



# OIL ANALYSIS REPORT

WEAR	<b>NORMAL</b>
CONTAMINATION	<b>NORMAL</b>
FLUID CONDITION	<b>NORMAL</b>

Machine Id  
**CUMMINS 232**  
 Component  
**Rear Diesel Engine**  
 Fluid  
**ESSO XD-3 EXTRA 15W40 (--- GAL)**

## RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>WC0866646</b>	WC0889013	WC0889116
Sample Date		Client Info		<b>20 Jun 2024</b>	22 Apr 2024	22 Feb 2024
Machine Age	kms	Client Info		<b>0</b>	0	0
Oil Age	kms	Client Info		<b>9726</b>	9041	8949
Filter Age	kms	Client Info		<b>9726</b>	9041	8949
Oil Changed		Client Info		<b>Changed</b>	Changed	Changed
Filter Changed		Client Info		<b>Changed</b>	Changed	Changed
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

## WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185(m)	>90	<b>7</b>	6	6
Chromium	ppm	ASTM D5185(m)	>20	<b>&lt;1</b>	0	<1
Nickel	ppm	ASTM D5185(m)	>2	<b>&lt;1</b>	0	<1
Titanium	ppm	ASTM D5185(m)	>2	<b>0</b>	0	0
Silver	ppm	ASTM D5185(m)	>2	<b>&lt;1</b>	0	0
Aluminum	ppm	ASTM D5185(m)	>20	<b>2</b>	2	2
Lead	ppm	ASTM D5185(m)	>40	<b>0</b>	0	<1
Copper	ppm	ASTM D5185(m)	>330	<b>1</b>	1	<1
Tin	ppm	ASTM D5185(m)	>15	<b>0</b>	0	0
Vanadium	ppm	ASTM D5185(m)		<b>0</b>	0	0
White Metal	scalar	Visual*	NONE	<b>NONE</b>	---	---
Yellow Metal	scalar	Visual*	NONE	<b>VLITE</b>	---	---

## CONTAMINATION

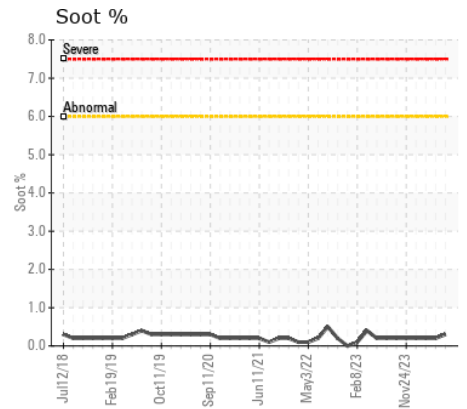
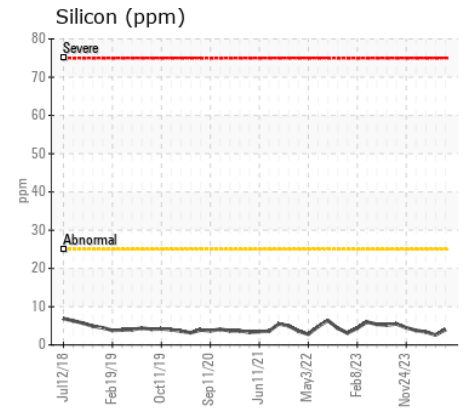
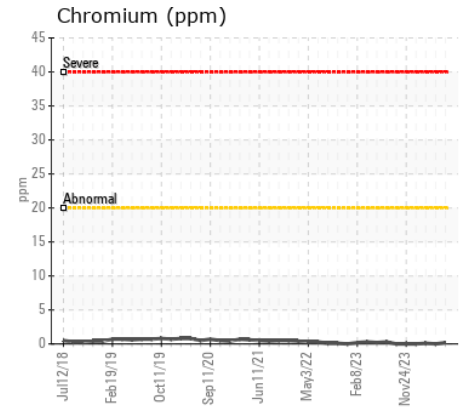
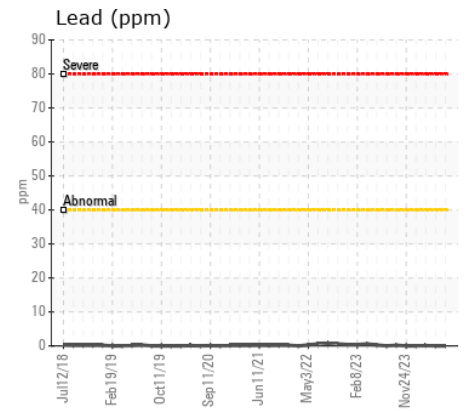
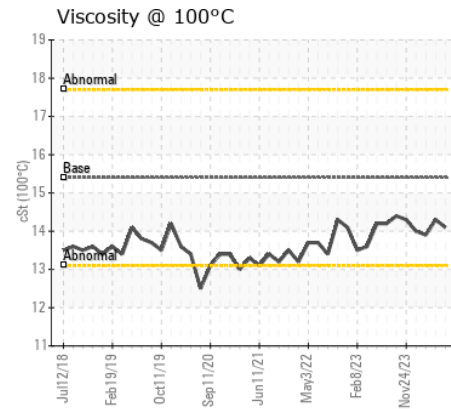
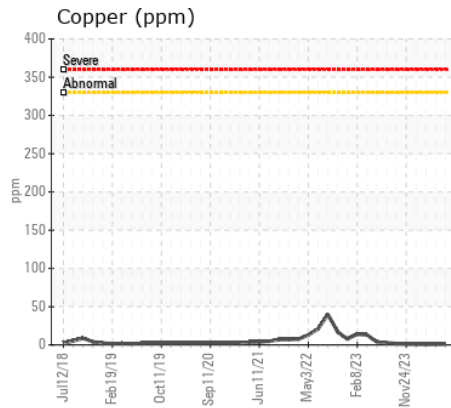
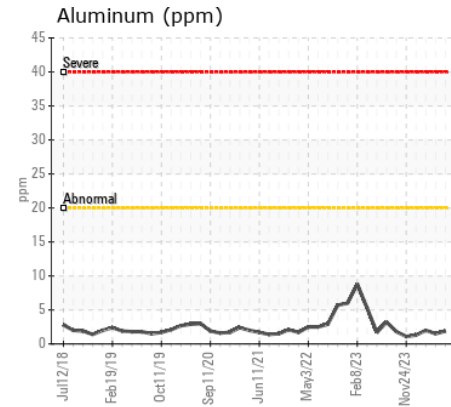
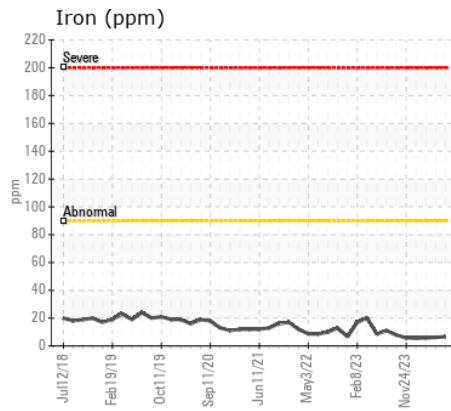
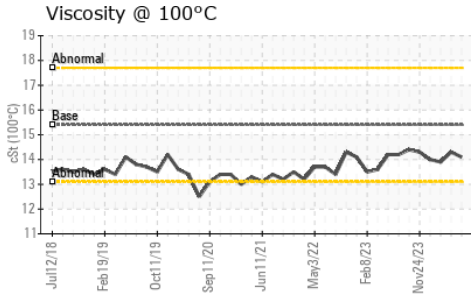
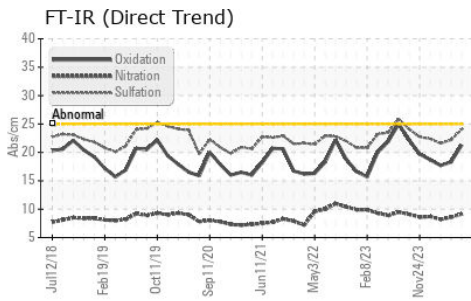
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185(m)	>25	<b>4</b>	3	3
Potassium	ppm	ASTM D5185(m)	>20	<b>7</b>	6	5
Fuel		WC Method	>3.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.2	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	ASTM D7844*	>6	<b>0.3</b>	0.2	0.2
Nitration	Abs/cm	ASTM D7624*	>20	<b>9.1</b>	8.6	8.2
Sulfation	Abs/.1mm	ASTM D7415*	>30	<b>24.0</b>	22.2	21.6
Silt	scalar	Visual*	NONE	<b>NONE</b>	---	---
Debris	scalar	Visual*	NONE	<b>NONE</b>	---	---
Sand/Dirt	scalar	Visual*	NONE	<b>NONE</b>	---	---
Appearance	scalar	Visual*	NORML	<b>NORML</b>	---	---
Odor	scalar	Visual*	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	Visual*	>0.2	<b>NEG</b>	NEG	NEG

## FLUID CONDITION

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

Sodium	ppm	ASTM D5185(m)	>192	<b>7</b>	2	2
Boron	ppm	ASTM D5185(m)		<b>97</b>	106	112
Barium	ppm	ASTM D5185(m)		<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1	1
Manganese	ppm	ASTM D5185(m)		<b>0</b>	0	0
Magnesium	ppm	ASTM D5185(m)		<b>12</b>	17	20
Calcium	ppm	ASTM D5185(m)	3780	<b>2156</b>	2221	2163
Phosphorus	ppm	ASTM D5185(m)	1370	<b>909</b>	939	939
Zinc	ppm	ASTM D5185(m)	1500	<b>1133</b>	1137	1117
Sulfur	ppm	ASTM D5185(m)	3800	<b>2748</b>	2781	2967
Oxidation	Abs/.1mm	ASTM D7414*	>25	<b>21.3</b>	18.3	17.7
Visc @ 100°C	cSt	ASTM D7279(m)	15.4	<b>14.1</b>	14.3	13.9



ISO 17025:2017  
Accredited  
Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : WC0866646  
**Lab Number** : 02643652  
**Unique Number** : 5801191  
**Test Package** : MOB 1 ( Additional Tests: Visual )

**Received** : 24 Jun 2024  
**Tested** : 24 Jun 2024  
**Diagnosed** : 24 Jun 2024 - Wes Davis

**CITY OF THUNDER BAY**  
 AUTO MAINTENANCE STORES, 570 FORT WILLIAM ROAD  
 THUNDER BAY, ON  
 CA P7B 2Z8

Contact: Sean Malcolm  
 sean.malcolm@thunderbay.ca  
 T: (807)684-2716  
 F: (807)344-0237

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.