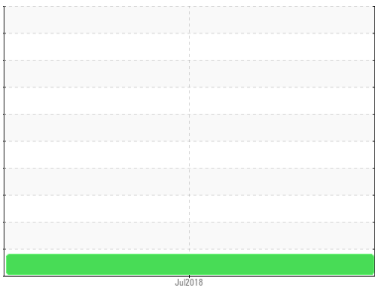
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Machine Id
CATERPILLAR 12H GRADER 6438 TRANSMISSION PLUS (S/N 8MN00572)
Component
Differential
Fluid
TULCO LUBSOIL TO-4 30 (--- GAL)

DIAGNOSIS

Recommendation
No corrective action is recommended at this time. Resample at the next service interval to monitor.

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

Contamination
There is no indication of any contamination in the oil.

Fluid Condition
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**TO1006382**	---	---
Sample Date		Client Info		**14 Jul 2018**	---	---
Machine Age	hrs	Client Info		**13328**	---	---
Oil Age	hrs	Client Info		**0**	---	---
Oil Changed		Client Info		**Not Changd**	---	---
Sample Status				**ABNORMAL**	---	---

CONTAMINATION		method	limit/base	current	history1	history2
Water		WC Method	>.2	**NEG**	---	---

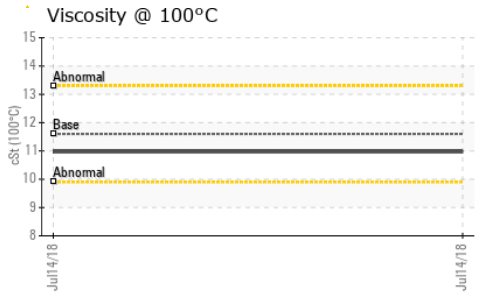
WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184		**24**	---	---
Iron	ppm	ASTM D5185m	>500	**32**	---	---
Chromium	ppm	ASTM D5185m	>3	**<1**	---	---
Nickel	ppm	ASTM D5185m	>3	**<1**	---	---
Titanium	ppm	ASTM D5185m	>2	**<1**	---	---
Silver	ppm	ASTM D5185m	>2	**0**	---	---
Aluminum	ppm	ASTM D5185m	>30	**22**	---	---
Lead	ppm	ASTM D5185m	>13	**1**	---	---
Copper	ppm	ASTM D5185m	>103	▲ **105**	---	---
Tin	ppm	ASTM D5185m	>5	**0**	---	---
Antimony	ppm	ASTM D5185m		**0**	---	---
Vanadium	ppm	ASTM D5185m		**0**	---	---
Cadmium	ppm	ASTM D5185m		**0**	---	---

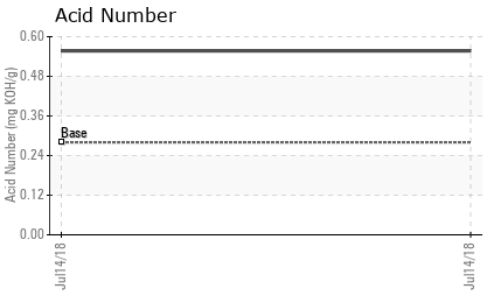
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**8**	---	---
Barium	ppm	ASTM D5185m		**<1**	---	---
Molybdenum	ppm	ASTM D5185m		**3**	---	---
Manganese	ppm	ASTM D5185m		**<1**	---	---
Magnesium	ppm	ASTM D5185m	9	**16**	---	---
Calcium	ppm	ASTM D5185m	4500	**3665**	---	---
Phosphorus	ppm	ASTM D5185m	1150	**855**	---	---
Zinc	ppm	ASTM D5185m	1250	**978**	---	---
Sulfur	ppm	ASTM D5185m	4500	**3974**	---	---

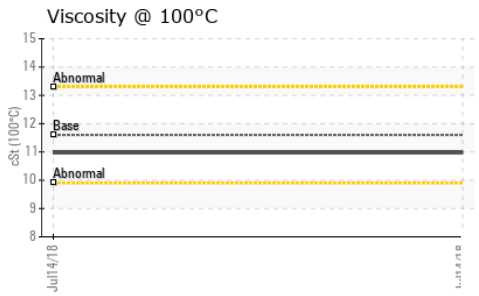
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>100	**11**	---	---
Sodium	ppm	ASTM D5185m		**5**	---	---
Potassium	ppm	ASTM D5185m	>20	**0**	---	---

