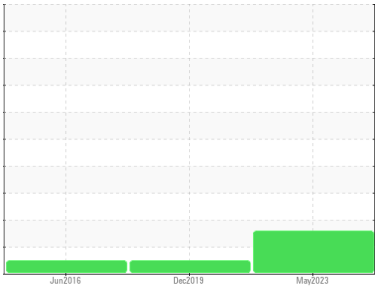
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Machine Id
FREIGHTLINER AL333/30066
Component
Left Diesel Engine
Fluid
CASTROL HYPURON 15W40 (18 LTR)

DIAGNOSIS

Recommendation
The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear
Iron ppm levels are abnormal. Chromium ppm levels are marginal. Cylinder, crank, or cam shaft wear is indicated.

Contamination
There is no indication of any contamination in the oil.

Fluid Condition
The oil is no longer serviceable as a result of the abnormal and/or severe wear.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PC0075259**	AP109939	AP102066
Sample Date		Client Info		**01 May 2023**	11 Dec 2019	29 Jun 2016
Machine Age	mths	Client Info		**0**	37208	4548
Oil Age	mths	Client Info		**6**	0	0
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**ABNORMAL**	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	**<1.0**	<1.0	<1.0
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*		**0**	---	---
Iron	ppm	ASTM D5185(m)	>75	▲ **82**	35	31
Chromium	ppm	ASTM D5185(m)	>5	▲ **5**	1	<1
Nickel	ppm	ASTM D5185(m)	>4	**<1**	<1	0
Titanium	ppm	ASTM D5185(m)	>2	**0**	<1	4
Silver	ppm	ASTM D5185(m)	>2	**<1**	<1	1
Aluminum	ppm	ASTM D5185(m)	>15	**7**	3	3
Lead	ppm	ASTM D5185(m)	>25	**<1**	1	6
Copper	ppm	ASTM D5185(m)	>100	**2**	4	189
Tin	ppm	ASTM D5185(m)	>4	**<1**	<1	<1
Antimony	ppm	ASTM D5185(m)		**0**	<1	1
Vanadium	ppm	ASTM D5185(m)		**0**	0	0
Beryllium	ppm	ASTM D5185(m)		**0**	0	0
Cadmium	ppm	ASTM D5185(m)		**0**	0	0

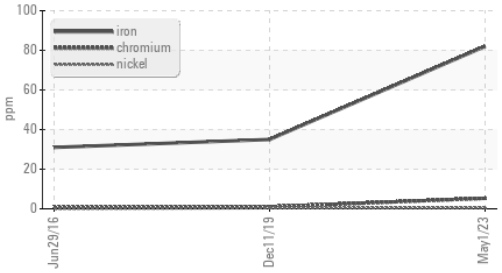
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		**2**	28	27
Barium	ppm	ASTM D5185(m)		**<1**	0	6
Molybdenum	ppm	ASTM D5185(m)		**59**	59	43
Manganese	ppm	ASTM D5185(m)		**<1**	<1	3
Magnesium	ppm	ASTM D5185(m)		**903**	1021	826
Calcium	ppm	ASTM D5185(m)		**980**	1089	1258
Phosphorus	ppm	ASTM D5185(m)		**925**	1017	895
Zinc	ppm	ASTM D5185(m)		**1130**	1253	1097
Sulfur	ppm	ASTM D5185(m)		**2286**	2784	2503
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	**8**	4	28
Sodium	ppm	ASTM D5185(m)		**8**	3	3
Potassium	ppm	ASTM D5185(m)	>20	**5**	3	<1

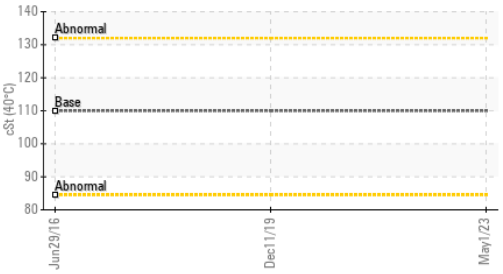
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	>6	**2.1**	0.8	0.2
Nitration	Abs/cm	ASTM D7624*	>20	**16.4**	12.8	8.3
Sulfation	Abs/.1mm	ASTM D7415*	>30	**32.4**	28.4	20.6

