

OIL ANALYSIS REPORT

Sample Rating Trend





Brent Run CAT 4 BRRM04BE

Biogas Engine

CHEVRON HDAX 6500 LFG GAS ENGINE OIL (--- GAL)

	GAS ENGINE OIL (GAL)								
SAMPLE INFORMATION method limit/base current history1	history2								
Sample Number Client Info WC0663710 WC0663714 W	C0776847								
Sample Date Client Info 21 Sep 2023 13 Sep 2023 17	7 Aug 2023								
Machine Age hrs Client Info 103169 102985 10	2667								
Oil Age hrs Client Info 315 131 64	13								
Oil Changed Client Info Not Changd Not Changd Not	ot Changd								
Sample Status NORMAL NORMAL SE	EVERE								
CONTAMINATION method limit/base current history1	history2								
Fuel WC Method >4.0 <1.0 <1.0	<1.0								
Glycol WC Method NEG NEG	NEG								
WEAR METALS method limit/base current history1	history2								
Iron ppm ASTM D5185m >15 7 7	3								
Chromium ppm ASTM D5185m >4 <1	<1								
Nickel ppm ASTM D5185m >2 2 <1	<1								
Titanium ppm ASTM D5185m 0 0	0								
Silver ppm ASTM D5185m >5 0 0	0								
Aluminum ppm ASTM D5185m >6 3 <1	3								
Lead ppm ASTM D5185m >9 <1 <1	<1								
Copper ppm ASTM D5185m >6 3 2	2								
Tin ppm ASTM D5185m >4 4 3	5								
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 0	0								
Boron ppm ASTM D5185m 0 0 Barium ppm ASTM D5185m 1 0	0								
PP									
Barium ppm ASTM D5185m 1 0 Molybdenum ppm ASTM D5185m 0 1 Manganese ppm ASTM D5185m 1	0 2 <1								
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Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: Early sample)

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.



11 May9/22

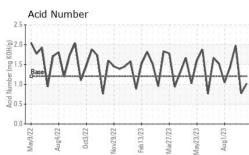
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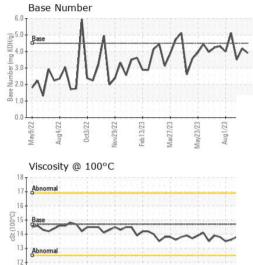
Nov29/22

Feb13/23

Aug4/22

OIL ANALYSIS REPORT





Mar27/23

	VISUAL		method	limit/base	current	history1	history2
	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
. 1	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
M	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
VVV	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	Sand/Dirt		*Visual	NONE	NONE	NONE	NONE
53-		scalar					
Aug1/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
A.	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
A	FLUID PROPER	TIES	method	limit/base	current	history1	history2
V ·	Visc @ 100°C	cSt	ASTM D445	14.7	13.5	13.5	13.8
	GRAPHS						
	Iron (ppm)				Lead (ppm)		
	25 Severe			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Severe		
Aug1/23	Abnormal			1	0 - Abnormal		
Au				mqq			
	¹⁰				5		
	5 mm						
		33	23	3			
	May9/22 Aug4/22 0ct3/22	Feb 13/23	Mar27/23 May23/23	7/1 Rn	May9/22 Aug4/22 Oct3/22	Nov29/22 Feb13/23 Mar27/23	May23/23 Aug1/23
	-	Le l	Ma	Ĉ.			Ma
~	Aluminum (ppm)				Chromium (p	pm)	
4	12 10				5 Severe		
	8				4 Abnormal		
	E 6 Abnormal			ud d			
Aug1/23	4				2		
Au	2-2000		$\neg \land \land \land$	γ_{I}	1		
		m	W Y	V			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
	May9/22 Aug4/22 0ct3/22	Feb 13/23	Mar27/23 - May23/23 - Aur1723 -	2	May9/22 Aug4/22 Oct3/22	Nov29/22 Feb13/23 Mar27/23	Aay23/23 . Aug1/23 .
	May Aug Nov2	Feb1	Mar2 May2	R N	May Aug Oct	Nov2 Feb1 Mar2	May23/23 Aug1/23
	Copper (ppm)				Silicon (ppm)		
	20 T 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			30			
	15 - Severe			25	0-	Λ	
				20			AAAA
	툍10-			틆 15	° VVV	Y Y V	/ / / / /
	Abnormal			10	State Charles and the		
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		23+	23		22	22 - 23 - 23 - 23 - 23 - 23 - 23 - 23 -	23-
	May9/22 Aug4/22 0ct3/22	Feb 13/23	Mar27/23 May23/23	/= Ran	May9/22 Aug4/22 Oct3/22	Nov29/22 Feb13/23 Mar27/23	May23/23 - Aug1/23 -
	2	_	M N 7				W
	Viscosity @ 100°C	2		C	Base Number		
	Abnormal			(B/)			
	16		+	in the second se	Base	1 01	$1 \sim 1$
	C Pres			<u>Ē</u>		VVV	V
	Base			<u>~</u> ₫		V^{*} -	
	Abnormal	\sim	~~~~	52	0 1 1 1		
	Abnormal	\sim	~~~~	Juny 2. 88 1.			
	Abnormal	~~	~~~~	(0,HOX) (0,HOX	0		
	Base Abnormal 12 10	3/23	3/23		0	9/22 3/23	3/23
	Base Abnormal	Feb13/23	Mar27/23		May9/22 Aug4/22 Oct3/22	Nov29/22	May23/23
	Base Abnormal 12 10	Feb13/23	Mar27/23 +		0	Nov29/22 Feb13/23	May23/23
pratory	Base Abnormal 12 10		son Ave., Ca	ary, NC 2751	May9/22 + 4084/22 + 4084/22 + 6063/22 - 6063/22 - 6063/22 + 6063/202 + 6063/22 + 6063/20 + 6063/22 + 6063/	EDL NA Red	cips-Brent Ru
	(J00)149 12 10 12 10 12 12 12 12 12 12 12 12 12 12		son Ave., Ca	ary, NC 2751: Sep 2023	May9/22		cips-Brent Ru
pratory ple No.	(0-00) 149 12 10 12 10 12 12 12 12 12 12 12 12 12 12	501 Madi	son Ave., Ca d : 25 ed : 27	ary, NC 2751 Sep 2023 Sep 2023	May9/22	EDL NA Rec n Power Station, 8	c ips-Brent Ru 3383 Vienna Roa Montrose, N
pratory ple No. Number Je Number	Co-00114 Base Abnormal 12 10 CZUB WearCheck USA - 5 : WearCheck USA - 5 : WC0663710 : 05960762 : 10661975	501 Madia Receive d	son Ave., Ca d : 25 ed : 27	ary, NC 2751: Sep 2023	May9/22	EDL NA Rec In Power Station, 8	z ips-Brent Ru 3383 Vienna Ro Montrose, M JS 48457-914
pratory ple No. Number Je Number Package	: WearCheck USA - 5 : WC0663710 : 05960762 : 10661975 : MOB 2	501 Madia Received Diagnos Diagnost	son Ave., Ca d : 25 ed : 27 tician : Dor	ary, NC 2751: Sep 2023 Sep 2023 n Baldridge	3 Brent Ru	EDL NA Rec In Power Station, 8 U Conta	zi ps-Brent Ru 3383 Vienna Roa Montrose, N JS 48457-914 ct: Rob Stewa
pratory ple No. Number Je Number Package ple report,	Co-00114 Base Abnormal 12 10 CZUB WearCheck USA - 5 : WearCheck USA - 5 : WC0663710 : 05960762 : 10661975	501 Madia Received Diagnos Diagnost	son Ave., Ca d : 25 ed : 27 tician : Dor 800-237-1365	ary, NC 2751: Sep 2023 Sep 2023 n Baldridge 9.	3 Brent Ru	EDL NA Rec In Power Station, 8	zi ps-Brent Ru 3383 Vienna Roa Montrose, N JS 48457-914 ct: Rob Stewa



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