



# OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id  
**WESTERN STAR 30**  
Component  
**Diesel Engine**  
Fluid  
**SHELL 15W40 (42 QTS)**

## RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>RW0004653</b>	RW0004646	RW0004644
Sample Date		Client Info		<b>08 Jul 2024</b>	09 Feb 2024	01 Nov 2023
Machine Age	mls	Client Info		<b>674589</b>	664040	654294
Oil Age	mls	Client Info		<b>10204</b>	9750	10203
Filter Age	mls	Client Info		<b>10204</b>	9750	10203
Oil Changed		Client Info		<b>Changed</b>	Changed	Changed
Filter Changed		Client Info		<b>Changed</b>	Changed	Changed
Sample Status				<b>NORMAL</b>	NORMAL	ABNORMAL

## WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	<b>43</b>	37	71
Chromium	ppm	ASTM D5185m	>6	<b>&lt;1</b>	2	3
Nickel	ppm	ASTM D5185m	>4	<b>0</b>	<1	<1
Titanium	ppm	ASTM D5185m	>2	<b>0</b>	<1	<1
Silver	ppm	ASTM D5185m	>2	<b>&lt;1</b>	<1	<1
Aluminum	ppm	ASTM D5185m	>30	<b>4</b>	3	6
Lead	ppm	ASTM D5185m	>10	<b>2</b>	2	3
Copper	ppm	ASTM D5185m	>150	<b>8</b>	12	33
Tin	ppm	ASTM D5185m	>4	<b>&lt;1</b>	1	1
Vanadium	ppm	ASTM D5185m		<b>0</b>	<1	<1
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

