

**WEAR**



Machine Id  
**JOHN DEERE 51-21**  
Component  
**Hydraulic System**  
Fluid  
**JOHN DEERE HYDRAU (120 LTR)**

**DIAGNOSIS**

**Recommendation**

We recommend that you drain the oil from the component if this has not already been done. The filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

**Wear**

Chromium ppm levels are abnormal. Ring wear is indicated.

**Contamination**

There is a light amount of silt (particulates < 14 microns in size) present in the oil.

**Fluid Condition**

Viscosity of sample indicates oil is within ISO 46 range, advise investigate. The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

SAMPLE INFORMATION	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>PC0076089</b>	PC0061420	---
Sample Date	Client Info		<b>11 Jun 2024</b>	14 Aug 2023	---
Machine Age	hrs	Client Info	<b>4480</b>	3201	---
Oil Age	hrs	Client Info	<b>0</b>	3201	---
Oil Changed	Client Info		<b>Not Chngd</b>	Not Chngd	---
Sample Status			<b>ABNORMAL</b>	ABNORMAL	---

CONTAMINATION	method	limit/base	current	history1	history2
Water	WC Method	>0.1	<b>NEG</b>	NEG	---

WEAR METALS	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>20	<b>14</b>	9
Chromium	ppm	ASTM D5185(m)	>10	<b>▲ 26</b>	▲ 17
Nickel	ppm	ASTM D5185(m)	>10	<b>1</b>	0
Titanium	ppm	ASTM D5185(m)		<b>0</b>	0
Silver	ppm	ASTM D5185(m)		<b>0</b>	0
Aluminum	ppm	ASTM D5185(m)	>10	<b>1</b>	<1
Lead	ppm	ASTM D5185(m)	>10	<b>0</b>	<1
Copper	ppm	ASTM D5185(m)	>75	<b>1</b>	2
Tin	ppm	ASTM D5185(m)	>10	<b>0</b>	0
Antimony	ppm	ASTM D5185(m)		<b>0</b>	0
Vanadium	ppm	ASTM D5185(m)		<b>0</b>	0
Beryllium	ppm	ASTM D5185(m)		<b>0</b>	0
Cadmium	ppm	ASTM D5185(m)		<b>0</b>	0

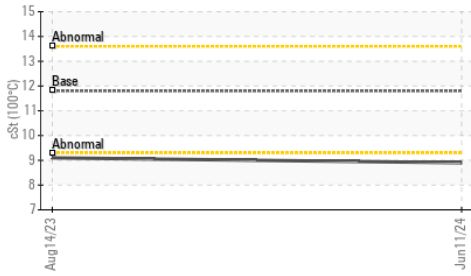
ADDITIVES	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1
Barium	ppm	ASTM D5185(m)		<b>0</b>	0
Molybdenum	ppm	ASTM D5185(m)		<b>0</b>	<1
Manganese	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1
Magnesium	ppm	ASTM D5185(m)		<b>4</b>	4
Calcium	ppm	ASTM D5185(m)	87	<b>135</b>	139
Phosphorus	ppm	ASTM D5185(m)	727	<b>620</b>	669
Zinc	ppm	ASTM D5185(m)	900	<b>817</b>	820
Sulfur	ppm	ASTM D5185(m)	1500	<b>1489</b>	1587
Lithium	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1

CONTAMINANTS	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>20	<b>1</b>	2
Sodium	ppm	ASTM D5185(m)		<b>4</b>	2
Potassium	ppm	ASTM D5185(m)	>20	<b>5</b>	6

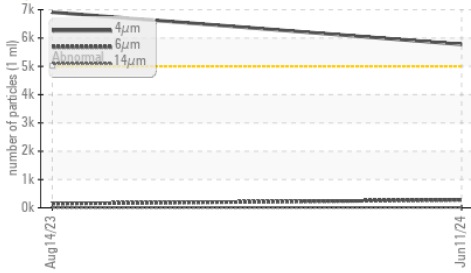
FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>5000	<b>● 5775</b>	● 6910	---
Particles >6µm	ASTM D7647	>1300	<b>279</b>	145	---
Particles >14µm	ASTM D7647	>160	<b>15</b>	8	---
Particles >21µm	ASTM D7647	>40	<b>4</b>	2	---
Particles >38µm	ASTM D7647	>10	<b>1</b>	0	---
Particles >71µm	ASTM D7647	>3	<b>1</b>	0	---
Oil Cleanliness	ISO 4406 (c)	>19/17/14	<b>● 20/15/11</b>	● 20/14/10	---

# OIL ANALYSIS REPORT

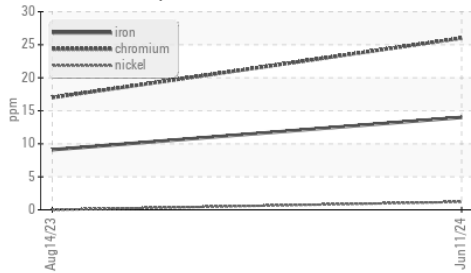
▲ Viscosity @ 100°C



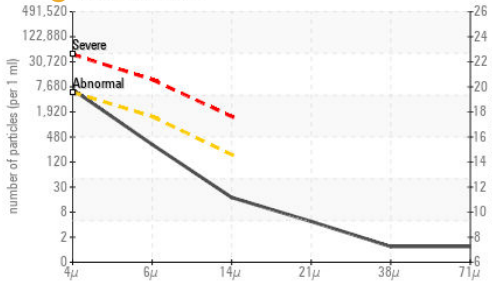
● Particle Trend



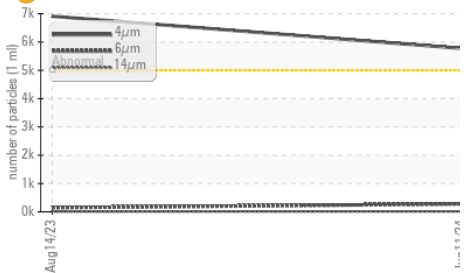
▲ Ferrous Alloys



● Particle Count



● Particle Trend



**FLUID DEGRADATION** method limit/base current history1 history2

Acid Number (AN)	mg KOH/g	ASTM D974*	1.0	<b>0.79</b>	0.84	---
------------------	----------	------------	-----	-------------	------	-----

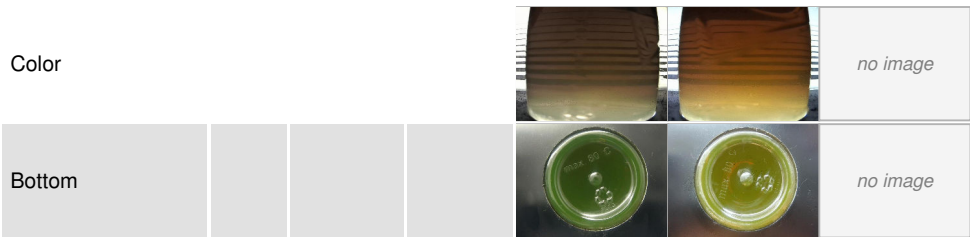
**VISUAL** method limit/base current history1 history2

White Metal	scalar	Visual*	NONE	<b>NONE</b>	NONE	---
Yellow Metal	scalar	Visual*	NONE	<b>NONE</b>	NONE	---
Precipitate	scalar	Visual*	NONE	<b>NONE</b>	NONE	---
Silt	scalar	Visual*	NONE	<b>NONE</b>	NONE	---
Debris	scalar	Visual*	NONE	<b>VLITE</b>	NONE	---
Sand/Dirt	scalar	Visual*	NONE	<b>NONE</b>	NONE	---
Appearance	scalar	Visual*	NORML	<b>NORML</b>	NORML	---
Odor	scalar	Visual*	NORML	<b>NORML</b>	NORML	---
Emulsified Water	scalar	Visual*	>0.1	<b>NEG</b>	NEG	---
Free Water	scalar	Visual*		<b>NEG</b>	NEG	---

**FLUID PROPERTIES** method limit/base current history1 history2

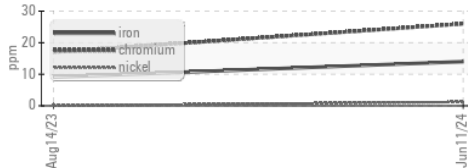
Visc @ 40°C	cSt	ASTM D7279(m)	65	▲ <b>42.3</b>	▲ 42.6	---
Visc @ 100°C	cSt	ASTM D7279(m)	11.8	▲ <b>8.9</b>	▲ 9.1	---
Viscosity Index (VI)	Scale	ASTM D2270*	178	<b>197</b>	202	---

**SAMPLE IMAGES** method limit/base current history1 history2

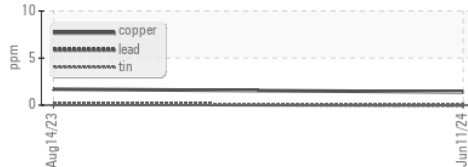


**GRAPHS**

▲ Ferrous Alloys



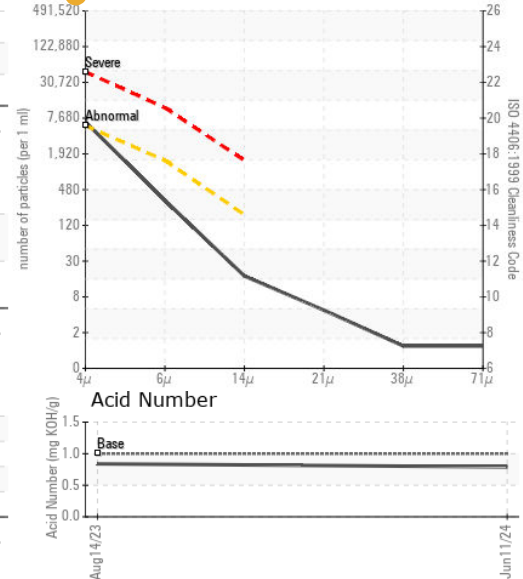
Non-ferrous Metals



▲ Viscosity @ 40°C



● Particle Count



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : PC0076089  
**Lab Number** : **02647824**  
**Unique Number** : 5813376  
**Test Package** : IND 2 ( Additional Tests: KV100, VI )  
**Received** : 15 Jul 2024  
**Tested** : 16 Jul 2024  
**Diagnosed** : 16 Jul 2024 - Kevin Marson

**TRUCK AND EQUIPMENT SOLUTION**  
 2 BERTRAM INDUSTRIAL PKWY.  
 MIDHURST, ON  
 CA L9X 1L2  
 Contact: John Irwin  
 jirwin@arnottgroup.com  
 T: (705)792-7620  
 F: (705)725-5425

To discuss this sample report, contact Customer Service at 1-800-268-2131.  
 Test denoted (\*) outside scope of accreditation, (m) method modified, (e) tested at external lab.  
 Validity of results and interpretation are based on the sample and information as supplied.