



OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL

Machine Id
WESTERN STAR 118787

Component
Front Diesel Engine

Fluid
SAE 15W40 (11 GAL)

RECOMMENDATION

We advise that you check for possible coolant leak. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		KLMFA09341	KLMFA13593	KLMFA12069
Sample Date		Client Info		17 Feb 2015	29 Sep 2014	27 May 2014
Machine Age	mls	Client Info		767805	744481	716101
Oil Age	mls	Client Info		610486	561162	558782
Filter Age	mls	Client Info		291709	268385	240005
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Filter Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				ABNORMAL	ABNORMAL	ABNORMAL

WEAR

The iron level is abnormal. All other component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	▲ 173	▲ 149	▲ 161
Chromium	ppm	ASTM D5185m	>20	4	3	3
Nickel	ppm	ASTM D5185m	>2	2	2	1
Titanium	ppm	ASTM D5185m	>2	<1	<1	0
Silver	ppm	ASTM D5185m	>2	<1	0	<1
Aluminum	ppm	ASTM D5185m	>25	10	8	9
Lead	ppm	ASTM D5185m	>40	20	20	24
Copper	ppm	ASTM D5185m	>330	18	17	16
Tin	ppm	ASTM D5185m	>15	0	0	4
Vanadium	ppm	ASTM D5185m		<1	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

Sodium and/or potassium levels remain high indicating a possible coolant leak.

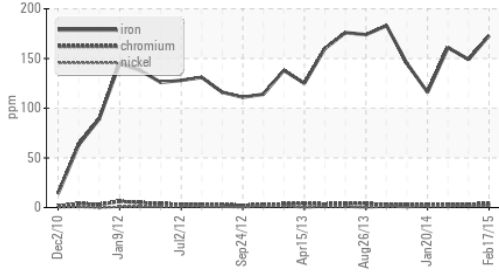
Silicon	ppm	ASTM D5185m	>25	9	10	8
Potassium	ppm	ASTM D5185m	>20	▲ 73	▲ 87	▲ 84
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol	%	*ASTM D2982		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	0.6	0.5	0.2
Nitration	Abs/cm	*ASTM D7624		11.	11.	6.
Sulfation	Abs/.1mm	*ASTM D7415		25.	23.	16.
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	NEG

FLUID CONDITION

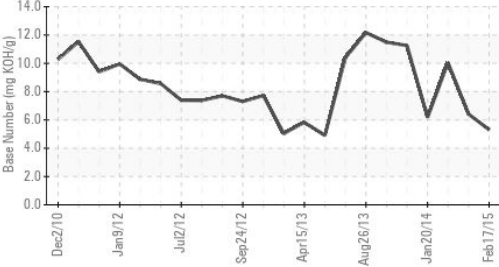
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

Sodium	ppm	ASTM D5185m		5	5	6
Boron	ppm	ASTM D5185m		131	136	147
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		84	76	80
Manganese	ppm	ASTM D5185m		1	1	4
Magnesium	ppm	ASTM D5185m		416	373	350
Calcium	ppm	ASTM D5185m		1625	1736	1633
Phosphorus	ppm	ASTM D5185m		982	952	997
Zinc	ppm	ASTM D5185m		1245	1232	1216
Sulfur	ppm	ASTM D5185m		1079	3182	683
Oxidation	Abs/.1mm	*ASTM D7414		29.	22.	13.
Base Number (BN)	mg KOH/g	ASTM D2896		5.31	6.41	10.04
Visc @ 100°C	cSt	ASTM D445	14.5	15.94	14.41	15.73

