

## **OIL ANALYSIS REPORT**

#### Machine Id **KENWORTH T880 912 (S/N 1NKZLP0X36J427612)** Component Discost Function

Diesel Engine

SHELL ROTELLA T 15W40 (--- QTS)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

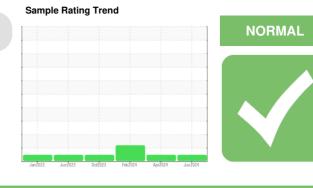
All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

### Fluid Condition

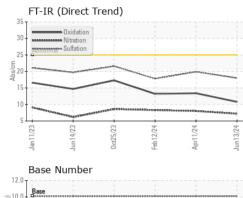
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

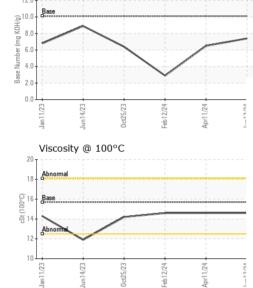


SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0917133	WC0878961	WC0878919
Sample Date		Client Info		13 Jun 2024	11 Apr 2024	12 Feb 2024
Machine Age	mls	Client Info		183723	178789	170017
Oil Age	mls	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	ABNORMAL
CONTAMINATION	٧	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	11	13	19
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	<1	0	<1
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>3	<1	0	<1
Aluminum	ppm	ASTM D5185m	>20	3	3	5
Lead	ppm	ASTM D5185m	>40	<1	<1	<1
Copper	ppm	ASTM D5185m	>330	1	<1	2
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		<1	<1	<1
Cadmium	ppm	ASTM D5185m		<1	0	<1
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 316	current 16	history1 11	history2 11
	ppm ppm					-
Boron		ASTM D5185m	316	16	11	11
Boron Barium	ppm	ASTM D5185m ASTM D5185m	316 0.0	16 <1	11 0	11 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0	16 <1 20	11 0 25	11 0 39
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0 1.2	16 <1 20 <1	11 0 25 0	11 0 39 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0 1.2 24	16 <1 20 <1 184	11 0 25 0 255 2141 902	11 0 39 <1 400 1713 922
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	316 0.0 1.2 24 2292 1064 1160	16 <1 20 <1 184 2108 989 1116	11 0 25 0 255 2141 902 1154	11 0 39 <1 400 1713 922 1131
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0 1.2 24 2292 1064	16 <1 20 <1 184 2108 989	11 0 25 0 255 2141 902	11 0 39 <1 400 1713 922 1131 3546
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	316 0.0 1.2 24 2292 1064 1160	16 <1 20 <1 184 2108 989 1116	11 0 25 0 255 2141 902 1154	11 0 39 <1 400 1713 922 1131
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm 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>	316 0.0 1.2 24 2292 1064 1160 4996	16 <1 20 <1 184 2108 989 1116 3793 current 8	11 0 25 0 255 2141 902 1154 3878 history1 6	11 0 39 <1 400 1713 922 1131 3546 history2 9
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 ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0 1.2 24 2292 1064 1160 4996 <b>limit/base</b> >25	16 <1 20 <1 184 2108 989 1116 3793 Current 8 <	11 0 25 0 255 2141 902 1154 3878 history1 6 2	11 0 39 <1 400 1713 922 1131 3546 history2 9 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm 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>	316 0.0 1.2 24 2292 1064 1160 4996	16 <1 20 <1 184 2108 989 1116 3793 current 8	11 0 25 0 255 2141 902 1154 3878 history1 6	11 0 39 <1 400 1713 922 1131 3546 history2 9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	316 0.0 1.2 24 2292 1064 1160 4996 <b>limit/base</b> >25	16 <1 20 <1 184 2108 989 1116 3793 current 8 < <1 5	11 0 25 0 255 2141 902 1154 3878 history1 6 2 18 18 history1	11 0 39 <1 400 1713 922 1131 3546 <b>history2</b> 9 0 13 <b>history2</b>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	316 0.0 1.2 24 2292 1064 1160 4996 <b>limit/base</b> >25 >20 <b>limit/base</b> >3	16 <1 20 <1 184 2108 989 1116 3793 <u>current</u> 8 <1 5 <u>current</u> 0.5	11 0 25 0 255 2141 902 1154 3878 history1 6 2 18 history1 0.4	11 0 39 <1 400 1713 922 1131 3546 history2 9 0 13 13 history2 0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	316 0.0 1.2 24 2292 1064 1160 4996 <b>limit/base</b> >25 >20	16 <1 20 <1 184 2108 989 1116 3793 <i>current</i> 8 <1 5 <i>current</i> 0.5 7.2	11 0 25 0 255 2141 902 1154 3878 history1 6 2 18 18 history1	11 0 39 <1 400 1713 922 1131 3546 <b>history2</b> 9 0 13 <b>history2</b>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	316 0.0 1.2 24 2292 1064 1160 4996 <b>limit/base</b> >25 >20 <b>limit/base</b> >3	16 <1 20 <1 184 2108 989 1116 3793 <u>current</u> 8 <1 5 <u>current</u> 0.5	11 0 25 0 255 2141 902 1154 3878 history1 6 2 18 history1 0.4	11 0 39 <1 400 1713 922 1131 3546 history2 9 0 13 history2 0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	316 0.0 1.2 24 2292 1064 1160 4996 <b>i</b> mit/base >25 >20 <b>i</b> mit/base >3 >20	16 <1 20 <1 184 2108 989 1116 3793 <i>current</i> 8 <1 5 <i>current</i> 0.5 7.2	11 0 25 0 255 2141 902 1154 3878 history1 6 2 18 history1 0.4 8.0	11 0 39 <1 400 1713 922 1131 3546 history2 9 0 13 history2 0.1 8.3
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	316 0.0 1.2 24 2292 1064 1160 4996 <b>Imit/base</b> >25 >20 <b>Imit/base</b> >3 >20 >30	16 <1 20 <1 184 2108 989 1116 3793 <b>current</b> 8 <1 5 <b>current</b> 0.5 7.2 18.0	11 0 25 0 255 2141 902 1154 3878 history1 6 2 18 history1 0.4 8.0 19.9	11 0 39 <1 400 1713 922 1131 3546 history2 9 0 13 history2 0.1 8.3 17.8



# **OIL ANALYSIS REPORT**





Test Package : MOB 1 (Additional Tests: TBN)

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

To discuss this sample report, contact Customer Service at 1-800-237-1369.

VISUAL		method	limit/base	current	history1	history2	2
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	IES	method	limit/base	current	history1	history2	2
Visc @ 100°C	cSt	ASTM D445	15.7	14.6	14.6	14.6	
GRAPHS							
Iron (ppm)			11	Lead (ppm)			
200 Severe				80 - Severe			
150				60			
Abnormal			M dd	40 - Abnormal			
50 -				20 -			
			_	0			_
Jan 11/23 Jun 14/23 Oct25/23	Feb12/24	Apr11/24	Jun 13/24	Jan 1 1/23 Jun 1 4/23	0ct25/23 Feb12/24	Apr11/24	Jun13/24
	Feb	Api	Jun			Api	Jun
Aluminum (ppm)				Chromium (p	pm)		
40 Severe	1	1		40 Severe		1	
20 - Abnormal	-		mqq	Abnormal		     	
10-				10			
0				0			_
Jan 11/23 Jun 14/23 Oct25/23	Feb12/24	Apr11/24	Jun13/24	Jan 11/23 Jun 14/23	0ct25/23 Feb12/24	Apr11/24	Jun13/24
	음	Apr	ղոր		Feb Oct	Apr	Jun
Copper (ppm)				Silicon (ppm)			
Abnormal							
300 -				60 -			
툡 200-			udd	40 - Abnormal		1	
100-				20 -		1	
0				0			-
Jan 11/23 Jun 14/23 Oct25/23	Feb 12/24	Apr11/24	Jun 13/24	Jan 11/23 Jun 14/23	0ct25/23 Feb12/24	Apr11/24	Jun13/24
		Apr	Jun			Apı	Jun
Viscosity @ 100°C			12	Base Number	•		
		1	(B)10	Bace	*****		
			mg KC	.0	<hr/>		_
(0-016 Base 14 Abnormal				.0-		/	
Abnormal			- 10 4 20 2	.0 -	$\sim$		
10							
Jan 11/23 Jun 14/23 Oct25/23	Feb12/24	Apr11/24	Jun13/24	Jan 1 1/23 Jun 1 4/23	0ct25/23 Feb12/24	Apr11/24	Jun13/24
Jan1 Jun1 Oct2	Feb 1	Aprl	Juni	Jan1	Octí Feb1	Aprì	Junt
: WearCheck USA - 50 : WC0917133 r : 06213031 er : 11085895	1 Madiso Recei Teste Diagr	ved : 17 d : 19	, NC 27513 ' Jun 2024 ) Jun 2024 Jun 2024 - Anj	cela Borella	34	N BREEDE 25 HWY 11 OSE HILL, I US 284	7N NC



Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) Report Id: JOHROSNC [WUSCAR] 06213031 (Generated: 06/20/2024 07:23:32) Rev: 1

Certificate 12367

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