

## **OIL ANALYSIS REPORT**

Sample Rating Trend

### NORMAL

Machine Id

# **JOHN DEERE 500-190**

### Diesel Engine

Fluid PETRO CANADA DURON SHP 15W40 (7 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

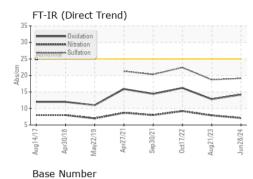
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

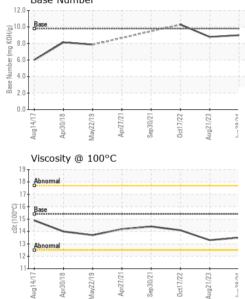
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0121250	PCA0089573	PCA0070801
Sample Date		Client Info		28 Jun 2024	21 Aug 2023	17 Oct 2022
Machine Age	hrs	Client Info		4545	4177	3600
Oil Age	hrs			548	473	500
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	<u>م</u>	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	7	9	13
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	<1	<1	0
Titanium	ppm	ASTM D5185m	0	1	0	<1
Silver	ppm	ASTM D5185m	>3	<1	0	0
Aluminum	ppm	ASTM D5185m		4	5	5
Lead	ppm	ASTM D5185m	>40	2	2	2
Copper	ppm	ASTM D5185m		2	1	1
Tin	ppm	ASTM D5185m	>15	1	<1	1
Antimony	ppm	ASTM D5185m				
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium						()
	ppm	ASTM D5185m		<1	0	0
ADDITIVES	ррпп	method	limit/base	current	history1	history2
	ppm		limit/base 0	current 7	history1 7	history2 5
ADDITIVES		method ASTM D5185m	0	current	history1	history2 5 0
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 7	history1 7	history2 5
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 7 0	history1 7 0	history2 5 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 7 0 59	history1 7 0 54	history2 5 0 57
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 7 0 59 <1	history1 7 0 54 1	history2 5 0 57 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 7 0 59 <1 970	history1 7 0 54 1 918	history2 5 0 57 <1 900
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	current     7     0     59     <1     970     1169	history1 7 0 54 1 918 1294	history2 5 0 57 <1 900 1048
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	current     7     0     59     <1     970     1169     1042	history1 7 0 54 1 918 1294 1056	history2     5     0     57     <1     900     1048     959
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current     7     0     59     <1     970     1169     1042     1286	history1 7 0 54 1 918 1294 1056 1333	history2     5     0     57     <1     900     1048     959     1157
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 7 0 59 <1 970 1169 1042 1286 3158	history1 7 0 54 1 918 1294 1056 1333 3845	history2   5   0   57   <1   900   1048   959   1157   3374
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	current   7   0   59   <1   970   1169   1042   1286   3158   current	history1 7 0 54 1 918 1294 1056 1333 3845 history1	bistory2   5   0   57   <1   900   1048   959   1157   3374   bistory2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 <b>limit/base</b>	current     7     0     59     <1     970     1169     1042     1286     3158     current     4	history1   7   0   54   1   918   1294   1056   1333   3845   history1   4	history2     5     0     57     <1     900     1048     959     1157     3374     history2     4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 <b>limit/base</b>	current     7     0     59     <1     970     1169     1042     1286     3158     current     4     4	history1   7   0   54   1   918   1294   1056   1333   3845   history1   4   1	history2   5   0   57   <1   900   1048   959   1157   3374   history2   4   2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 >20	current   7   0   59   <1   970   1169   1042   1286   3158   current   4   3	history1   7   0   54   1   918   1294   1056   1333   3845   history1   4   1   3	history2   5   0   57   <1   900   1048   959   1157   3374   history2   4   2   2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >25	current   7   0   59   <1   970   1169   1042   1286   3158   current   4   3   current	history1   7   0   54   1   918   1294   1056   1333   3845   history1   4   1   3   history1	history2   5   0   57   <1   900   1048   959   1157   3374   history2   4   2   2   history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method   ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 imit/base >20	current   7   0   59   <1   970   1169   1042   1286   3158   current   4   3   current   0.6	history1   7   0   54   1   918   1294   1056   1333   3845   history1   4   1   3   history1   0.9	history2   5   0   57   <1   900   1048   959   1157   3374   history2   4   2   2   history2   1.4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method   ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 imit/base >20	current   7   0   59   <1   970   1169   1042   1286   3158   current   4   4   3   current   0.6   7.1	history1   7   0   54   1   918   1294   1056   1333   3845   history1   4   1   3   history1   0.9   7.9	history2   5   0   57   <1   900   1048   959   1157   3374   history2   4   2   2   history2   1.4   9.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method   ASTM D5185m   ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >3 >20	current   7   0   59   <1   970   1169   1042   1286   3158   current   4   3   current   0.6   7.1   19.1	history1   7   0   54   1   918   1294   1056   1333   3845   history1   4   1   3   history1   0.9   7.9   18.7	history2   5   0   57   <1   900   1048   959   1157   3374   history2   4   2   history2   1.4   9.2   22.4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method   ASTM D5185m   ASTM D7185M   ASTM D7624   *ASTM D7415   method	0 0 0 1010 1070 1150 2260 225 220 220 imit/base 23 20 20 330	current   7   0   59   <1   970   1169   1042   1286   3158   current   4   3   current   0.6   7.1   19.1   current	history1   7   0   54   1   918   1294   1056   1333   3845   history1   4   1   3   history1   0.9   7.9   18.7   history1	history2   5   0   57   <1   900   1048   959   1157   3374   history2   4   2   history2   1.4   9.2   22.4   history2

