



TRAAP

Texas Refinery Advanced Analysis Program

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	MARGINAL
FLUID CONDITION	ATTENTION

Machine Id
MELROE BOBCAT 610

Component
Gasoline Engine

Fluid
TRC MOLY XL PRO-SPEC IV 10W30 (4 QTS)

RECOMMENDATION

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

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		TR04139965	TR03334628	TR00676661
Sample Date		Client Info		15 Jun 2016	16 Jul 2013	07 Oct 2003
Machine Age	mths	Client Info		0	0	0
Oil Age	mths	Client Info		0	0	100
Filter Age	mths	Client Info		0	0	100
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ATTENTION	ABNORMAL	ABNORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>150	48	84	48
Chromium	ppm	ASTM D5185m	>20	3	5	<1
Nickel	ppm	ASTM D5185m	>5	0	<1	<1
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>40	9	11	▲ 30
Lead	ppm	ASTM D5185m	>50	9	8	16
Copper	ppm	ASTM D5185m	>155	44	22	11
Tin	ppm	ASTM D5185m	>10	7	1	0
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

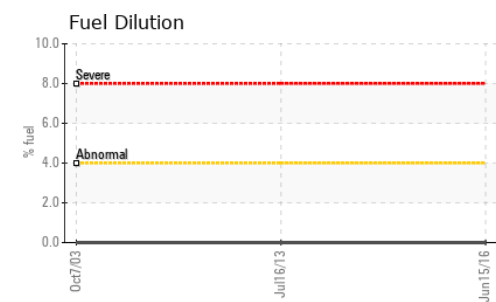
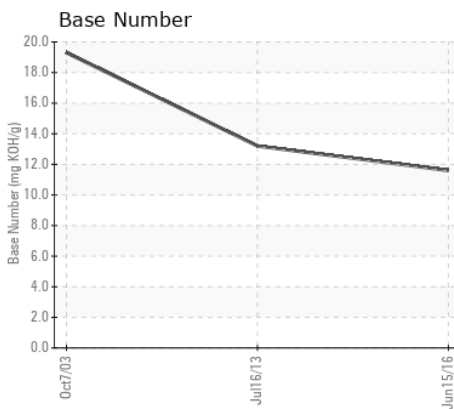
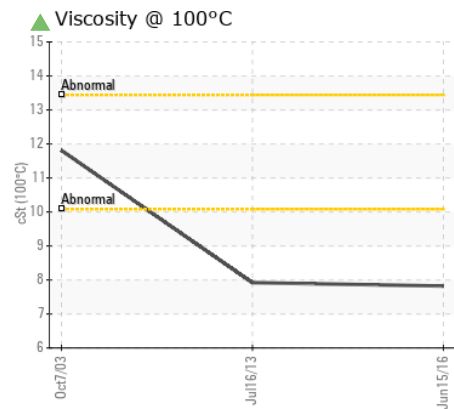
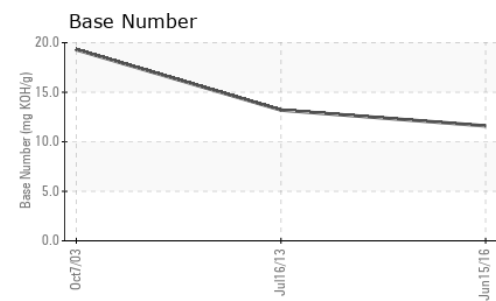
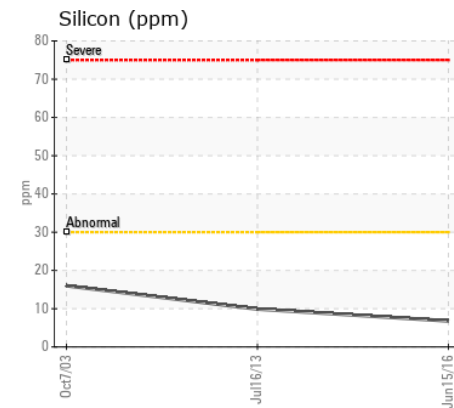
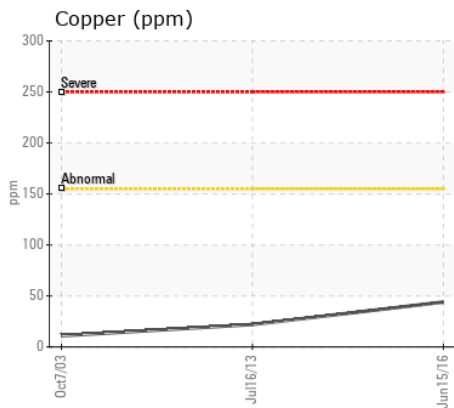
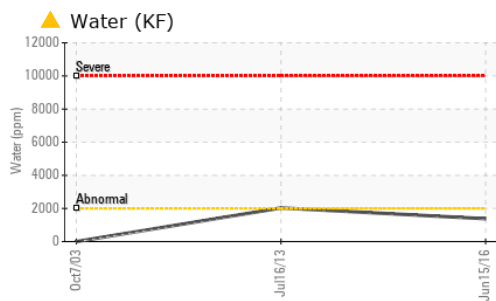
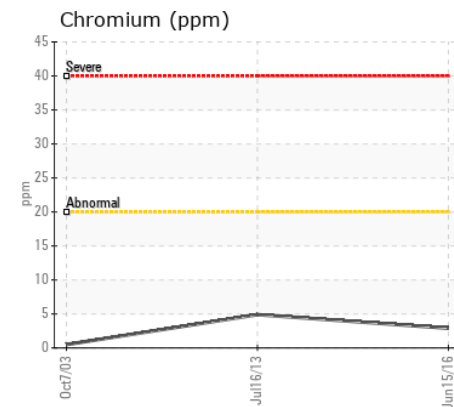
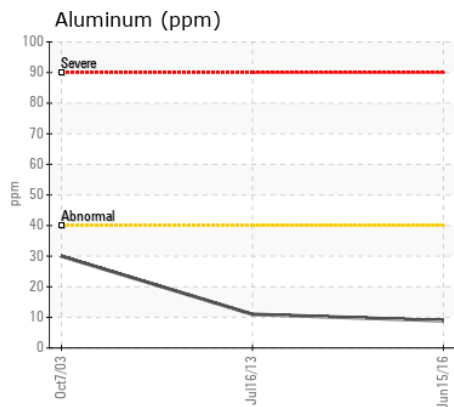
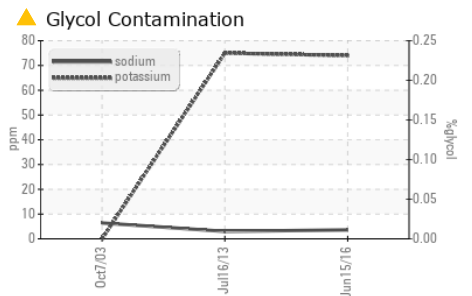
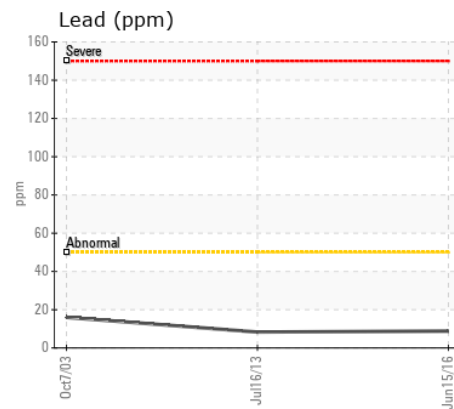
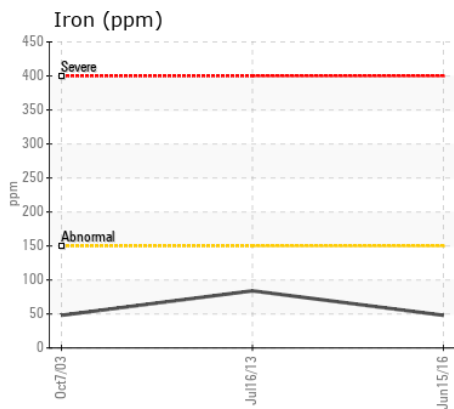
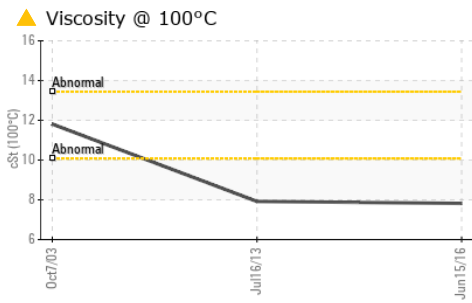
Sodium and/or potassium levels are high. There is a light concentration of water present in the oil. Test for glycol is negative.

