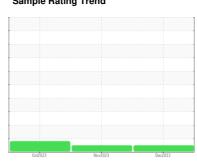


OIL ANALYSIS REPORT

Sample Rating Trend







Machine Id 1202 Component **Diesel Engine**

DIESEL ENGINE OIL SAE 15W40 (--- GAL)

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

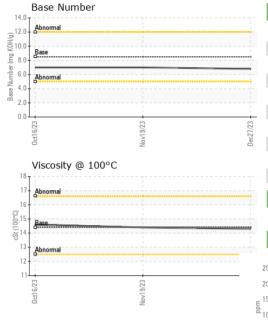
Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION method limit/base current history1 history2 Sample Number Client Info WC0868053 WC0867998 WC0855884 Sample Date Client Info 27 Dec 2023 19 Nov 2023 16 Oct 2023 Machine Age mls Client Info 0 0 0 Oil Age mls Client Info N/A N/A N/A Oil Changed Client Info N/A N/A N/A N/A Sample Status Client Info N/A N/A N/A N/A CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Bycol WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 1 1 1 1 Iro	Oct2023 Nev/2023 Dec2023						
Sample Date Client Info 27 Dec 2023 19 Nov 2023 16 Oct 2023 Machine Age mls Client Info 0 0 0 Oil Age mls Client Info 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status Client Info N/A N/A N/A N/A CONTAMINATION method Ilimit/base current history1 history2 Fuel WC Method >5 <1.0	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age mls Client Info 0 0 0 Oil Age mls Client Info 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status Client Info N/A N/A N/A N/A CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method NEG NEG NEG Blycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 21 27 26 Chromium ppm ASTM D5185m >100 0 0 0 Nickel ppm ASTM D5185m >3 0 0 0 0 Silver ppm ASTM D5185m	Sample Number		Client Info		WC0868053	WC0867998	WC0855884
Oil Age mls Client Info N/A N/A N/A N/A Sample Status Client Info N/A N/A N/A N/A CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0	Sample Date		Client Info		27 Dec 2023	19 Nov 2023	16 Oct 2023
Oil Changed Sample Status Client Info N/A N/A N/A N/A CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0	Machine Age	mls	Client Info		0	0	0
Sample Status NORMAL NORMAL ABNORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <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 >100 21 27 26 Chromium ppm ASTM D5185m >20 1 1 1 1 Nickel ppm ASTM D5185m >20 1 1 1 0 <t< th=""><th>Oil Age</th><th>mls</th><th>Client Info</th><th></th><th>0</th><th>0</th><th>0</th></t<>	Oil Age	mls	Client Info		0	0	0
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <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 >100 21 27 26 Chromium ppm ASTM D5185m >20 1 1 1 Nickel ppm ASTM D5185m >20 1 1 1 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >3 0 0 <1 Lead ppm ASTM D5185m >40 0 0 <1 Copper ppm ASTM D5185m >15 0 0 <1 Vanadium ppm <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>N/A</th> <th>N/A</th> <th>N/A</th>	Oil Changed		Client Info		N/A	N/A	N/A
Fuel WC Method >5 <1.0	Sample Status				NORMAL	NORMAL	ABNORMAL
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS WC Method Imit/base Current history1 history2 Iron ppm ASTM D5185m >100 21 27 26 Chromium ppm ASTM D5185m >20 1 1 1 Nickel ppm ASTM D5185m >4 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 5 13 40 Lead ppm ASTM D5185m >40 0 0 <1 Copper ppm ASTM D5185m >330 2 3 8 Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m >10 0 0	CONTAMINATION	l	method	limit/base	current	history1	history2
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 21 27 26 Chromium ppm ASTM D5185m >20 1 1 1 Nickel ppm ASTM D5185m >20 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 5 13 40 Lead ppm ASTM D5185m >40 0 0 <1	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 21 27 26 Chromium ppm ASTM D5185m >20 1 1 1 Nickel ppm ASTM D5185m >20 0 0 0 Titanium ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 5 13 ▲ 40 Lead ppm ASTM D5185m >20 5 13 ▲ 40 Lead ppm ASTM D5185m >330 2 3 8 Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m 250 <1 0 <th>Water</th> <th></th> <th>WC Method</th> <th>>0.2</th> <th>NEG</th> <th>NEG</th> <th>NEG</th>	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 1 1 1 1 Nickel ppm ASTM D5185m >20 0 0 0 Titanium ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 5 13 40 Lead ppm ASTM D5185m >20 5 13 40 Lead ppm ASTM D5185m >40 0 0 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >4 0 0 0 Titanium ppm ASTM D5185m 0 <1 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 5 13 ▲40 Lead ppm ASTM D5185m >40 0 0 <1 Copper ppm ASTM D5185m >330 2 3 8 Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 250 <1 0 1 1 Barium ppm ASTM D5185m 10 0 0 0 0 Molybdenum ppm ASTM D5185m 450 1049	Iron	ppm		>100	21		
