



WEAR	<b>NORMAL</b>
CONTAMINATION	<b>NORMAL</b>
FLUID CONDITION	<b>NORMAL</b>



Machine Id  
**JOHN DEERE 310E 1DW310EXVMF710644**

Component  
**Diesel Engine**

Fluid  
**JOHN DEERE ENGINE OIL PLUS 50 II 15W40 (9 GAL)**

### RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>JR0214975</b>	JR0203451	JR0206351
Sample Date		Client Info		<b>07 May 2024</b>	26 Mar 2024	14 Mar 2024
Machine Age	hrs	Client Info		<b>3470</b>	3322	3302
Oil Age	hrs	Client Info		<b>2788</b>	2660	0
Filter Age	hrs	Client Info		<b>0</b>	0	0
Oil Changed		Client Info		<b>Changed</b>	Not Changd	Not Changd
Filter Changed		Client Info		<b>Changed</b>	Not Changd	Not Changd
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

### WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>51	<b>6</b>	27	20
Chromium	ppm	ASTM D5185m	>11	<b>0</b>	<1	0
Nickel	ppm	ASTM D5185m	>5	<b>0</b>	2	0
Titanium	ppm	ASTM D5185m		<b>0</b>	<1	0
Silver	ppm	ASTM D5185m	>3	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>31	<b>4</b>	6	3
Lead	ppm	ASTM D5185m	>26	<b>&lt;1</b>	<1	0
Copper	ppm	ASTM D5185m	>26	<b>0</b>	7	3
Tin	ppm	ASTM D5185m	>4	<b>&lt;1</b>	<1	0
Vanadium	ppm	ASTM D5185m		<b>0</b>	<1	0
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.

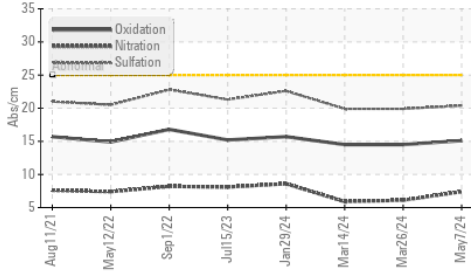
Silicon	ppm	ASTM D5185m	>22	<b>7</b>	11	7
Potassium	ppm	ASTM D5185m	>20	<b>3</b>	3	0
Fuel		WC Method	>2.1	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.21	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.2</b>	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	<b>7.4</b>	6.1	5.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>20.4</b>	19.9	19.9
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	>0.21	<b>NEG</b>	NEG	NEG

### FLUID CONDITION

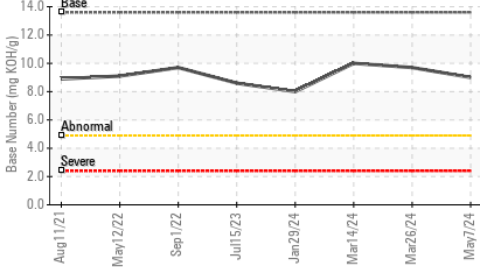
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>31	<b>2</b>	0	0
Boron	ppm	ASTM D5185m		<b>229</b>	281	243
Barium	ppm	ASTM D5185m		<b>0</b>	1	0
Molybdenum	ppm	ASTM D5185m		<b>193</b>	241	232
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	1	0
Magnesium	ppm	ASTM D5185m		<b>875</b>	766	828
Calcium	ppm	ASTM D5185m		<b>1361</b>	1379	1450
Phosphorus	ppm	ASTM D5185m		<b>1003</b>	941	911
Zinc	ppm	ASTM D5185m		<b>1120</b>	1038	1077
Sulfur	ppm	ASTM D5185m		<b>3601</b>	3113	3623
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>15.1</b>	14.5	14.5
Base Number (BN)	mg KOH/g	ASTM D2896	13.6	<b>9.0</b>	9.7	10.0
Visc @ 100°C	cSt	ASTM D445	15.4	<b>13.5</b>	13.6	13.8

