



Machine Id
JOHN DEERE 310E 1DW310EXJNF714367

Component
Diesel Engine

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

RECOMMENDATION

We advise that you check for the source of the coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		JR0209700	JR0168249	JR0156949
Sample Date		Client Info		14 Jun 2024	08 May 2023	30 Jan 2023
Machine Age	hrs	Client Info		1681	1021	547
Oil Age	hrs	Client Info		660	474	547
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				SEVERE	NORMAL	ABNORMAL

WEAR

The copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core).

Iron	ppm	ASTM D5185m	>51	26	19	41
Chromium	ppm	ASTM D5185m	>11	1	0	<1
Nickel	ppm	ASTM D5185m	>5	7	5	▲ 17
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>31	6	5	3
Lead	ppm	ASTM D5185m	>26	3	0	2
Copper	ppm	ASTM D5185m	>26	▲ 206	25	▲ 145
Tin	ppm	ASTM D5185m	>4	<1	0	2
Vanadium	ppm	ASTM D5185m		<1	0	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

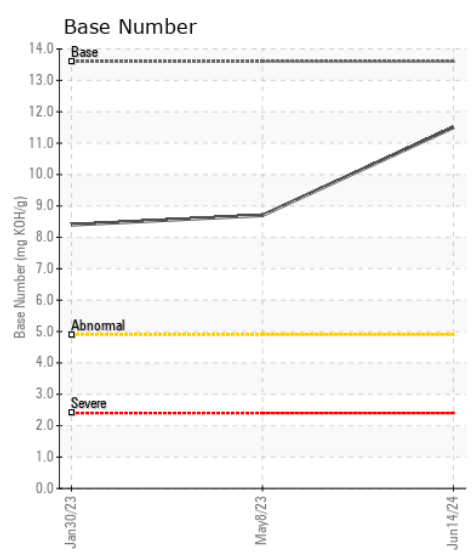
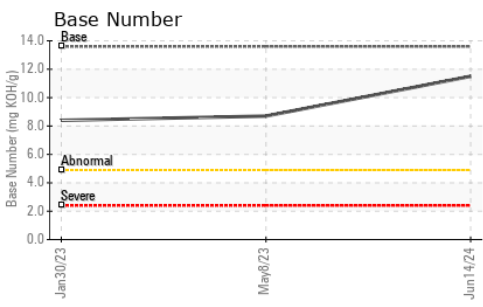
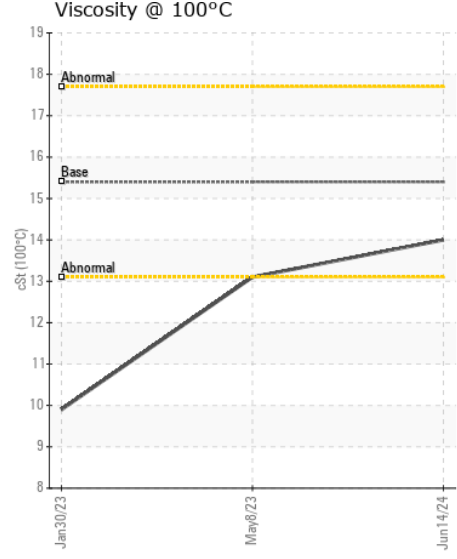
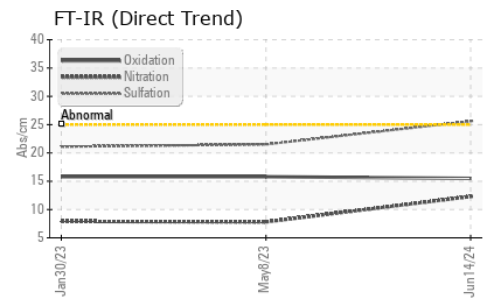
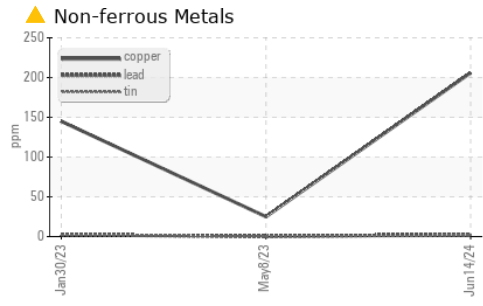
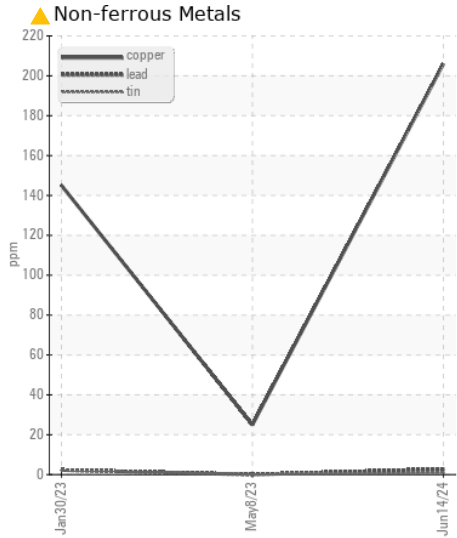
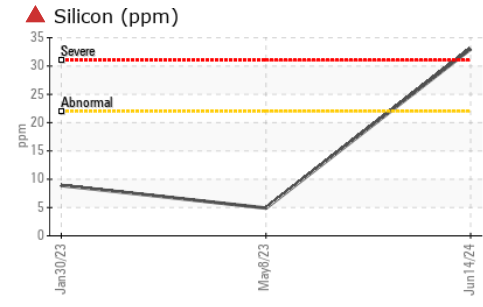
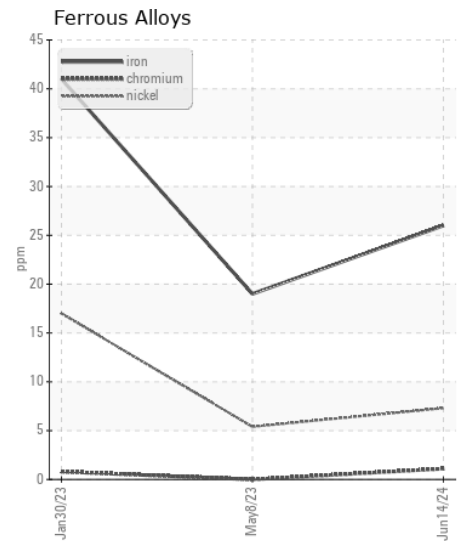
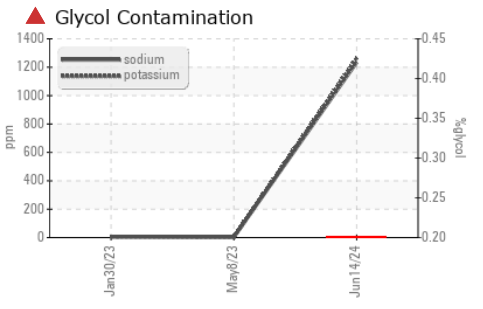
Sodium and/or potassium levels are high. There is a high concentration of glycol present in the oil. Elemental level of silicon (Si) above normal indicating ingress of seal material.

Silicon	ppm	ASTM D5185m	>22	▲ 33	5	9
Potassium	ppm	ASTM D5185m	>20	▲ 1264	2	5
Fuel		WC Method	>2.1	<1.0	<1.0	0.2
Water		WC Method	>0.21	NEG	NEG	NEG
Glycol	%	*ASTM D2982		▲ 0.20	NEG	NEG
Soot %	%	*ASTM D7844	>3	0.3	0.3	0.2
Nitration	Abs/cm	*ASTM D7624	>20	12.3	7.8	7.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	25.6	21.5	21.1
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	>0.21	NEG	NEG	NEG

FLUID CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil.

Sodium	ppm	ASTM D5185m	>31	▲ 1233	2	5
Boron	ppm	ASTM D5185m		147	206	237
Barium	ppm	ASTM D5185m		0	0	<1
Molybdenum	ppm	ASTM D5185m		316	236	234
Manganese	ppm	ASTM D5185m		2	0	2
Magnesium	ppm	ASTM D5185m		791	807	780
Calcium	ppm	ASTM D5185m		1341	1430	1348
Phosphorus	ppm	ASTM D5185m		866	838	812
Zinc	ppm	ASTM D5185m		1074	1035	979
Sulfur	ppm	ASTM D5185m		3498	3108	3347
Oxidation	Abs/.1mm	*ASTM D7414	>25	15.5	15.8	15.8
Base Number (BN)	mg KOH/g	ASTM D2896	13.6	11.5	8.7	8.4
Visc @ 100°C	cSt	ASTM D445	15.4	14.0	13.1	9.9



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : JR0209700 **Received** : 17 Jun 2024
Lab Number : 06211450 **Tested** : 20 Jun 2024
Unique Number : 11084314 **Diagnosed** : 20 Jun 2024 - Jonathan Hester
Test Package : CONST (Additional Tests: Glycol, TBN)

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Certificate L2367
 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)