



WEAR	NORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL

Area
NADINE URCIUOLI [ROSS]

Machine Id
VOLVO A220859

Component
Center Diesel Engine

Fluid
VOLVO 10W40 (--- GAL)

RECOMMENDATION

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

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		VPA015704	---	---
Sample Date		Client Info		21 Aug 2017	---	---
Machine Age	hrs	Client Info		106	---	---
Oil Age	hrs	Client Info		36	---	---
Filter Age	hrs	Client Info		0	---	---
Oil Changed		Client Info		Not Changd	---	---
Filter Changed		Client Info		Not Changd	---	---
Sample Status				ABNORMAL	---	---

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>80	65	---	---
Chromium	ppm	ASTM D5185m	>6	1	---	---
Nickel	ppm	ASTM D5185m	>2	<1	---	---
Titanium	ppm	ASTM D5185m	>2	0	---	---
Silver	ppm	ASTM D5185m	>2	0	---	---
Aluminum	ppm	ASTM D5185m	>20	4	---	---
Lead	ppm	ASTM D5185m	>95	1	---	---
Copper	ppm	ASTM D5185m	>85	13	---	---
Tin	ppm	ASTM D5185m	>9	9	---	---
Vanadium	ppm	ASTM D5185m		0	---	---
White Metal	scalar	*Visual	NONE	NONE	---	---
Yellow Metal	scalar	*Visual	NONE	NONE	---	---

CONTAMINATION

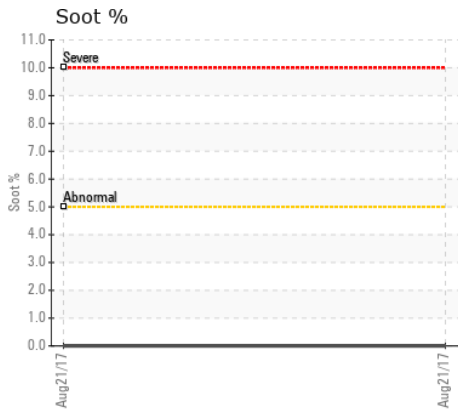
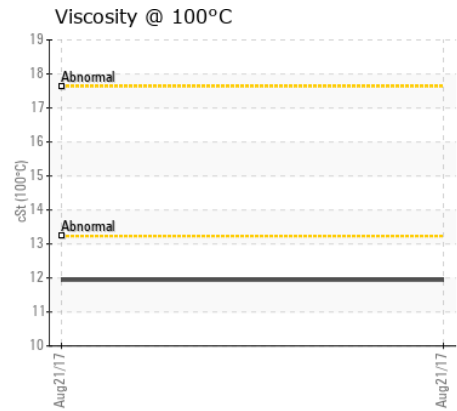
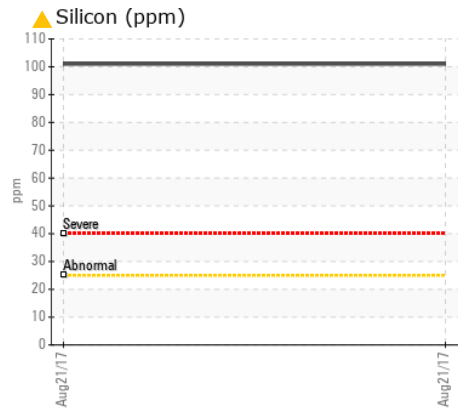
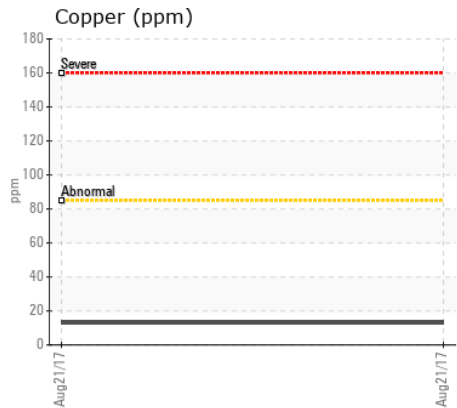
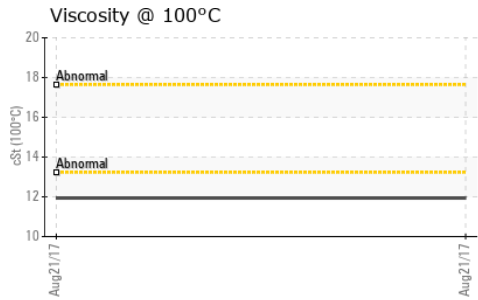
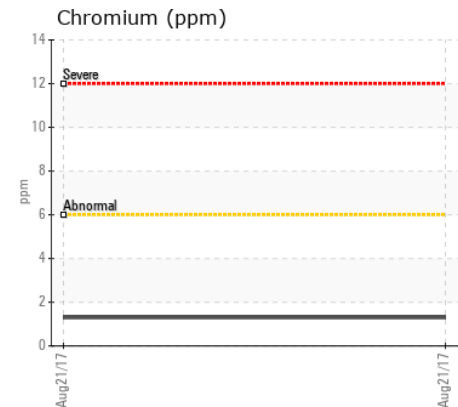
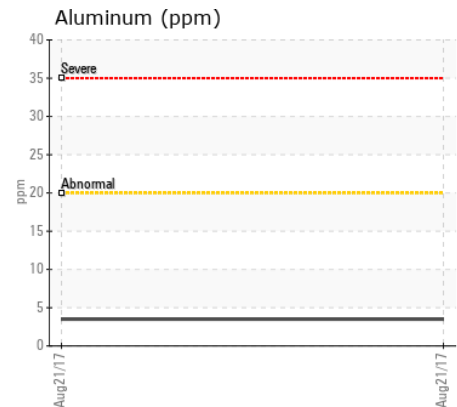
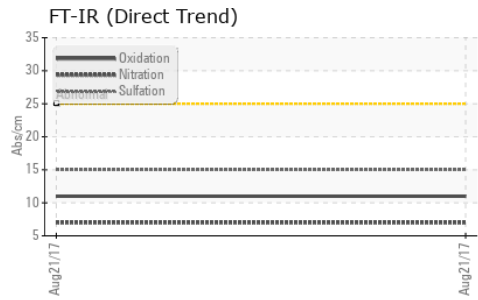
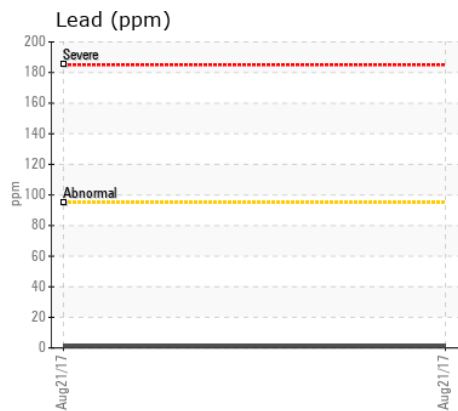
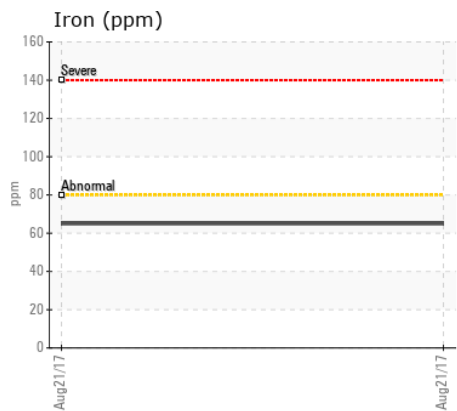
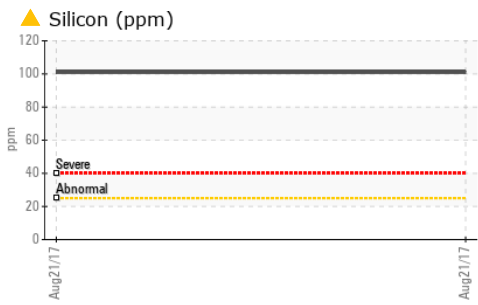
Elemental level of silicon (Si) above normal indicating ingress of seal material.

Silicon	ppm	ASTM D5185m	>25	▲ 101	---	---
Potassium	ppm	ASTM D5185m	>20	7	---	---
Fuel		WC Method	>4.0	<1.0	---	---
Water		WC Method	>0.1	NEG	---	---
Glycol		WC Method		NEG	---	---
Soot %	%	*ASTM D7844		0	---	---
Nitration	Abs/cm	*ASTM D7624		7.	---	---
Sulfation	Abs/.1mm	*ASTM D7415		15.	---	---
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	>0.1	NEG	---	---

FLUID CONDITION

The condition of the oil is acceptable for the time in service.

Sodium	ppm	ASTM D5185m		5	---	---
Boron	ppm	ASTM D5185m		11	---	---
Barium	ppm	ASTM D5185m		0	---	---
Molybdenum	ppm	ASTM D5185m		40	---	---
Manganese	ppm	ASTM D5185m		4	---	---
Magnesium	ppm	ASTM D5185m		18	---	---
Calcium	ppm	ASTM D5185m		1878	---	---
Phosphorus	ppm	ASTM D5185m		643	---	---
Zinc	ppm	ASTM D5185m		756	---	---
Sulfur	ppm	ASTM D5185m		2234	---	---
Oxidation	Abs/.1mm	*ASTM D7414		11.	---	---
Visc @ 100°C	cSt	ASTM D445		11.94	---	---



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : VPA015704
Lab Number : 04294418
Unique Number : 7912951
Test Package : MOB 1
Received : 30 Aug 2017
Tested : 31 Aug 2017
Diagnosed : 05 Sep 2017 - Doug Bogart

Helmuts Marine Service
 619 Canal Street
 SAN RAFAEL, CA
 US 94901-3545
 Contact: NADINE URUIOLI
 SERVICE@HELMUTSMARINE.COM

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)

T: x:
 F: x: