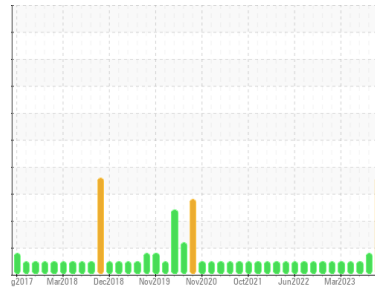




OIL ANALYSIS REPORT

Sample Rating Trend



DIRT



Machine Id
CUMMINS 177

Component
Diesel Engine

Fluid
ESSO XD-3 EXTRA 15W40 (24 LTR)

DIAGNOSIS

Recommendation

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. The oil change at the time of sampling has been noted. We recommend you service the filters on this component. We recommend an early resample to monitor this condition.

Wear

Copper ppm levels are noted. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core). All other component wear rates are normal.

Contamination

Light fuel dilution occurring. There is a moderate concentration of dirt present in the oil.

Fluid Condition

Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		WC0889063	WC0816372	WC0816461
Sample Date	Client Info		02 Apr 2024	25 Sep 2023	05 Jun 2023
Machine Age	kms	Client Info	0	0	0
Oil Age	kms	Client Info	9190	10103	10069
Oil Changed	Client Info		Changed	Changed	Changed
Sample Status			ABNORMAL	MARGINAL	NORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
Water	WC Method	>0.2	NEG	NEG	NEG
Glycol	WC Method		NEG	NEG	NEG

WEAR METALS

	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185(m)	>90	36	6	11
Chromium	ppm	ASTM D5185(m)	>20	<1	0	<1
Nickel	ppm	ASTM D5185(m)	>2	<1	0	<1
Titanium	ppm	ASTM D5185(m)	>2	0	0	<1
Silver	ppm	ASTM D5185(m)	>2	0	<1	0
Aluminum	ppm	ASTM D5185(m)	>20	4	2	2
Lead	ppm	ASTM D5185(m)	>40	5	<1	<1
Copper	ppm	ASTM D5185(m)	>330	201	4	12
Tin	ppm	ASTM D5185(m)	>15	<1	0	<1
Antimony	ppm	ASTM D5185(m)		0	0	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
Beryllium	ppm	ASTM D5185(m)		0	0	0
Cadmium	ppm	ASTM D5185(m)		0	0	0

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185(m)		23	99	66
Barium	ppm	ASTM D5185(m)		11	<1	0
Molybdenum	ppm	ASTM D5185(m)		10	50	17
Manganese	ppm	ASTM D5185(m)		<1	0	<1
Magnesium	ppm	ASTM D5185(m)		71	333	176
Calcium	ppm	ASTM D5185(m)	3780	2368	1817	2253
Phosphorus	ppm	ASTM D5185(m)	1370	855	982	1069
Zinc	ppm	ASTM D5185(m)	1500	1057	1163	1230
Sulfur	ppm	ASTM D5185(m)	3800	2665	2765	2932
Lithium	ppm	ASTM D5185(m)		1	<1	<1

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185(m)	>25	▲ 28	11	5
Sodium	ppm	ASTM D5185(m)	>192	5	4	4
Potassium	ppm	ASTM D5185(m)	>20	10	2	5
Fuel	%	ASTM D7593*	>3.0	▲ 1.3	▲ 1	<1.0

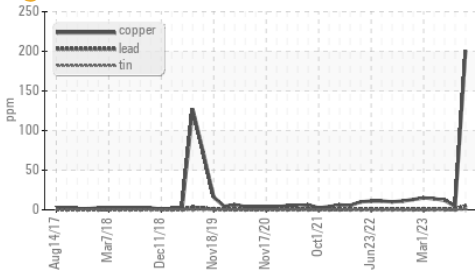
INFRA-RED

	method	limit/base	current	history1	history2	
Soot %	%	ASTM D7844*	>6	0.1	0.1	0.4
Nitration	Abs/cm	ASTM D7624*	>20	8.1	5.7	9.4
Sulfation	Abs./1mm	ASTM D7415*	>30	19.8	20.2	24.5

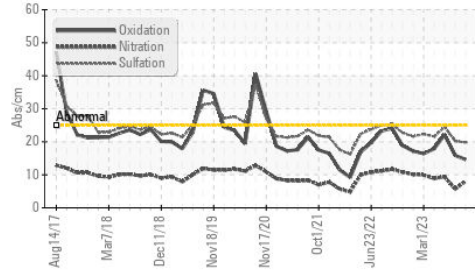


OIL ANALYSIS REPORT

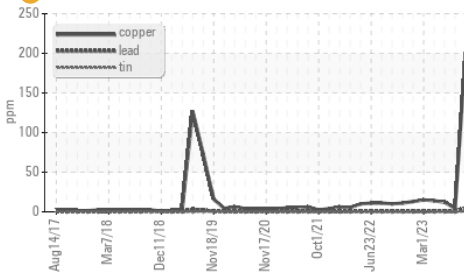
Non-ferrous Metals



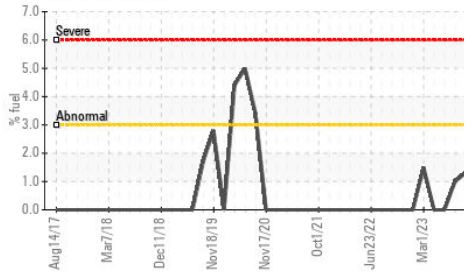
FT-IR (Direct Trend)