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# **OIL ANALYSIS REPORT**





end)					VISUAL	_		n	nethod	limit/b	base	currer	nt	his	tory1		history	/2
				W	hite Meta	al	scala	ar *V	isual	NONE		NONE		NON	IE	Ν	IONE	
				Y	ellow Met	al	scala	ar *V	isual	NONE		NONE		NON	IE	Ν	IONE	
THE R. D. LEWIS Co., LANSING MICH.	-			Р	recipitate		scala	ar *V	isual	NONE		NONE		NON	IE	Ν	IONE	
	-		-	S	ilt		scala	ar *V	isual	NONE		NONE		NON	IE	Ν	IONE	
	NAMES OF TAXABLE			D	ebris		scala	ar *V	isual	NONE		NONE		NON			IONE	
					and/Dirt		scala	ar *V	isual	NONE		NONE		NON			IONE	
Apr27/21 Sep30/21	0ct17/22	Aug21/23	Jun28/24		ppearanc	е	scala		isual	NORM		NORML		NOF			IORML	
Ar	00	Au	ηη		dor		scala		isual	NORM	IL	NORML	-	NOF			IORML	-
					mulsified		scala		isual	>0.2		NEG		NEG			IEG	
				F	ree Water	ſ	scala	ar *V	isual			NEG		NEG		Ν	IEG	
1 70 70 40 10 70 70 10 10		$\sim$			FLUID	PROP	PERTIE	S n	nethod	limit/b	oase	currer	nt	his	tory1		history	/2
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				250 <del>-</del>	Iron (ppr	n)					100 <del>т</del>	Lead (pp	m)					
121-	22 -	/23	V.C.	200-	Severe						80-	Severe						
Apr27/21 Sep30/21	0ct17/22	Aug21/23	10/86 mil	= 150-							F 60-							
		4		E 150 -	Abnormal			1			und 40	Abnormal						
2				50							20-							
				0	8	5	21-		N M	*	0	8	6	21	21	2		
					Aug14/17. Apr30/18	May22/19	Apr27/21	Sep30/21	0ct1 //22 Aug21/23	Jun28/24		Aug14/17. Apr30/18	May22/19	Apr27/21	Sep30/21	0ct17/22	Aug21/23	Jun28/24
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				40-	Severe						40	0.000						
Apr27/21 - Sep30/21 -	0ct17/22 -	1/23	V C/ B	e <sup>30</sup> -	Abnormal		1	-		1	e <sup>30</sup>	Abnormal						
Apr27/21 Sep30/21	0ct1	Aug21/23	0.901	10							10-							
				0	8	5			3 2	4	0	8	6			2		+
					Aug 14/17 Apr30/18	May22/19	Apr27/21	Sep30/21	0ct1//22 Aug21/23	Jun28/24		Aug14/17 Apr30/18	May22/19	Apr27/21	Sep30/21	0ct17/22	Aug21/23	Jun28/24
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					Viscosity		°C					Base Nur						
				<sup>20</sup>							@ <sup>12.0</sup>	Base				1		
				18- 0	Abnormal						Base Number (mg KOH/g) 6.0 4.0 2.0			AND DESCRIPTION OF	pd at 10 10 10 10		$\sim$	_
				(0-016- 14-	Base				*****		ju 6.0	/						
					Abnormal						4.0 ·							
				12 10							88 2.0 0.0							
					Aug 14/17 - Apr30/18 -	2/19	Apr27/21	Sep30/21+	Oct1 //22 + Aug21/23 -	8/24	0.04	- 4/17	2/19	Apr27/21-	Sep30/21-	7/22	1/23	8/24
					Aug14/17 Apr30/18	May22/19	Apr2	Sep	0ct1 //22 Aug21/23	Jun28/24		Aug14/17 Apr30/18	May22/19	Apr2	Sep 3	0ct17/22	Aug21/23	Jun28/24
		aborato																
4		earCheck			Madison Ave., Cary, NC 27513 Received : 08 Jul 2024					GI	GE MARSHALL EXCAVATION							
ANAB			229933	U					Jul 2024 Jul 2024			1351 JOLIET RD VALPARAISO, IN						
TESTING LABORATORY	mber	:11	113426			ignose		9 Jul 202		s Davis		US 46385						
Certificate L2367						sts: TBN)						Contact: MARK STEFFEL mark.steffel@gemarshall.com						
To discuss * - Denotes														mark.s	tettel@	ygema	rsnall.	com T:
- Denotes Statements											ision r	ule (JCGI	И 106:	:2012)				F:
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