



OIL ANALYSIS REPORT

WEAR	SEVERE
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
G5-01111 Approved Boat (FRC) (S/N SSEDC 01111)
 Component
Diesel Engine
 Fluid
VOLVO VDS-4.5 Premium Motor Oil 15W40 (10 LTR)

RECOMMENDATION

We advise that you check for visible metal particles in the oil. We recommend that you drain the oil from the component if this has not already been done. An inspection for the source(s) of wear may be warranted at this time. We recommend an early resample to monitor this condition. Re-sampling is suggested to confirm test results prior to significant maintenance activities being performed. Please indicate that this is a resample on your Sample Information Form (SIF). Advise you send the oil filter for a more detailed analysis of the wear situation that is occurring in this component.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0855479	WC0700680	WC0603744
Sample Date		Client Info		10 Dec 2023	02 Dec 2022	22 Apr 2022
Machine Age	hrs	Client Info		582	263	241
Oil Age	hrs	Client Info		5	0	0
Filter Age	hrs	Client Info		5	0	0
Oil Changed		Client Info		Not Changd	Not Changd	N/A
Filter Changed		Client Info		Not Changd	Not Changd	N/A
Sample Status				SEVERE	NORMAL	NORMAL

WEAR

Moderate concentration of visible metal present. Bearing and/or bushing, and cylinder and/or crankshaft wear is indicated. Cutting wear particles are caused by either hard protuberances (mis-aligned components, etc.), or abrasives entering the system and embedding themselves in softer materials (sand, etc.), and gouging out mating surfaces. Black oxides are produced when metal particles are completely oxidized. This can be caused by insufficient or spent lubricant, or extreme heat at the wear surface.

Iron	ppm	ASTM D5185(m)	>100	1	2	4
Chromium	ppm	ASTM D5185(m)	>20	0	0	<1
Nickel	ppm	ASTM D5185(m)	>2	<1	0	<1
Titanium	ppm	ASTM D5185(m)		0	<1	0
Silver	ppm	ASTM D5185(m)	>2	<1	0	0
Aluminum	ppm	ASTM D5185(m)	>25	<1	1	1
Lead	ppm	ASTM D5185(m)	>40	<1	<1	<1
Copper	ppm	ASTM D5185(m)	>330	2	<1	2
Tin	ppm	ASTM D5185(m)	>15	0	<1	<1
Vanadium	ppm	ASTM D5185(m)		0	0	0
White Metal	scalar	Visual*	NONE	▲ MODER	---	---
Yellow Metal	scalar	Visual*	NONE	NONE	---	---

