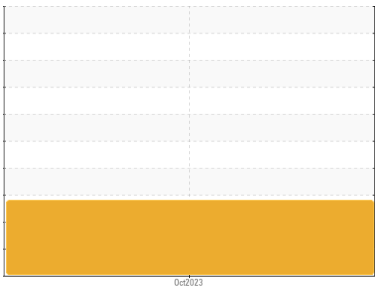
OIL ANALYSIS REPORT

Sample Rating Trend



DIRT

Machine Id
242
Component
Diesel Engine
Fluid
ESSO XD-3 EXTRA 15W40 (--- GAL)

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. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition. No other corrective action is recommended at this time.

Wear

All component wear rates are normal.

Contamination

Light fuel dilution occurring. There is a moderate concentration of dirt present in the oil. No other contaminants were detected in the oil.

Fluid Condition

Viscosity of sample indicates oil is within SAE 30 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0866453**	---	---
Sample Date		Client Info		**18 Oct 2023**	---	---
Machine Age	kms	Client Info		**0**	---	---
Oil Age	kms	Client Info		**10559**	---	---
Oil Changed		Client Info		**Changed**	---	---
Sample Status				**ABNORMAL**	---	---

CONTAMINATION		method	limit/base	current	history1	history2
Glycol		WC Method		**NEG**	---	---

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>90	**32**	---	---
Chromium	ppm	ASTM D5185(m)	>20	**<1**	---	---
Nickel	ppm	ASTM D5185(m)	>2	**<1**	---	---
Titanium	ppm	ASTM D5185(m)	>2	**0**	---	---
Silver	ppm	ASTM D5185(m)	>2	**<1**	---	---
Aluminum	ppm	ASTM D5185(m)	>20	**2**	---	---
Lead	ppm	ASTM D5185(m)	>40	**<1**	---	---
Copper	ppm	ASTM D5185(m)	>330	**13**	---	---
Tin	ppm	ASTM D5185(m)	>15	**<1**	---	---
Antimony	ppm	ASTM D5185(m)		**0**	---	---
Vanadium	ppm	ASTM D5185(m)		**0**	---	---
Beryllium	ppm	ASTM D5185(m)		**0**	---	---
Cadmium	ppm	ASTM D5185(m)		**0**	---	---

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		**31**	---	---
Barium	ppm	ASTM D5185(m)		**5**	---	---
Molybdenum	ppm	ASTM D5185(m)		**48**	---	---
Manganese	ppm	ASTM D5185(m)		**8**	---	---
Magnesium	ppm	ASTM D5185(m)		**778**	---	---
Calcium	ppm	ASTM D5185(m)	3780	**1262**	---	---
Phosphorus	ppm	ASTM D5185(m)	1370	**674**	---	---
Zinc	ppm	ASTM D5185(m)	1500	**831**	---	---
Sulfur	ppm	ASTM D5185(m)	3800	**1952**	---	---
Lithium	ppm	ASTM D5185(m)		**<1**	---	---

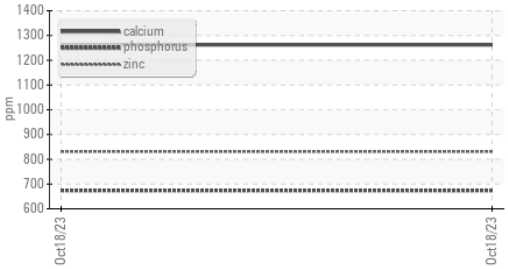
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	▲ **27**	---	---
Sodium	ppm	ASTM D5185(m)	>192	**6**	---	---
Potassium	ppm	ASTM D5185(m)	>20	**1**	---	---
Fuel	%	ASTM D7593*	>3.0	▲ **1.1**	---	---

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	>6	**0.1**	---	---
Nitration	Abs/cm	ASTM D7624*	>20	**11.0**	---	---
Sulfation	Abs/.1mm	ASTM D7415*	>30	**22.9**	---	---

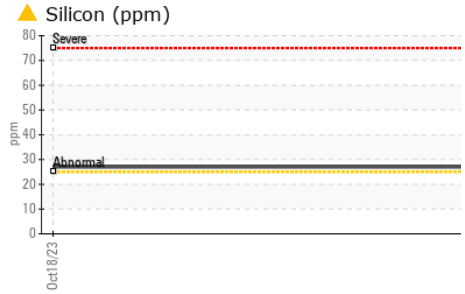
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*	>25	**23.9**	---	---

OIL ANALYSIS REPORT

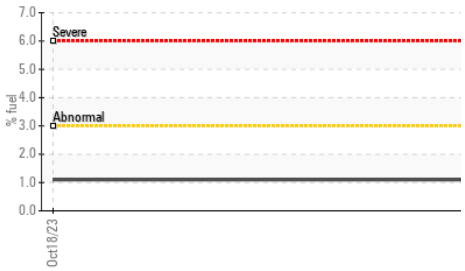
Additives



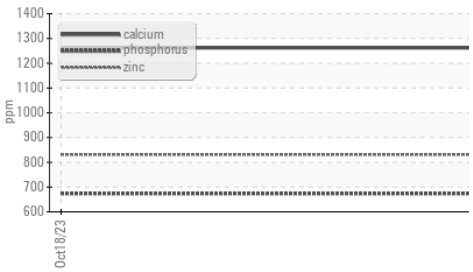
Silicon (ppm)