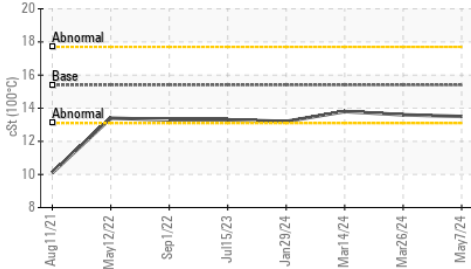
FT-IR (Direct Trend)



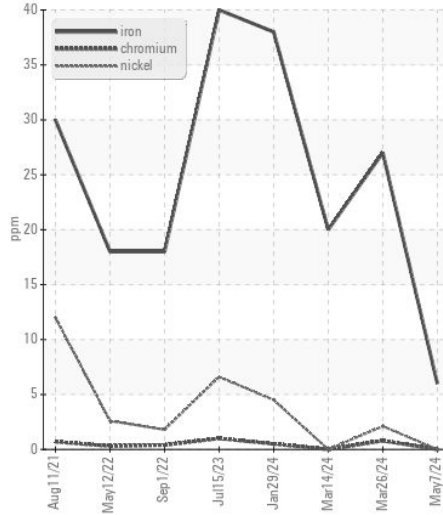
Base Number



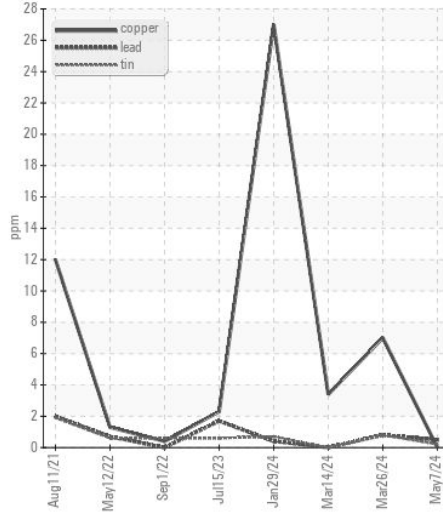
Viscosity @ 100°C



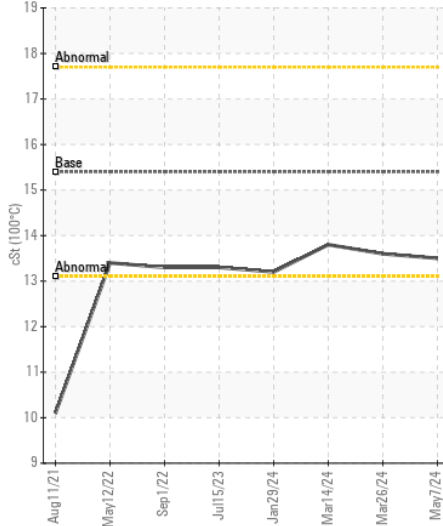
Ferrous Alloys



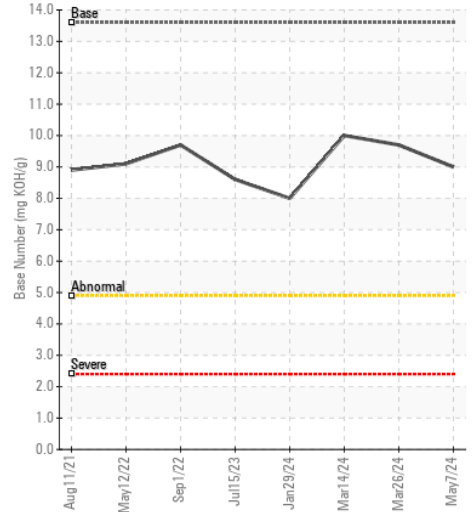
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : JR0214975 **Received** : 10 May 2024  
**Lab Number** : 06175261 **Tested** : 13 May 2024  
**Unique Number** : 11021314 **Diagnosed** : 13 May 2024 - Wes Davis  
**Test Package** : CONST ( Additional Tests: TBN )

**CARLTON'S BACKHOE**  
 9550 STATESVILLE ROAD  
 CHARLOTTE, NC  
 US 28269  
 Contact: LEO

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)

T: (704)547-0211

F: