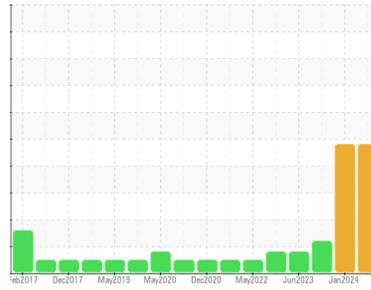




OIL ANALYSIS REPORT

Sample Rating Trend



Area
3000 Series
 Machine Id
Freightliner 3810T

Component
Diesel Engine
 Fluid
PETRO CANADA DURON SHP 10W30 (26 LTR)

DIAGNOSIS

Recommendation
 Check for low coolant level. We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. We recommend that you drain the oil from the component if this has not already been done. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

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

Contamination
 Water treatment chemicals present, indicating slow coolant leak. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. Test for glycol is negative. High amount of ingressed dirt has caused abrasive wear to the component.

Fluid Condition
 The oil is no longer serviceable as a result of the abnormal and/or severe wear. The condition of the oil is acceptable for the time in service (see recommendation).

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		WC0948253	WC0886678	WC0805749
Sample Date	Client Info		16 Jun 2024	06 Jan 2024	30 Aug 2023
Machine Age	mls	Client Info	214735	195923	187764
Oil Age	mls	Client Info	18812	17072	7913
Oil Changed	Client Info		Changed	Changed	Not Changd
Sample Status			ABNORMAL	ABNORMAL	ABNORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>3.0	<1.0	<1.0	<1.0
Water	WC Method	>0.2	NEG	NEG	NEG

WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184*		0	---	---
Iron	ppm	ASTM D5185(m) >75	▲ 82	73	37
Chromium	ppm	ASTM D5185(m) >5	3	2	1
Nickel	ppm	ASTM D5185(m) >4	<1	<1	0
Titanium	ppm	ASTM D5185(m) >2	0	0	0
Silver	ppm	ASTM D5185(m) >2	<1	0	<1
Aluminum	ppm	ASTM D5185(m) >15	10	7	3
Lead	ppm	ASTM D5185(m) >25	1	1	1
Copper	ppm	ASTM D5185(m) >100	8	6	2
Tin	ppm	ASTM D5185(m) >4	0	0	0
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) 2	2	6	2
Barium	ppm	ASTM D5185(m) 0	<1	0	<1
Molybdenum	ppm	ASTM D5185(m) 50	80	82	72
Manganese	ppm	ASTM D5185(m) 0	1	<1	0
Magnesium	ppm	ASTM D5185(m) 950	871	948	977
Calcium	ppm	ASTM D5185(m) 1050	1013	1050	1082
Phosphorus	ppm	ASTM D5185(m) 995	780	987	961
Zinc	ppm	ASTM D5185(m) 1180	1119	1185	1194
Sulfur	ppm	ASTM D5185(m) 2600	2265	2656	2482
Lithium	ppm	ASTM D5185(m)	<1	<1	<1

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m) >25	▲ 26	20	9
Sodium	ppm	ASTM D5185(m)	● 320	● 302	128
Potassium	ppm	ASTM D5185(m) >20	▲ 513	▲ 291	▲ 207
Glycol	%	ASTM D7922*	0.0	▲ 0.06	0.0

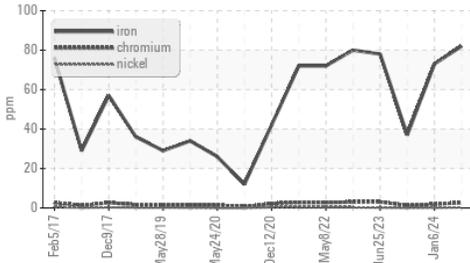
INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	ASTM D7844* >6	1.3	0.7	0.6
Nitration	Abs/cm	ASTM D7624* >20	15.2	13.8	12.5
Sulfation	Abs./1mm	ASTM D7415* >30	29.3	25.5	23.8

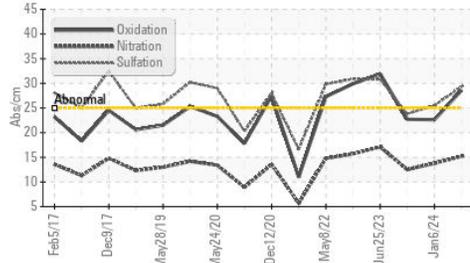


OIL ANALYSIS REPORT

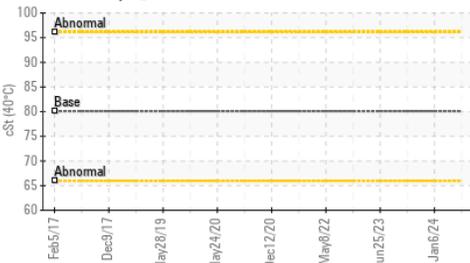
▲ Ferrous Alloys



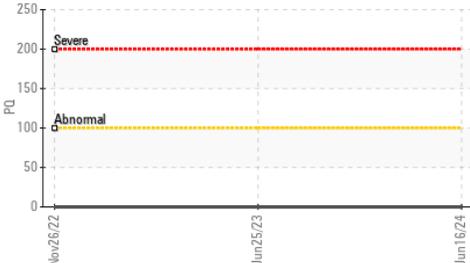
● FT-IR (Direct Trend)



