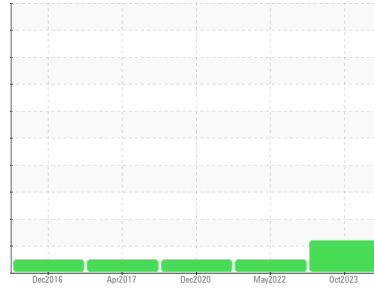


Machine Id
JOHN DEERE 190-152
 Component
Diesel Engine
 Fluid
PETRO CANADA DURON SHP 15W40 (12 LTR)



DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

Light fuel dilution occurring.

Fluid Condition

The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	PCA0106847	PCA0057437	PCA0035000
Sample Date	Client Info	13 Oct 2023	18 May 2022	21 Dec 2020
Machine Age	hrs	12196	11600	11100
Oil Age	hrs	596	500	500
Oil Changed	Client Info	Changed	Changed	Changed
Sample Status		MARGINAL	NORMAL	NORMAL

CONTAMINATION

method	limit/base	current	history1	history2
Glycol	WC Method	NEG	NEG	NEG

WEAR METALS

method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m >100	25	16	19
Chromium	ppm	ASTM D5185m >20	1	<1	<1
Nickel	ppm	ASTM D5185m >4	<1	0	0
Titanium	ppm	ASTM D5185m	<1	0	<1
Silver	ppm	ASTM D5185m >3	0	<1	0
Aluminum	ppm	ASTM D5185m >20	8	3	0
Lead	ppm	ASTM D5185m >40	0	<1	<1
Copper	ppm	ASTM D5185m >330	3	2	3
Tin	ppm	ASTM D5185m >15	<1	<1	<1
Antimony	ppm	ASTM D5185m	---	---	0
Vanadium	ppm	ASTM D5185m	<1	0	0
Cadmium	ppm	ASTM D5185m	<1	0	0

ADDITIVES

method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m 0	5	6	13
Barium	ppm	ASTM D5185m 0	<1	0	0
Molybdenum	ppm	ASTM D5185m 60	91	60	66
Manganese	ppm	ASTM D5185m 0	<1	<1	<1
Magnesium	ppm	ASTM D5185m 1010	1415	954	860
Calcium	ppm	ASTM D5185m 1070	1692	1138	1162
Phosphorus	ppm	ASTM D5185m 1150	1582	1057	1033
Zinc	ppm	ASTM D5185m 1270	1961	1227	1120
Sulfur	ppm	ASTM D5185m 2060	5639	2853	2656
Lithium	ppm	ASTM D5185m	---	---	---

CONTAMINANTS

method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m >25	8	3	1
Sodium	ppm	ASTM D5185m	5	0	<1
Potassium	ppm	ASTM D5185m >20	5	0	5
Fuel	%	ASTM D3524 >5	▲ 3.9	<1.0	<1.0

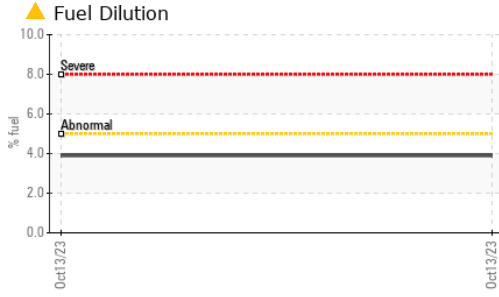
INFRA-RED

method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844 >3	0.7	0.8	0.9
Nitration	Abs/cm	*ASTM D7624 >20	8.3	8.5	8
Sulfation	Abs/.1mm	*ASTM D7415 >30	18.7	18.6	19.9

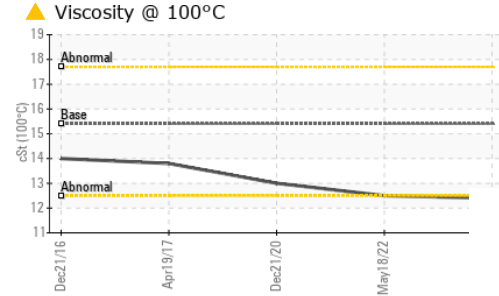
FLUID DEGRADATION

method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	*ASTM D7414 >25	14.3	14.5	15.3
Base Number (BN)	mg KOH/g	ASTM D2896 9.8	8.7	8.3	---