Fuel Dilution



Additives

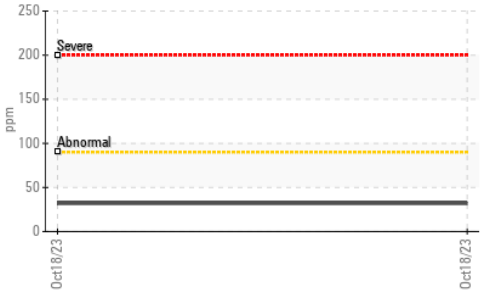


VISUAL		method	limit/base	current	history1	history2
Emulsified Water	scalar	Visual*	>0.2	**NEG**	---	---
Free Water	scalar	Visual*		**NEG**	---	---

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D7279(m)	15.4	▲ **12.1**	---	---

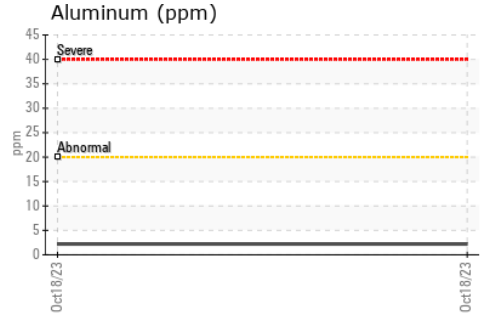
GRAPHS

Iron (ppm)

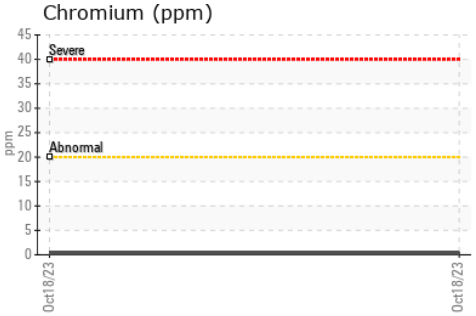


Lead (ppm)

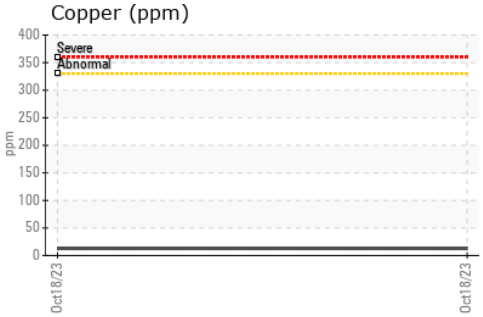
Aluminum (ppm)



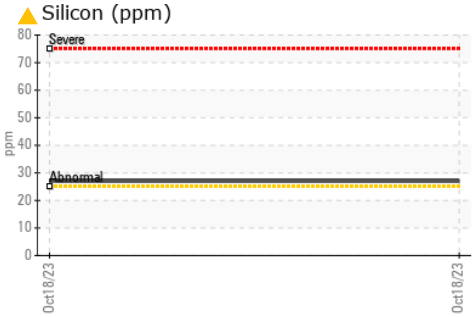
Chromium (ppm)



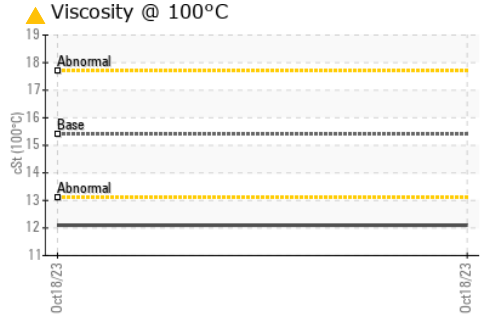
Copper (ppm)



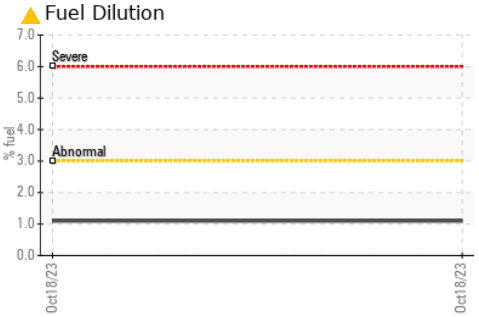
Silicon (ppm)



Viscosity @ 100°C



Fuel Dilution



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0866453 **Received** : 25 Oct 2023
Lab Number : 02591689 **Diagnosed** : 26 Oct 2023
Unique Number : 5668768 **Diagnostician** : Kevin Marson
Test Package : MOB 1 (Additional Tests: FuelDilution, PercentFuel)

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.

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