Silicon	ppm	ASTM D5185m	>30	7	10	16
Potassium	ppm	ASTM D5185m	>20	▲ 74	▲ 75	0
Fuel	%	ASTM D3524	>4.0	<1.0	<1.0	<1.0
Water	%	ASTM D6304	>0.2	▲ 0.138	▲ 0.203	▲ 0.640
ppm Water	ppm	ASTM D6304	>2000	▲ 1380	▲ 2030	---
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0	0.1	0.1
Nitration	Abs/cm	*ASTM D7624		9.	7.	0.20
Sulfation	Abs/.1mm	*ASTM D7415		21.	21.	0.29
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	>0.2	NEG	NEG	▲ 0.5%

FLUID CONDITION

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

Sodium	ppm	ASTM D5185m	>400	4	3	6
Boron	ppm	ASTM D5185m		52	73	3
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		226	247	241
Manganese	ppm	ASTM D5185m		2	2	1
Magnesium	ppm	ASTM D5185m		185	46	721
Calcium	ppm	ASTM D5185m		3416	4209	5785
Phosphorus	ppm	ASTM D5185m		1265	1060	1257
Zinc	ppm	ASTM D5185m		1318	1180	1617
Sulfur	ppm	ASTM D5185m		4654	3573	7189
Oxidation	Abs/.1mm	*ASTM D7414		18.	13.	0.27
Base Number (BN)	mg KOH/g	ASTM D2896		11.6	13.2	19.3
Visc @ 100°C	cSt	ASTM D445		▲ 7.82	▲ 7.92	▲ 11.81



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TR04139965 **Received** : 11 Jan 2017
Lab Number : 04139965 **Tested** : 13 Jan 2017
Unique Number : 7663351 **Diagnosed** : 13 Jan 2017 - Doug Bogart
Test Package : MOB 2 (Additional Tests: FuelDilution, KF, TAN Man)

To discuss this sample report, contact Customer Service at 1-800-827-0711.

* - 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)

PHIL HARDER
 57803 350TH STREET
 MOUNTAIN LAKE, MN
 US 56159
 Contact: PHILIP HARDER
 philbren@frontiernet.net
 T: 5(07) 227-6074
 F: