

### **OIL ANALYSIS REPORT**

# Sample Rating Trend

NORMAL

# KENWORTH T880 T-863 (S/N 1NKZXPEXXLJ391737)

Diesel Engine

DURALENE Dura-Max 15W40 (--- 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.

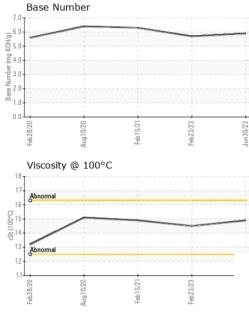
#### Fluid Condition

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

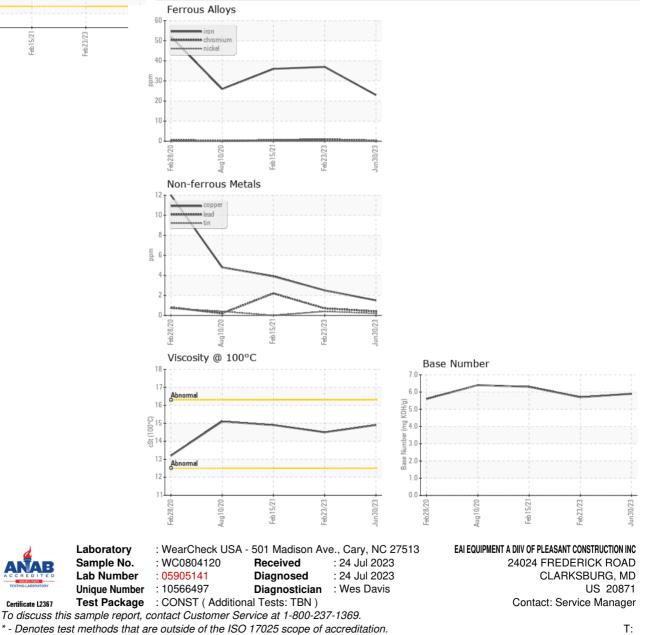
		Feb2020	Aug2020	Feb2021 Feb2023		
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0804120	WC0693456	WC0517938
Sample Date		Client Info		30 Jun 2023	23 Feb 2023	15 Feb 2021
Machine Age	mls	Client Info		197531	172460	75382
Oil Age	mls	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	ABNORMAL
CONTAMINATION	N	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
	2000	ASTM D5185m	>100	23	37	36
Iron Chromium	ppm ppm	ASTM D5185m	>100	23 <1	<1	<1
Nickel		ASTM D5185m	>20	< 1 0	<1	<1
Titanium	ppm	ASTM D5185m	>4	0 <1	<1	<1
Silver	ppm ppm	ASTM D5185m	>3	<1	0	<1
Aluminum	ppm	ASTM D5185m	>20	4	8	▲ 25
Lead		ASTM D5185m	>40	+ <1	<1	2
Copper	ppm ppm	ASTM D5185m	>330	2	2	4
Tin		ASTM D5185m	>15	2 <1	<1	4
Antimony	ppm ppm	ASTM D5185m	>10			<1
Vanadium	ppm	ASTM D5185m		<1	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ouumum	ppiii			v	0	0
						·
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 0	2	history2 4
			limit/base			4 <1
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 4	2 0 5	4 <1 3
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 4 <1	2 0 5 <1	4 <1 3 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 4 <1 54	2 0 5 <1 78	4 <1 3 <1 73
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 4 <1 54 2568	2 0 5 <1 78 2953	4 <1 3 <1 73 2794
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 4 <1 54 2568 956	2 0 5 <1 78 2953 1085	4 <1 3 <1 73 2794 993
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	limit/base	0 0 4 <1 54 2568 956 1162	2 0 5 <1 78 2953 1085 1342	4 <1 3 <1 73 2794 993 1185
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 4 <1 54 2568 956	2 0 5 <1 78 2953 1085	4 <1 3 <1 73 2794 993
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 4 <1 54 2568 956 1162	2 0 5 <1 78 2953 1085 1342	4 <1 3 <1 73 2794 993 1185
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 4 <1 54 2568 956 1162 4421	2 0 5 <1 78 2953 1085 1342 4333	4 <1 3 <1 73 2794 993 1185 3195 history2 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 4 <1 54 2568 956 1162 4421 current	2 0 5 <1 78 2953 1085 1342 4333 history1	4 <1 3 <1 73 2794 993 1185 3195 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm 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>	limit/base >25	0 0 4 <1 54 2568 956 1162 4421 current 5	2 0 5 <1 78 2953 1085 1342 4333 history1 10	4 <1 3 <1 73 2794 993 1185 3195 history2 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm 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	limit/base >25	0 0 4 <1 54 2568 956 1162 4421 current 5 1	2 0 5 <1 78 2953 1085 1342 4333 history1 10 2	4 <1 3 <1 73 2794 993 1185 3195 history2 7 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20	0 0 4 <1 54 2568 956 1162 4421 current 5 1 6	2 0 5 <1 78 2953 1085 1342 4333 history1 10 2 18	4 <1 3 <1 73 2794 993 1185 3195 history2 7 3 ▲ 54
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	limit/base >25 >20 limit/base	0 0 4 <1 54 2568 956 1162 4421 <u>current</u> 5 1 6 <u>current</u>	2 0 5 <1 78 2953 1085 1342 4333 history1 10 2 18 18 history1	4 <1 3 <1 73 2794 993 1185 3195 history2 7 3 ▲ 54 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3	0 0 4 <1 54 2568 956 1162 4421 <u>current</u> 5 1 6 <u>current</u> 0.8	2 0 5 <1 78 2953 1085 1342 4333 history1 10 2 18 18 history1 0.9	4 <1 3 <1 73 2794 993 1185 3195 history2 7 3 ▲ 54 history2 0.8
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	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3 >20	0 0 4 <1 54 2568 956 1162 4421 5 5 1 6 <i>current</i> 6 <i>current</i> 0.8 9.4	2 0 5 <1 78 2953 1085 1342 4333 history1 10 2 18 18 history1 0.9 9.9	4 <1 3 <1 73 2794 993 1185 3195 history2 7 3 ↓ 54 history2 0.8 9.5
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	limit/base >25 >20 limit/base >3 >20 >30 >30	0 0 4 <1 54 2568 956 1162 4421 <u>current</u> 5 1 6 <u>current</u> 0.8 9.4 23.2	2 0 5 <1 78 2953 1085 1342 4333 history1 10 2 18 18 history1 0.9 9.9 25.8	4 <1 3 <1 73 2794 993 1185 3195 history2 7 3  54 history2 0.8 
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 D7844 *ASTM D7624 *ASTM D7415	limit/base >25 >20 limit/base >3 >20 >30 >30	0 0 4 <1 54 2568 956 1162 4421 5 5 1 6 Current 6 0.8 9.4 23.2 Current	2 0 5 <1 78 2953 1085 1342 4333 history1 10 2 18 history1 0.9 9.9 25.8 history1	4 <13 3 <1 73 2794 993 1185 3195 history2 7 3 ↓ 54 history2 0.8 9.5 25.4 history2

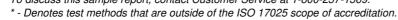


## **OIL ANALYSIS REPORT**



VISUAL		method	limit/base	current	history1	history2
VISUAL		memou	iiiiii/base	Current	TIIStOLA	TIIStoryz
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	IIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445		14.9	14.5	14.9
GRAPHS						





Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate L2367

Contact/Location: Service Manager - EAICLA

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