CONTAMINATION

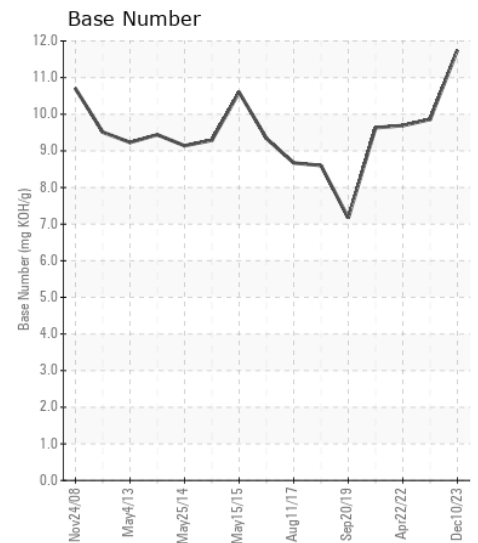
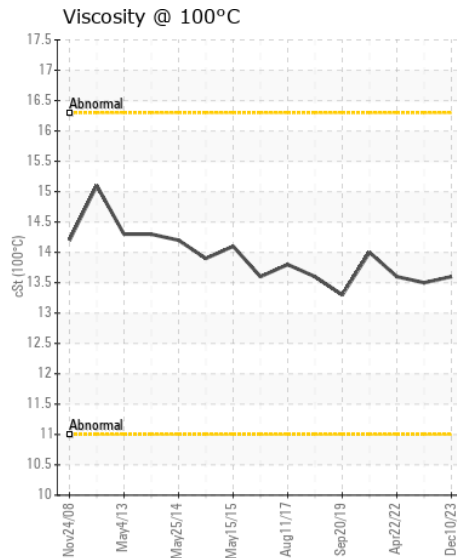
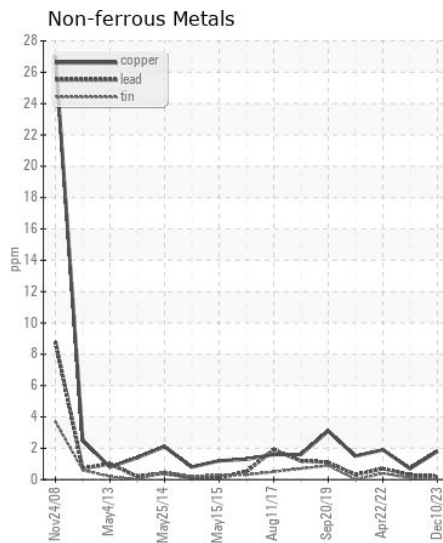
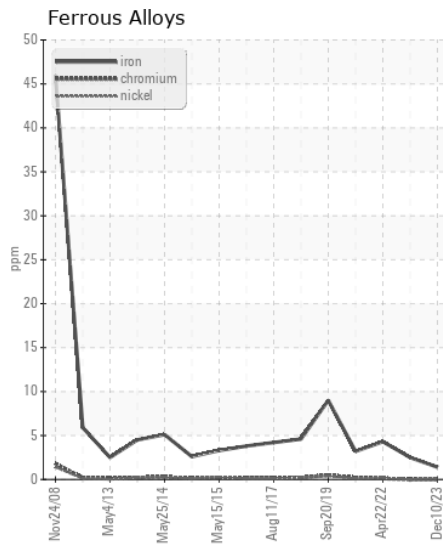
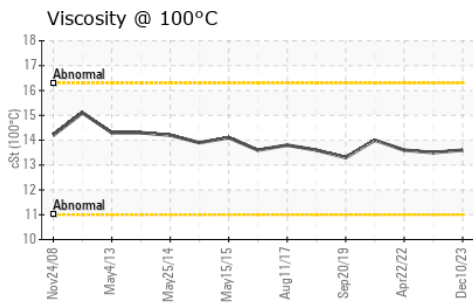
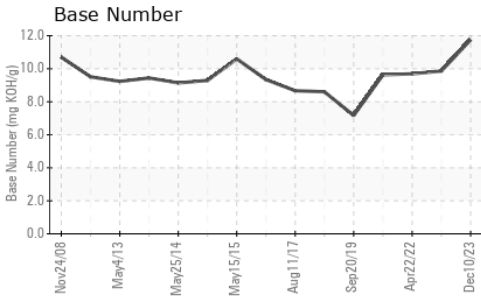
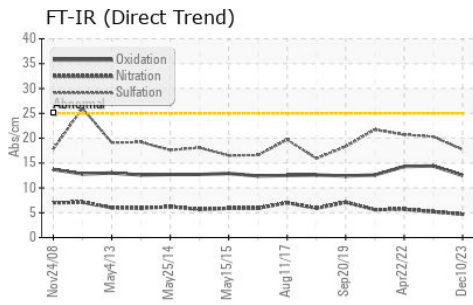
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185(m)	>25	4	6	5
Potassium	ppm	ASTM D5185(m)	>20	0	0	<1
Fuel		WC Method	>6.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	ASTM D7844*	>3	0	0	0
Nitration	Abs/cm	ASTM D7624*	>20	4.7	5.2	5.7
Sulfation	Abs/.1mm	ASTM D7415*	>30	17.7	20.3	20.7
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	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 oil is no longer serviceable as a result of the abnormal and/or severe wear.

Sodium	ppm	ASTM D5185(m)		3	3	3
Boron	ppm	ASTM D5185(m)		2	2	5
Barium	ppm	ASTM D5185(m)		<1	0	0
Molybdenum	ppm	ASTM D5185(m)		60	59	60
Manganese	ppm	ASTM D5185(m)		0	<1	<1
Magnesium	ppm	ASTM D5185(m)		940	974	965
Calcium	ppm	ASTM D5185(m)		1002	1073	1027
Phosphorus	ppm	ASTM D5185(m)		956	1091	1047
Zinc	ppm	ASTM D5185(m)		1152	1201	1159
Sulfur	ppm	ASTM D5185(m)		2685	2819	2742
Oxidation	Abs/.1mm	ASTM D7414*	>25	12.5	14.4	14.3
Base Number (BN)	mg KOH/g	ASTM D2896*		11.75	9.86	9.69
Visc @ 100°C	cSt	ASTM D7279(m)		13.6	13.5	13.6



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0855479
Lab Number : 02603061
Unique Number : 5696146
Test Package : MAR 2 (Additional Tests: BottomAnalysis, FILTERPATCH, Visual)

CANADIAN COAST GUARD
 CCGS GRIFFON, PO BOX 1000, 401 KING ST.W
 Prescott, ON
 CA K6V 5T3
 Contact: Laurie Bosley
 Laurie.Bosley@dfo-mpo.gc.ca

To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.

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