Jan	Aug	Dec	Api	ηn	Ď
-					Aluminum (ppm)	)		12	Chromium	(ppm)				
		~~	$\sim$	~~	Severe			10	Severe					
					30 + 0			8	3					
77/7	2/22	/23	‡/23	5/23	Abnormal			E C	Abnormal					
77BnA	Dec12	Apr1	Jul24	Deci	10-			4						
						$\sim$	~~~				n	<u></u>	~	~
					25/21 24/22 72/22	12/22	24/23	c5/23	25/21	72/22	12/22	11/23	24/23	c5/23
					Jan Ma	Dec	Jul	De	Jan Oc	Aug	Dec	Apr	Jul	De
					Copper (ppm)			500	Silicon (ppr	n)				
					Severe			400	Severe		111			
					30 - 0			_ 300						
					Abnormal			년 200	Abnormal		111 111			
					10			100	10	1	21	1	11	11
								····· (					V	
					t25/21 24/22 y2/22	12/22	11/23	c5/23	24/22	72/22	12/22	11/23	24/23	ec5/23
					Jan. Oc	Dec	Apr	De	Jan.	Aug	Dec	Apr	Jul	De
					Viscosity @ 100°	С		10 (	Base Numb	per				
					18 - Abnormal			(B/HO 8.0	Base					
					÷ 16-			Ĕ 6.0	N	2~	~~~	N	N	~~
					E 14- Base				bnormal	V	~~~			
					12 - Abnormal			1 2.0	V					
					10			.0.0	l <u>i</u>					_
					t25/2 24/22 v2/22	12/22	24/23	sc5/21	24/22	22/22	12/22	11/23	124/23	sc5/23
					Jan Ma	Dec	Api	Dé	Jan.	Aug	Dec	Apr	Jul	De
			la	horatory	· WearCheck LISA - 5	01 Madiec		rv NC 27513		TEC		W۵۷		οιιντν
Sample No.		: WC0831461	Rece	ived :2	29 Mar 2024	24		460 SOUTH LANDFIL			FILL RD			
Lab Number			La	b Number	: 06134195	Teste	<b>Tested</b> : 01 Apr 2024			•				EY, NC
TE	STING LABORAT	ORY	Un	que Number	: 10953660	Diagr	nosed : (	03 Apr 2024 - Se	an Felton		_		US	28333
Certificate L2367 Test Package				st Package	: MOB 2	MOB 2				Contact: JASON CHENEY				HENEY
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Sta	ateme	nts o	f con	formity to s	pecifications are based	on the sin	nple accept	tance decision	rule (JCGM	106:201	2)			F:
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