

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend

### NORMAL



Diesel Engine

JOHN DEERE ENGINE OIL PLUS 50 II 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.

SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		JR0180548	JR0088931	JR0047029
Sample Date		Client Info		11 Oct 2023	13 Aug 2021	06 May 2020
Machine Age	hrs	Client Info		2174	1435	2048
Oil Age	hrs	Client Info		0	700	0
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	۷	method	limit/base	current	history1	history2
Fuel		WC Method	>2.1	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>51	25	8	9
Chromium	ppm	ASTM D5185m	>11	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	<1	0	<1
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>31	7	<1	6
Lead	ppm	ASTM D5185m	>26	2	<1	<1
Copper	ppm	ASTM D5185m	>26	2	1	<1
Tin	ppm	ASTM D5185m	>4	1	<1	0
Antimony	ppm	ASTM D5185m			0	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current	history1 358	history2 202
	ppm ppm		limit/base			
Boron		ASTM D5185m	limit/base	107	358	202
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	107 <1	358 0	202 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	107 <1 235	358 0 128	202 0 233
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	107 <1 235 <1	358 0 128 <1	202 0 233 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	107 <1 235 <1 797	358 0 128 <1 616	202 0 233 <1 878
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	107 <1 235 <1 797 1428	358 0 128 <1 616 1484	202 0 233 <1 878 1536
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	107 <1 235 <1 797 1428 813	358 0 128 <1 616 1484 735	202 0 233 <1 878 1536 908
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	107 <1 235 <1 797 1428 813 1052	358 0 128 <1 616 1484 735 795	202 0 233 <1 878 1536 908 1019
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	107 <1 235 <1 797 1428 813 1052 2852	358 0 128 <1 616 1484 735 795 2136	202 0 233 <1 878 1536 908 1019 2578
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	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	107 <1 235 <1 797 1428 813 1052 2852 current	358 0 128 <1 616 1484 735 795 2136 history1	202 0 233 <1 878 1536 908 1019 2578 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	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 ASTM D5185m	limit/base	107 <1 235 <1 797 1428 813 1052 2852 current 15	358 0 128 <1 616 1484 735 795 2136 history1 10	202 0 233 <1 878 1536 908 1019 2578 history2 11
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	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 ASTM D5185m	limit/base >22 >31	107 <1 235 <1 797 1428 813 1052 2852 current 15 3	358 0 128 <1 616 1484 735 795 2136 history1 10 2	202 0 233 <1 878 1536 908 1019 2578 history2 11 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >22 >31 >20	107 <1 235 <1 797 1428 813 1052 2852 Current 15 3 3	358 0 128 <1 616 1484 735 795 2136 history1 10 2 1	202 0 233 <1 878 1536 908 1019 2578 history2 11 2 5
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 >22 >31 >20 limit/base >3	107 <1 235 <1 797 1428 813 1052 2852 current 15 3 3 3	358 0 128 <1 616 1484 735 795 2136 history1 10 2 1 1 history1	202 0 233 <1 878 1536 908 1019 2578 history2 11 2 5 5 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	limit/base >22 >31 >20 limit/base >3	107 <1 235 <1 797 1428 813 1052 2852 current 15 3 3 3 current 0.7	358 0 128 <1 616 1484 735 795 2136 history1 10 2 1 1 10 2 1 1 0	202 0 233 <1 878 1536 908 1019 2578 history2 11 2 5 history2 0.2
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 >22 >31 >20 limit/base >3 >20	107 <1 235 <1 797 1428 813 1052 2852 <i>current</i> 15 3 3 <i>current</i> 0.7 11.9	358 0 128 <1 616 1484 735 795 2136 history1 10 2 1 10 2 1 history1 0 7.3	202 0 233 <1 878 1536 908 1019 2578 history2 11 2 5 history2 0.2 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 D7844 *ASTM D7624 *ASTM D7415	limit/base >22 >31 >20 limit/base >3 >20 >30 >30	107 <1 235 <1 797 1428 813 1052 2852 Current 15 3 3 Current 0.7 11.9 26.4 Current	358 0 128 <1 616 1484 735 795 2136 history1 10 2 1 10 2 1 history1 0 7.3 26.5 history1	202 0 233 <1 878 1536 908 1019 2578 history2 11 2 5 history2 0.2 9.5 22.8 history2
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	Imit/base >22 >31 >20 Imit/base >3 >20 >30	107 <1 235 <1 797 1428 813 1052 2852 <u>current</u> 15 3 3 3 <u>current</u> 0.7 11.9 26.4	358 0 128 <1 616 1484 735 795 2136 history1 10 2 1 10 2 1 1 history1 0 7.3 26.5	202 0 233 <1 878 1536 908 1019 2578 history2 11 2 5 <u>history2</u> 0.2 9.5 22.8