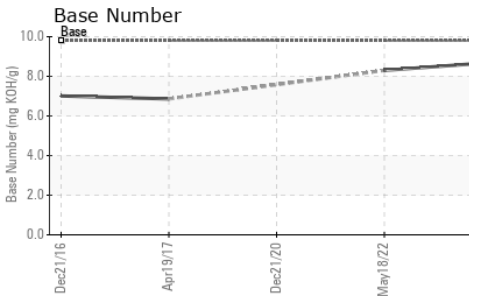
OIL ANALYSIS REPORT



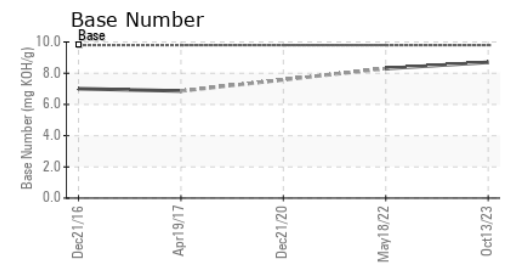
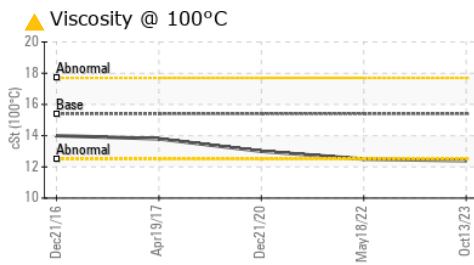
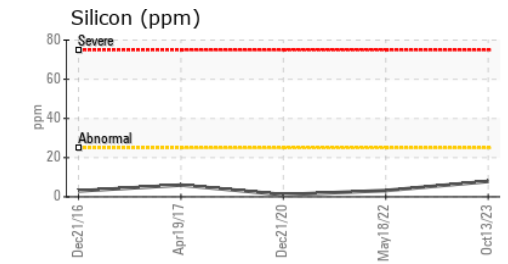
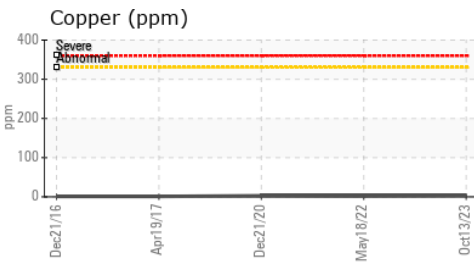
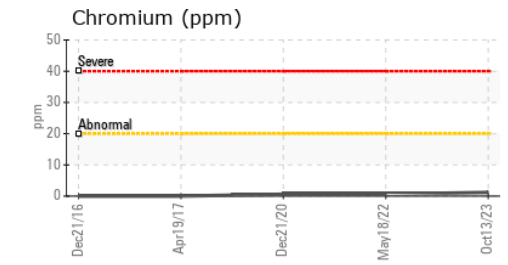
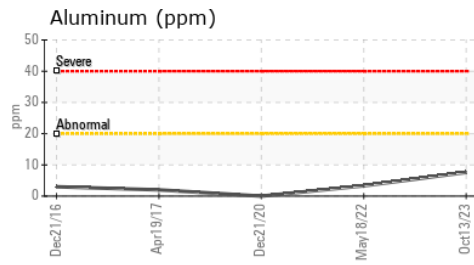
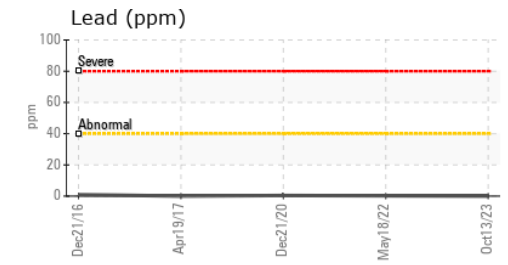
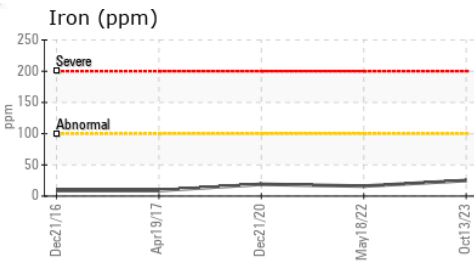
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG



FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4 ▲ 12.4	12.5	13.0



GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0106847 **Received** : 01 Nov 2023
Lab Number : 05995428 **Diagnosed** : 06 Nov 2023
Unique Number : 10723788 **Diagnostician** : Jonathan Hester
Test Package : MOB 1 (Additional Tests: FUELDILUTION, PercentFuel, TBN)

GE MARSHALL EXCAVATION
 1351 JOLIET RD
 VALPARAISO, IN
 US 46385
 Contact: MARK STEFFEL
 mark.steffel@gemarshall.com

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)