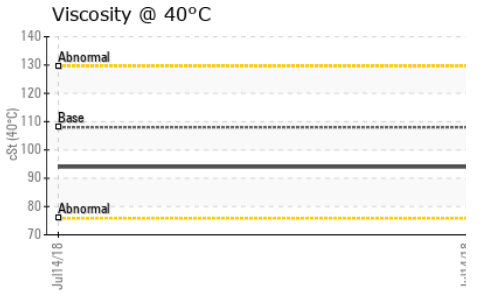
FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	0.28	**0.557**	---	---

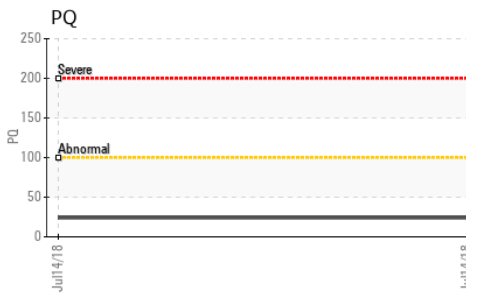
OIL ANALYSIS REPORT









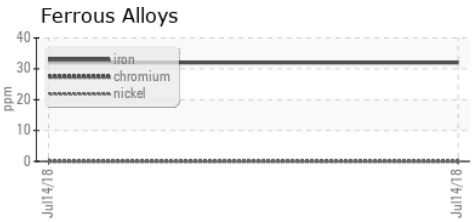


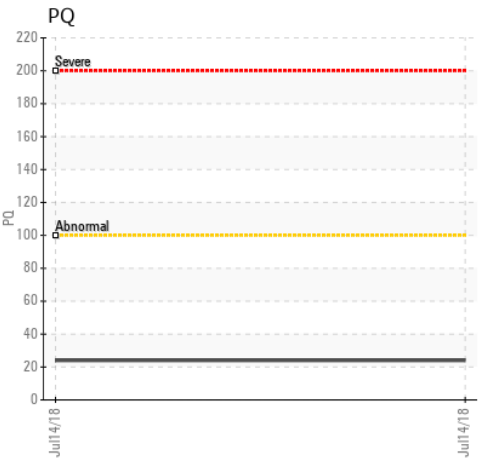
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	---	---
Yellow Metal	scalar	*Visual	NONE	**NONE**	---	---
Precipitate	scalar	*Visual	NONE	**NONE**	---	---
Silt	scalar	*Visual	NONE	**NONE**	---	---
Debris	scalar	*Visual	NONE	**NONE**	---	---
Sand/Dirt	scalar	*Visual	NONE	**NONE**	---	---
Appearance	scalar	*Visual	NORML	**NORML**	---	---
Odor	scalar	*Visual	NORML	**NORML**	---	---
Emulsified Water	scalar	*Visual	>.2	**NEG**	---	---
Free Water	scalar	*Visual		**NEG**	---	---

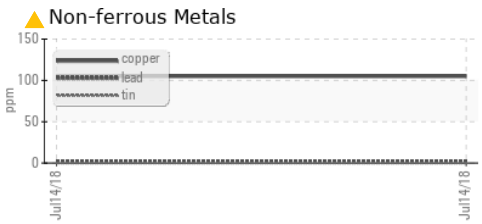
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	108	**94.00**	---	---
Visc @ 100°C	cSt	ASTM D445	11.6	**10.97**	---	---
Viscosity Index (VI)	Scale	ASTM D2270	94	**101**	---	---

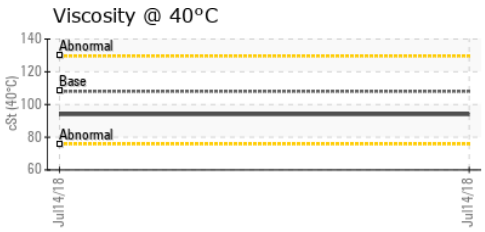
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color			*no image*	*no image*	*no image*
Bottom			*no image*	*no image*	*no image*

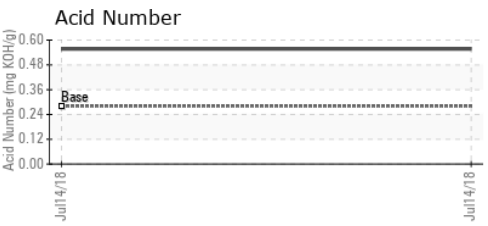
GRAPHS











Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TO1006382
Lab Number : 04517432
Unique Number : 8276261
Test Package : IND 2 (Additional Tests: KV100, PQ, VI)

Received : 25 Jul 2018
Tested : 26 Jul 2018
Diagnosed : 26 Jul 2018 - Don Baldridge

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)

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