Titanium ppm ASTM D5185m 0 <1		ppm					
Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 5 13 ▲ 40 Lead ppm ASTM D5185m >40 0 0 <1	Nickel	ppm		>4		0	
Aluminum ppm ASTM D5185m >20 5 13 ▲ 40 Lead ppm ASTM D5185m >40 0 0 <1 Copper ppm ASTM D5185m >330 2 3 8 Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m <1 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 250 <1 0 1 Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 60 65 64 Manganese ppm ASTM D5185m 450 1049 1015 1027 Calcium ppm ASTM D5185m 1350 1352		ppm			-		
Lead ppm ASTM D5185m >40 0 0 <1							
Copper ppm ASTM D5185m >330 2 3 8 Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 250 <1 0 1 Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 60 65 64 Manganese ppm ASTM D5185m 450 1049 1015 1027 Calcium ppm ASTM D5185m 3000 1140 1144 1152 Phosphorus ppm ASTM D5185m 1350 1352 1281 1400 Sulfur ppm ASTM D5185m 4250 3033 3066		ppm					
Tin ppm ASTM D5185m >15 0 0 <1							
Vanadium ppm ASTM D5185m <1							
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 250 <1 0 1 Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 60 65 64 Manganese ppm ASTM D5185m 450 1049 1015 1027 Calcium ppm ASTM D5185m 3000 1140 1144 1152 Phosphorus ppm ASTM D5185m 1350 1352 1281 1400 Sulfur ppm ASTM D5185m 4250 3033 3066 2972				>15			
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 250 <1 0 1 Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 60 65 64 Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 450 1049 1015 1027 Calcium ppm ASTM D5185m 3000 1140 1144 1152 Phosphorus ppm ASTM D5185m 1150 1075 981 1099 Zinc ppm ASTM D5185m 1350 1352 1281 1400 Sulfur ppm ASTM D5185m 4250 3033 3066 2972							
Boron ppm ASTM D5185m 250 <1		ppm					
Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 60 65 64 Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 450 1049 1015 1027 Calcium ppm ASTM D5185m 3000 1140 1144 1152 Phosphorus ppm ASTM D5185m 1150 1075 981 1099 Zinc ppm ASTM D5185m 1350 1352 1281 1400 Sulfur ppm ASTM D5185m 4250 3033 3066 2972	ADDITIVES		method	limit/base	current	•	
Molybdenum ppm ASTM D5185m 100 60 65 64 Manganese ppm ASTM D5185m <1							
Manganese ppm ASTM D5185m <1					-		
Magnesium ppm ASTM D5185m 450 1049 1015 1027 Calcium ppm ASTM D5185m 3000 1140 1144 1152 Phosphorus ppm ASTM D5185m 1150 1075 981 1099 Zinc ppm ASTM D5185m 1350 1352 1281 1400 Sulfur ppm ASTM D5185m 4250 3033 3066 2972				100			
Calcium ppm ASTM D5185m 3000 1140 1144 1152 Phosphorus ppm ASTM D5185m 1150 1075 981 1099 Zinc ppm ASTM D5185m 1350 1352 1281 1400 Sulfur ppm ASTM D5185m 4250 3033 3066 2972	•			450			
Phosphorus ppm ASTM D5185m 1150 1075 981 1099 Zinc ppm ASTM D5185m 1350 1352 1281 1400 Sulfur ppm ASTM D5185m 4250 3033 3066 2972	-						
Zinc ppm ASTM D5185m 1350 1352 1281 1400 Sulfur ppm ASTM D5185m 4250 3033 3066 2972							
Sulfur ppm ASTM D5185m 4250 3033 3066 2972							
CONTAMINANTS method limit/base current history1 history2	-						
	CONTAMINANTS		method	limit/base	current	history1	history2
Silicon ppm ASTM D5185m >25 6 6 10		nnm					
Sodium ppm ASTM D5185m >158 5 0 3		• •					
Potassium ppm ASTM D5185m >20 2 5 2							
INFRA-RED method limit/base current history1 history2	INFRA-RED		method	limit/base	current	history1	history2
Soot %	Soot %	%	*ASTM D7844	>3	0.5	0.9	0.8
Nitration Abs/cm *ASTM D7624 >20 10.2 10.3 10.5							
Sulfation Abs/.1mm *ASTM D7415 >30 22.6 21.4 22.4							
FLUID DEGRADATION method limit/base current history1 history2	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Oxidation	Oxidation	Abs/.1mm	*ASTM D7414	>25	22.1	19.5	20.5
	Base Number (BN)	mg KOH/g	ASTM D2896	8.5	6.8	7.0	7.0



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	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	TIES	method	limit/base	current	history1	history2

Visc @ 100°C	cSt	ASTM D445	14.4	14.3	14.4	14.6

	GRAPHS				
	Iron (ppm)		Lead (ppm)		
250	Severe	80	Severe	!	
된 150 100	Abnormal	Ed 40	Abnormal		<u> </u>
50		20	+		
0	23 - 23 - 23 - 23 - 23 - 23 - 23 - 23 -	- 0		23	- 23
	Oct16/23		Oct16/23	Nov19/23	Dec27/23
	Aluminum (ppm)		Chromium (ppm	1)	
50 40	Severe	- 50	Savara		-
된 30 20	Abnomal	20 E	Abnormal		-
10		10	1		
0	9/23 +	- 0		9/23	57/23
	Oct1 6/23 Nov1 9/23		Oct16/23	Nov19/23	Dec27/23
400	Copper (ppm)	80	Silicon (ppm)		
300	Severe Abnormal	60			
틆 200		E 40	Abnormal	1	
100		20			
0	Oct16/23 - Nov19/23 -	_ 0	Oct16/23 	Nov19/23 +	Dec27/23 +
	Nov1		0ct1	Nov1	Dec2
18	Viscosity @ 100°C	15.0	Base Number		
18	Viscosity @ 100°C	(B/HO)			
16	·	15.0 10.00 kg (mg KOH/g)			
CSt (100°C)	·	Number (mg KOH/g)			
(16 (0.001) 14 12	Abnormal Base	Base Number (mg KOH/g)	Abnormal Base Abnormal		
CSt (100°C)	Abnormal Base	9.00 D.00 Rase Mumber (mg KOH/g)	Abnormal Base Abnormal	Nov19/23	Dec27/23



Laboratory Sample No. Lab Number

: 06062408 Unique Number : 10833790

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0868053 Recieved

: 17 Jan 2024 Diagnosed

: 18 Jan 2024 Diagnostician : Wes Davis

Test Package : MOB 1 (Additional Tests: TBN)

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) **GO DURHAM - RAPT**

1903 FAYETTEVILLE ST DURHAM, NC US 27701

Contact: Robert Iosiniecki Robert.losiniecki@ratpdev.com

T: F:

Report Id: GODDUR [WUSCAR] 06062408 (Generated: 01/18/2024 08:41:01) Rev: 1

Contact/Location: Robert Iosiniecki - GODDUR