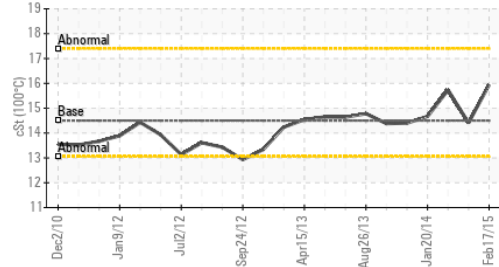
▲ Ferrous Alloys



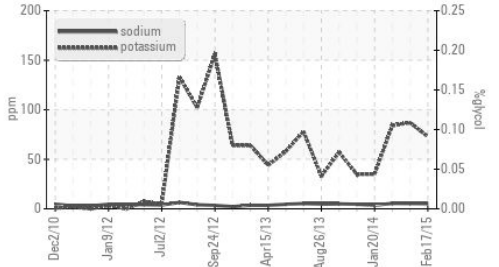
Base Number



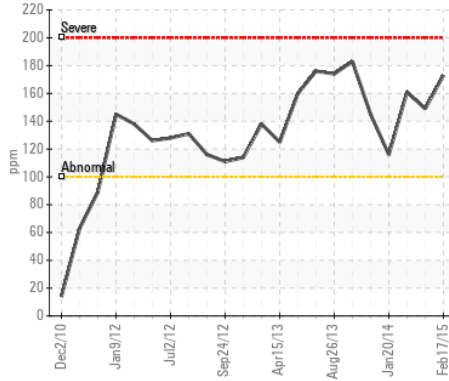
Viscosity @ 100°C



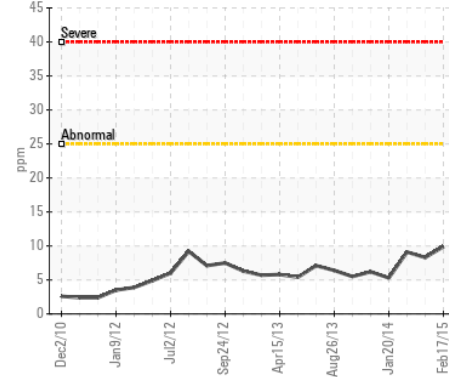
Glycol Contamination



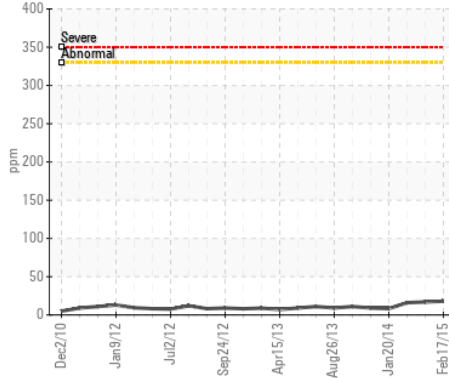
▲ Iron (ppm)



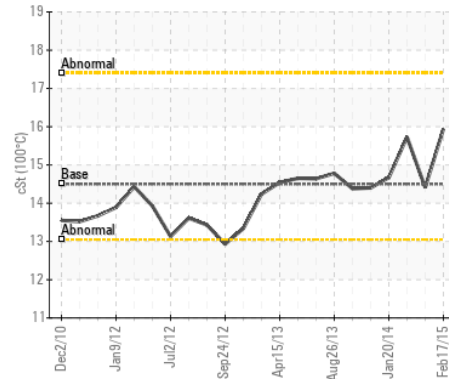
Aluminum (ppm)



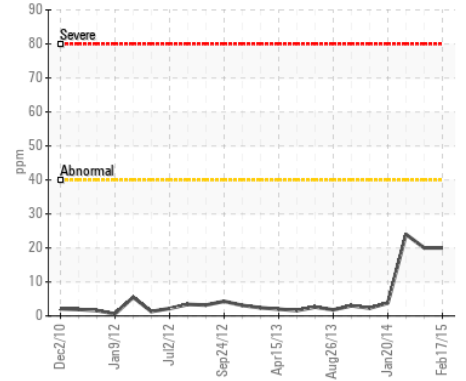
Copper (ppm)



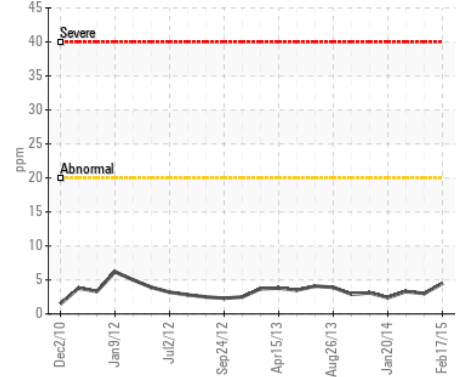
Viscosity @ 100°C



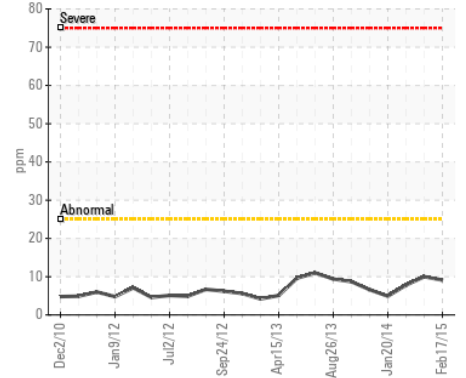
Lead (ppm)



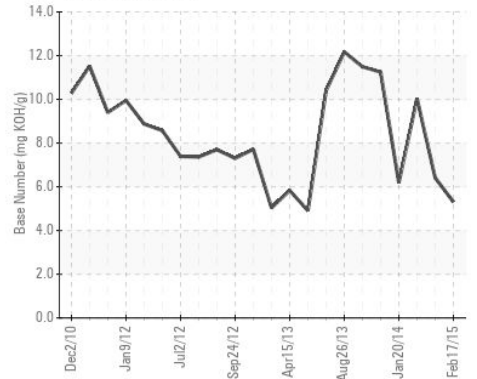
Chromium (ppm)



Silicon (ppm)



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KLMFA09341 **Received** : 04 Mar 2015
Lab Number : 03694299 **Diagnosed** : 05 Mar 2015
Unique Number : 6927297 **Diagnostician** : Elizabeth Valachovic
Test Package : MOB 2 (Additional Tests: Glycol, PQ)

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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)