

### **OIL ANALYSIS REPORT**

#### Sample Rating Trend

# NORMAL

Machine Id

# KENWORTH T880 912 (S/N 1NKZLP0X36J427612)

Diesel Engine

Fluid 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.

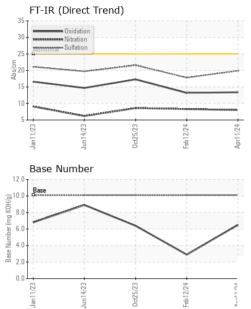
#### Fluid Condition

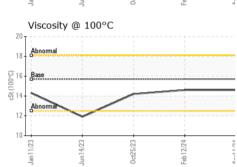
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0878961	WC0878919	WC0822273
Sample Date		Client Info		11 Apr 2024	12 Feb 2024	25 Oct 2023
Machine Age	mls	Client Info		178789	170017	155040
Oil Age	mls	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	ABNORMAL	NORMAL
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	13	19	21
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	<1	0
Titanium	ppm	ASTM D5185m	- 1	<1	<1	0
Silver	ppm	ASTM D5185m	>3	0	<1	<1
Aluminum	ppm	ASTM D5185m	>20	3	5	10
Lead	ppm	ASTM D5185m	>40	<1	<1	<1
Copper	ppm	ASTM D5185m		<1	2	1
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m	210	<1	<1	0
Cadmium	ppm	ASTM D5185m		0	<1	0
	ppm		limit/base	0 current		-
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	316	current 11	history1 11	history2 14
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	316 0.0	current 11 0	history1 11 0	history2 14 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	316	current 11 0 25	history1 11 0 39	history2 14 0 54
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0 1.2	current 11 0 25 0	history1 11 0 39 <1	history2 14 0 54 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0 1.2 24	Current 11 0 25 0 255	history1 11 0 39 <1 400	history2 14 0 54 <1 594
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0 1.2 24 2292	Current 11 0 25 0 255 2141	history1 11 0 39 <1 400 1713	history2 14 0 54 <1 594 1570
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0 1.2 24 2292 1064	Current 11 0 25 0 255 2141 902	history1 11 0 39 <1 400 1713 922	history2 14 0 54 <1 594 1570 989
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0 1.2 24 2292	Current 11 0 25 0 255 2141	history1 11 0 39 <1 400 1713	history2 14 0 54 <1 594 1570
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0 1.2 24 2292 1064 1160	Current 11 0 25 0 255 2141 902 1154	history1 11 0 39 <1 400 1713 922 1131	history2 14 0 54 <1 594 1570 989 1279
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method 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	Current 11 0 25 0 255 2141 902 1154 3878	history1 11 0 39 <1 400 1713 922 1131 3546	history2 14 0 54 <1 594 1570 989 1279 2903
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	method 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	current 11 0 25 0 255 2141 902 1154 3878 current	history1         11         0         39         <1         400         1713         922         1131         3546         history1	history2 14 0 54 <1 594 1570 989 1279 2903 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method 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	current           11           0           25           0           255           2141           902           1154           3878           current           6	history1         11         0         39         <1         400         1713         922         1131         3546         history1         9	history2           14           0           54           <1           594           1570           989           1279           2903           history2           11
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	316 0.0 1.2 24 2292 1064 1160 4996 <b>limit/base</b>	current           11           0           25           0           255           2141           902           1154           3878           current           6           2	history1         11         0         39         <1         400         1713         922         1131         3546         history1         9         0	history2         14         0         54         <1         594         1570         989         1279         2903         history2         11         1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	316 0.0 1.2 24 2292 1064 1160 4996 <b>limit/base</b> >25 >20	current           11           0           25           0           255           2141           902           1154           3878           current           6           2           18	history1         11         0         39         <1         400         1713         922         1131         3546         history1         9         0         13         history1         0.1	history2         14         0         54         <1         594         1570         989         1279         2903         history2         11         1         24
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	316 0.0 1.2 24 2292 1064 1160 4996 <b>limit/base</b> >25 >20 <b>limit/base</b> >3	current         11         0         25         0         255         2141         902         1154         3878         current         6         2         18         current	history1         11         0         39         <1         400         1713         922         1131         3546         history1         9         0         13         history1	history2         14         0         54         <1         594         1570         989         1279         2903         history2         11         1         24
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm	method           ASTM D5185m	316 0.0 1.2 24 2292 1064 1160 4996 <b>limit/base</b> >25 >20 <b>limit/base</b> >3	current         11         0         25         0         255         2141         902         1154         3878         current         6         2         18         current         0.4	history1         11         0         39         <1         400         1713         922         1131         3546         history1         9         0         13         history1         0.1	history2         14         0         54         <1         594         1570         989         1279         2903         history2         11         1         24         history2         0.7
ADDITIVES 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	method           ASTM D5185m	316 0.0 1.2 24 2292 1064 1160 4996 <i>imit/base</i> >25 >20 <i>imit/base</i> >3 >20	current         11         0         25         0         255         2141         902         1154         3878         current         6         2         18         current         0.4         8.0	history1         11         0         39         <1         400         1713         922         1131         3546         history1         9         0         13         history1         0.1         8.3	history2         14         0         54         <1         594         1570         989         1279         2903         history2         11         1         24         history2         0.7         8.6
ADDITIVES 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	method           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	current         11         0         25         0         255         2141         902         1154         3878         current         6         2         18         current         0.4         8.0         19.9	history1         11         0         39         <1         400         1713         922         1131         3546         history1         9         0         13         history1         0.1         8.3         17.8	history2         14         0         54         <1         594         1570         989         1279         2903         history2         11         1         24         history2         0.7         8.6         21.6



## **OIL ANALYSIS REPORT**





	VISUAL		method	limit/base	current	history1	histo	ry2
	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	
Apr11/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORM	1L
Apr1	Odor	scalar	*Visual	NORML	NORML	NORML	NORM	1L
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
	Free Water	scalar	*Visual		NEG	NEG	NEG	
	FLUID PROPER	RTIES	method	limit/base	current	history1	histo	ry2
/	Visc @ 100°C	cSt	ASTM D445	15.7	14.6	14.6	14.2	
	GRAPHS							
	Iron (ppm)			10	Lead (ppm)			
V.C.	200 Severe			80	0 Severe			
101 F 12-04	= 150-			_ 60	0-			
	Abnormal			ud 4	Abnormal			
	50 -				0-			
			4	4		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	4	_
	Jan 1 1/23 Jun 1 4/23	0ct25/23	Feb 12/24 -	Apr11/24	Jan11/23 Jun14/23	0ct25/23	Feb12/24	
			E.	A		_	£	
	Aluminum (ppm)	)		50	Chromium (p	pm)		
	40 - Severe			4(	0 Severe			
	= 30-			ی ط	0-			
10.1	20 - Abnormal		·····	a 2	0 - Abnormal			
And	10-			10	0-			
		~				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
	Jan 11/23 Jun 14/23	0ct25/23	Feb 12/24	Apr11/24	Jan 11/23 Jun 14/23	Jct25/23	Feb12/24	
		00	-e	Ap		-	E	
	Copper (ppm)			Silicon (ppm)				
	300 Severe					1	1	
	툡 200 -			튭.41	Abnormal			
	100			2	0		p	
	0							
	Jan 1 1/23 Jun 1 4/23	0ct25/23	Feb12/24	Apr11/24	Jan11/23 Jun14/23	0ct25/23	Feb12/24 ·	
			명	Ap		_	Feb	
	Viscosity @ 100°	С			Base Numbe	r		
	Abnormal	1		。 第10.0	Base		*****	
				(D)H010.1 H0X Bull tagung 4.1 seg				
	D 16 Base			.0 pe	1			/
	Abnormal			4.0 82 2.0			$\checkmark$	
	10							
	Jan 11/23	0ct25/23	Feb 12/24	Apr11/24	Jan11/23 Jun14/23	0ct25/23	Feb12/24	
	Junl	0ct2	Feb1	Apri	Jun1	Octž	Feb1	
oratory iple No. Number	: WearCheck USA - 5 : WC0878961 : 06151017 : 10981095	Rece Teste	ived : 16 ed : 17	r, NC 27513 6 Apr 2024 7 Apr 2024 Apr 2024 - Se	3	JOHNSON BREEDEF 3425 HWY 117 ROSE HILL, N US 284 Contact: GREG JONE		

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)

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