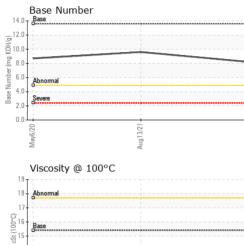


Base

May6/20

14 Abnorma 13 12.

# **OIL ANALYSIS REPORT**



		method				history2
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	>0.21	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.2	13.0	13.9
GRAPHS						
Ferrous Alloys						
25 iron			/			
20		/				
		/				
10	/					
5-						
0			0.00000			
/6/20	13/21		1/23			
May	Aug		Oct1			
Non-ferrous Metal	s					
8						
tin						
6-						
udd						
4-1						
2						
		Contraction of the local division of the loc				
0			23 +			
May6/	ug 13,		Detl1/			
<sup>19</sup>						
18 - Abnormal			12.0			
17-			( <sup>D</sup> H)10.0-			
5.0			ير 10-10-10-10-10-10-10-10-10-10-10-10-10-1			
D 10 1 D						
Base			e e e e e e e e e e e e e e e e e e e			
3			aquint 6.0	Abnormal		
14 Abnormal			(B) 10.0 - HOX 000 8.0 - Jaq 00.0 - Wang 4.0 - egg 4.0 -			
14 13 - Abnormal			2.0	Abnormal Severe		
14 Abnormal	Aug13/21		2.0		Aug13/21	
	Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPERT Visc @ 100°C GRAPHS Ferrous Alloys Competition Competitio	Sand/Dirt scalar Appearance scalar Odor scalar Emulsified Water scalar Free Water scalar Fluid PROPERTIES Visc @ 100°C cSt GRAPHS Ferrous Alloys Terrous Metals Non-ferrous Metals Non-ferrous Metals	Sand/Dirt scalar *Visual Appearance scalar *Visual Codor scalar *Visual Emulsified Water scalar *Visual Free Water scalar *Visual Free Water scalar *Visual FLUID PROPERTIES method Visc @ 100°C cSt ASTM D445 GRAPHS Ferrous Alloys Torn nickel Non-ferrous Metals Non-ferrous Metals	Sand/Dirt scalar *Visual NONE Appearance scalar *Visual NORML Odor scalar *Visual NORML Emulsified Water scalar *Visual >0.21 Free Water scalar *Visual FLUID PROPERTIES method limit/base Visc @ 100°C cSt ASTM D445 15.4 GRAPHS Ferrous Alloys On-ferrous Metals Non-ferrous Metals Viscosity @ 100°C	Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NORML NORML Odor scalar *Visual NORML NORML Emulsified Water scalar *Visual >0.21 NEG Free Water scalar *Visual NEG FLUID PROPERTIES method limit/base current Visc @ 100°C cSt ASTM D445 15.4 14.2 GRAPHS Ferrous Alloys Continue Control of the state of the s	Sand/Dirt scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML Odor scalar *Visual NORML NORML NORML Emulsified Water scalar *Visual >0.21 NEG NEG Free Water scalar *Visual NEG NEG FLUID PROPERTIES method limit/base current history1 Visc @ 100°C cSt ASTM D445 15.4 14.2 13.0 GRAPHS Ferrous Alloys Communication State of the state

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