## CONTAMINATION

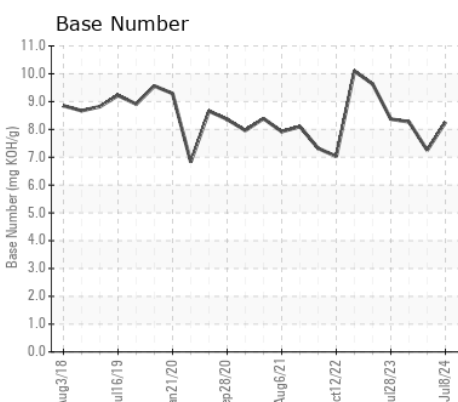
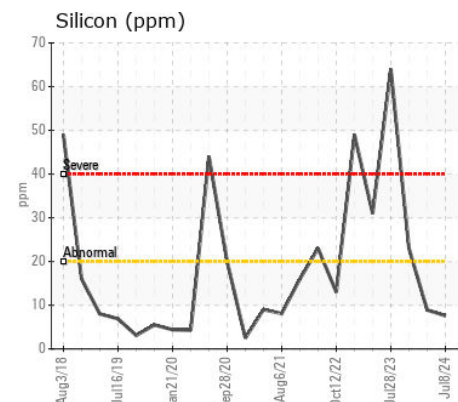
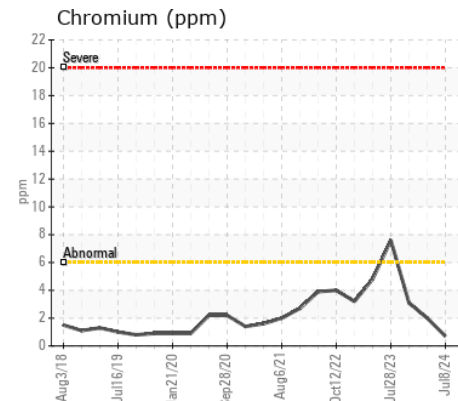
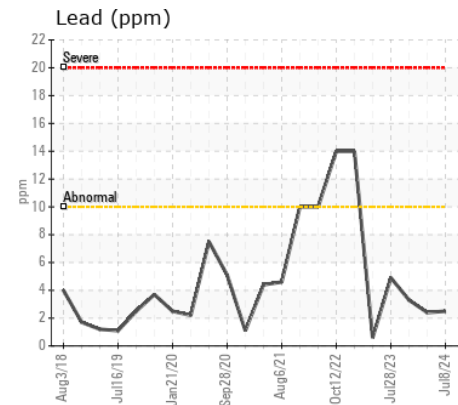
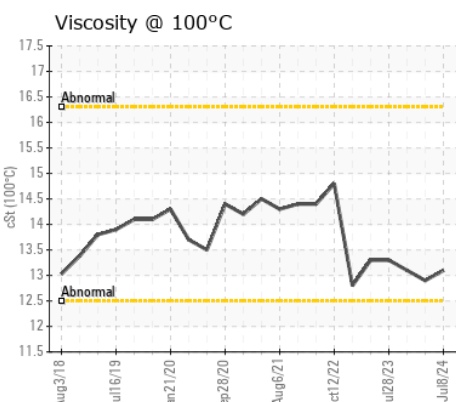
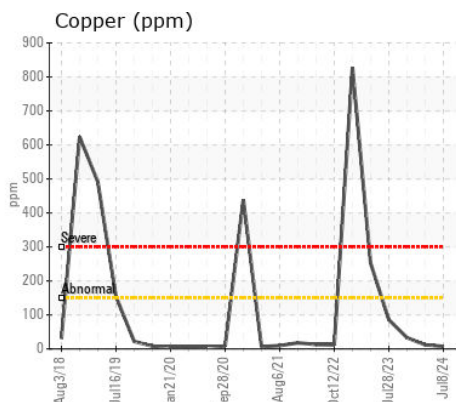
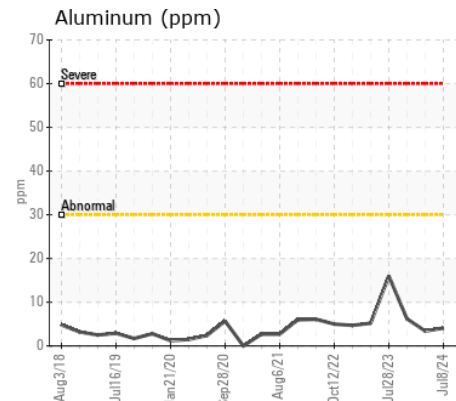
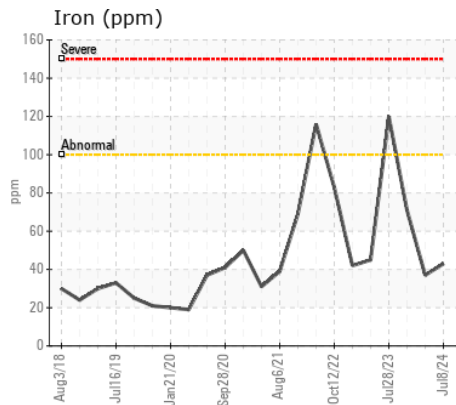
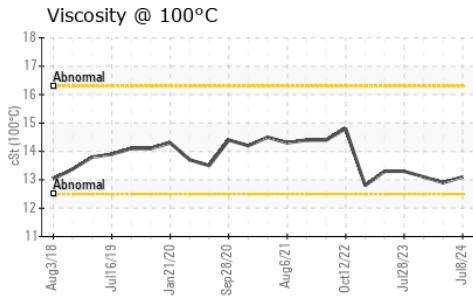
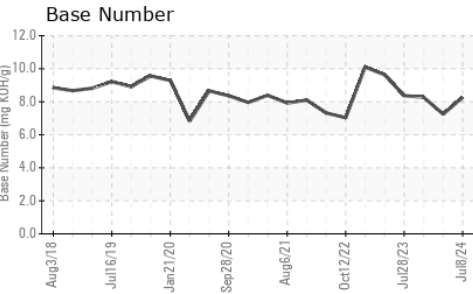
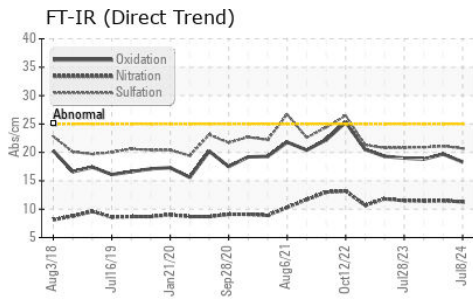
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>20	<b>8</b>	9	23
Potassium	ppm	ASTM D5185m	>20	<b>2</b>	2	4
Fuel		WC Method	>5	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.2	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.4</b>	0.3	0.4
Nitration	Abs/cm	*ASTM D7624	>20	<b>11.3</b>	11.5	11.4
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>20.7</b>	21.1	20.9
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	<b>NEG</b>	NEG	NEG

## 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.

Sodium	ppm	ASTM D5185m	>150	<b>2</b>	0	2
Boron	ppm	ASTM D5185m		<b>37</b>	44	37
Barium	ppm	ASTM D5185m		<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>87</b>	87	94
Manganese	ppm	ASTM D5185m		<b>0</b>	1	1
Magnesium	ppm	ASTM D5185m		<b>53</b>	52	64
Calcium	ppm	ASTM D5185m		<b>2277</b>	2108	2305
Phosphorus	ppm	ASTM D5185m		<b>1045</b>	911	1047
Zinc	ppm	ASTM D5185m		<b>1305</b>	1178	1297
Sulfur	ppm	ASTM D5185m		<b>4228</b>	3848	3823
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>18.3</b>	19.7	18.8
Base Number (BN)	mg KOH/g	ASTM D2896		<b>8.26</b>	7.25	8.27
Visc @ 100°C	cSt	ASTM D445		<b>13.1</b>	12.9	13.1



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : RW0004653  
**Lab Number** : 06235148  
**Unique Number** : 11123982  
**Test Package** : MOB 2

**ROTHIG FOREST PRODUCTS, INC.**  
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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)