OIL ANALYSIS REPORT

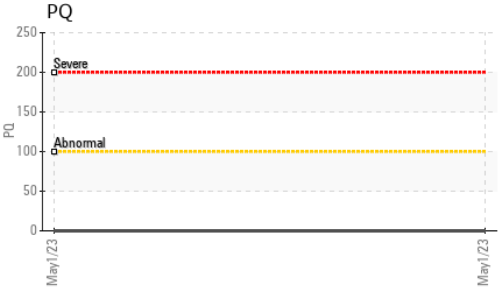
Ferrous Alloys



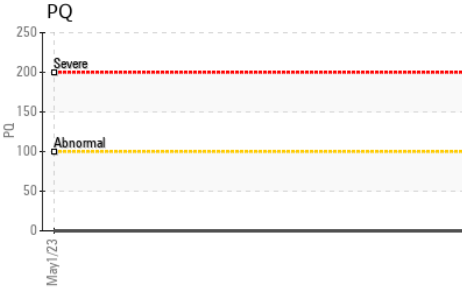
Viscosity @ 40°C



PQ



PQ



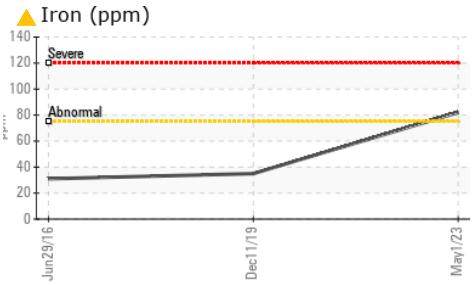
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*	>25	**34.2**	23.9	16.0

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

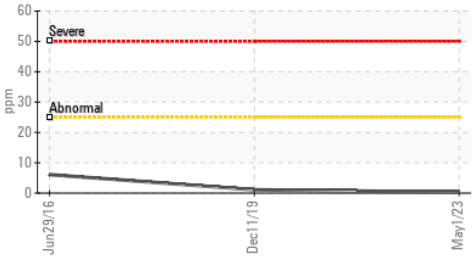
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	110	**112**	---	---
Visc @ 100°C	cSt	ASTM D7279(m)	15.0	**15.0**	14.2	14.2
Viscosity Index (VI)	Scale	ASTM D2270*	140	**139**	---	---

GRAPHS

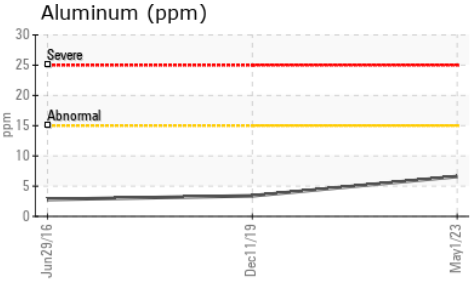
Iron (ppm)



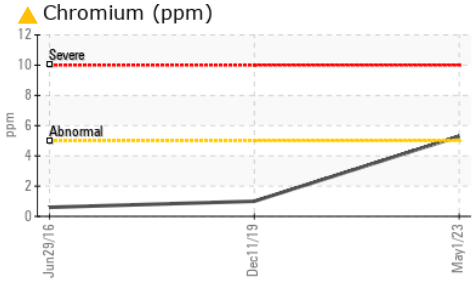
Lead (ppm)



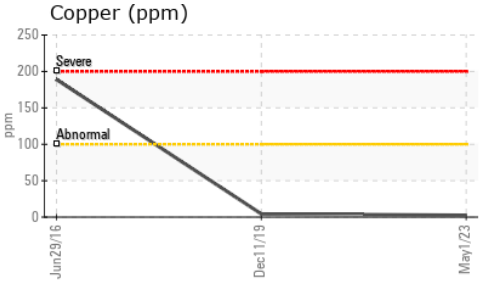
Aluminum (ppm)



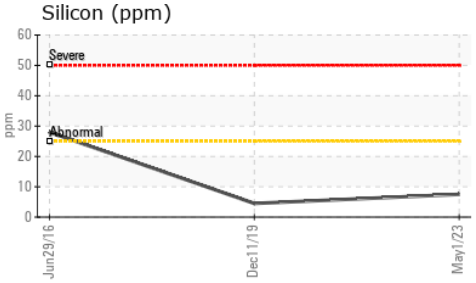
Chromium (ppm)



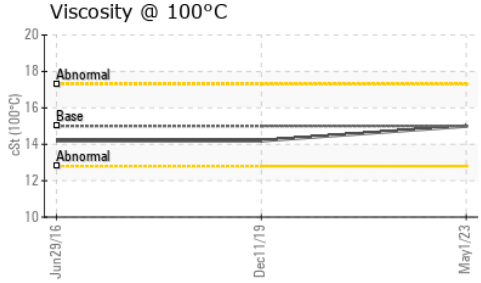
Copper (ppm)



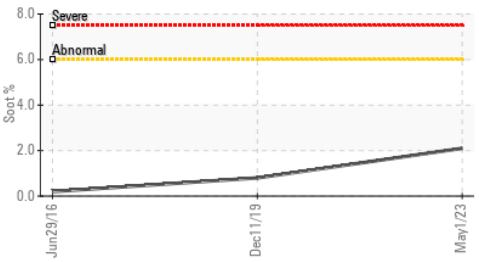
Silicon (ppm)



Viscosity @ 100°C



Soot %



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC0075259 **Received** : 06 Nov 2023
Lab Number : 02594118 **Diagnosed** : 07 Nov 2023
Unique Number : 5671197 **Diagnostician** : Kevin Marson
Test Package : MOB 1 (Additional Tests: KV40, PQ, VI)

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.

TORONTO FIRE SERVICES
40 TORYORK DRIVE
TORONTO, ON
CA M9L 1X6
Contact: Antonio Rodrigues
antonio.rodrigues@tonroto.ca
T:
F: (416)338-9207