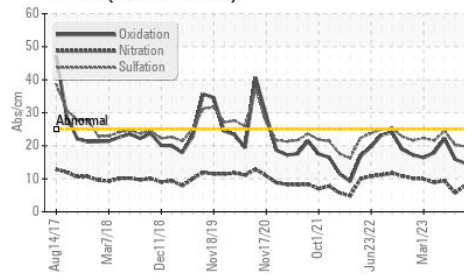
Non-ferrous Metals



Fuel Dilution



FT-IR (Direct Trend)



FLUID DEGRADATION

method	limit/base	current	history1	history2	
Oxidation	Abs.:1mm ASTM D7414*	>25	14.6	15.9	22.1

VISUAL

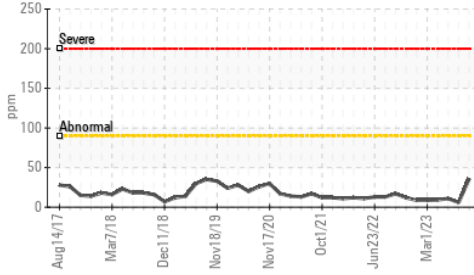
method	limit/base	current	history1	history2	
Emulsified Water	scalar Visual*	>0.2	NEG	NEG	NEG
Free Water	scalar Visual*	NEG	NEG	NEG	NEG

FLUID PROPERTIES

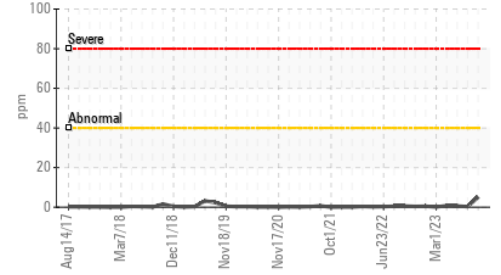
method	limit/base	current	history1	history2	
Visc @ 100°C	cSt ASTM D7279(m)	15.4	▲ 11.7	12.1	13.9

GRAPHS

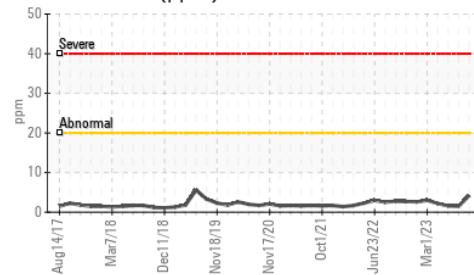
Iron (ppm)



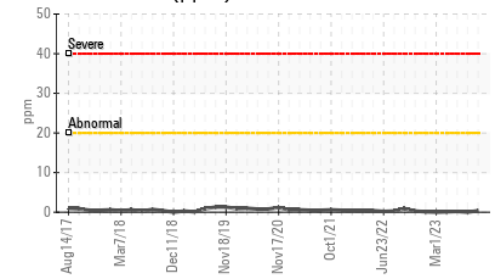
Lead (ppm)



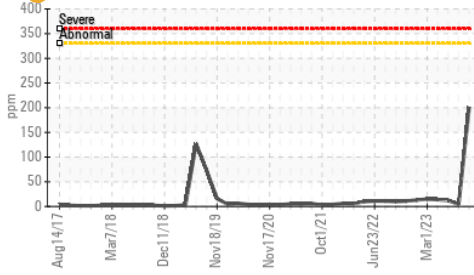
Aluminum (ppm)



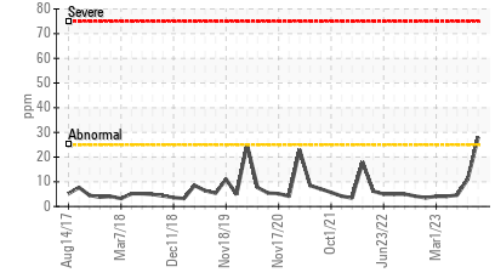
Chromium (ppm)



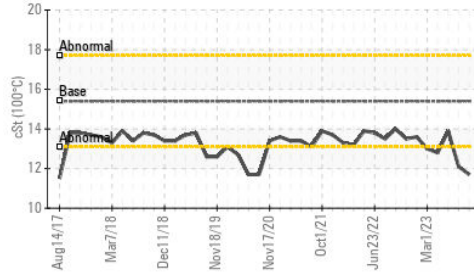
Copper (ppm)



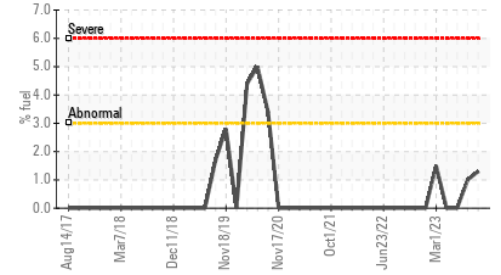
Silicon (ppm)



Viscosity @ 100°C



Fuel Dilution



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0889063 **Received** : 08 Apr 2024
Lab Number : 02627297 **Tested** : 10 Apr 2024
Unique Number : 5760429 **Diagnosed** : 10 Apr 2024 - Kevin Marson
Test Package : MOB 1 (Additional Tests: FuelDilution, PercentFuel)

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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.