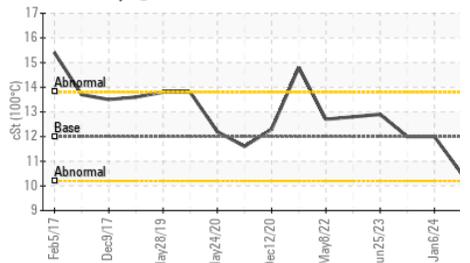
Viscosity @ 40°C



PQ



Viscosity @ 100°C



FLUID DEGRADATION

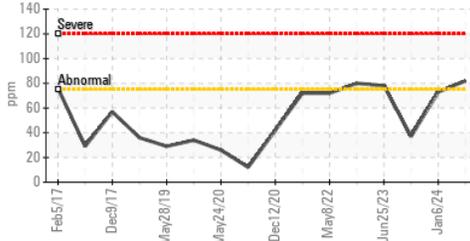
method	limit/base	current	history1	history2	
Oxidation	Abs./1mm ASTM D7414*	>25	28.6	22.6	22.7
Odor	scalar Visual*	NORML	NORML	NORML	NORML
Emulsified Water	scalar Visual*	>0.2	NEG	NEG	NEG
Free Water	scalar Visual*	NEG	NEG	NEG	NEG

FLUID PROPERTIES

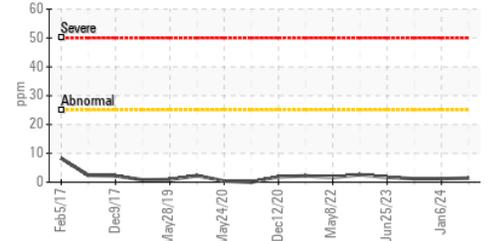
method	limit/base	current	history1	history2	
Visc @ 40°C	cSt ASTM D7279(m)	80.1	67.8	---	---
Visc @ 100°C	cSt ASTM D7279(m)	12.00	10.5	12.0	12.0
Viscosity Index (VI)	Scale ASTM D2270*	144	142	---	---

GRAPHS

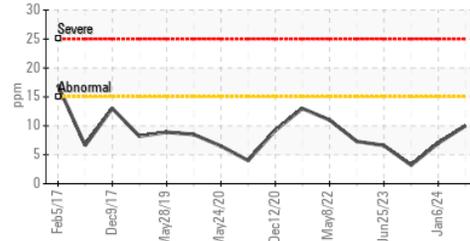
▲ Iron (ppm)



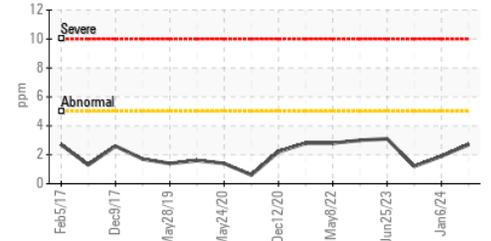
Lead (ppm)



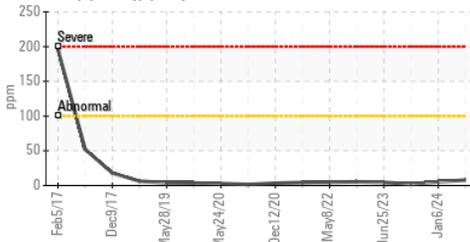
Aluminum (ppm)



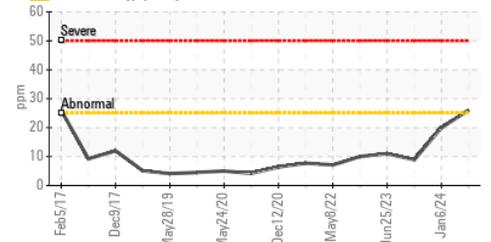
Chromium (ppm)



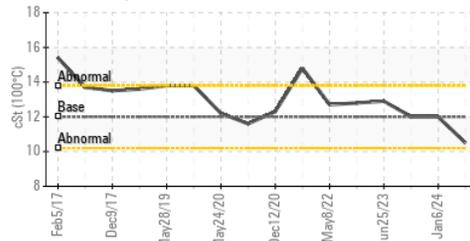
Copper (ppm)



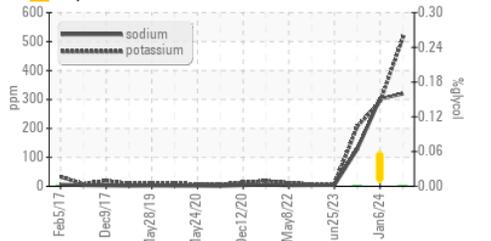
▲ Silicon (ppm)



Viscosity @ 100°C



▲ Glycol Contamination



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0948253
Lab Number : 02642470
Unique Number : 5800009
Test Package : MOB 1 (Additional Tests: KV40, PQ, VI, Visual)

MANITOU LIN TRANSPORT (GARAGE)
 1335 SHAWSON DRIVE
 MISSISSAUGA, ON
 CA L4W 1C4
 Contact: Travis Spence
 tspence@manitoulintransport.com

*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.*

T:
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