



LIEBHERR

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	ABNORMAL



Area
(358698)
Machine Id
LIEBHERR R934 053048-1550
Component
Diesel Engine
Fluid
PETRO CANADA SUPREME 5W30 (30 LTR)

RECOMMENDATION

Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor. The fluid was specified as PETRO CANADA SUPREME 5W30, however, a fluid match indicates that this fluid is SAE 40 Diesel Engine Oil. Please confirm the oil type and grade on your next sample.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		LH0294725	LH0265663	LH0223995
Sample Date		Client Info		03 Jul 2024	04 Aug 2023	06 Sep 2022
Machine Age	hrs	Client Info		2720	2011	1073
Oil Age	hrs	Client Info		0	0	0
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				ABNORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185(m)	>100	4	5	3
Chromium	ppm	ASTM D5185(m)	>5	<1	<1	0
Nickel	ppm	ASTM D5185(m)	>5	0	0	0
Titanium	ppm	ASTM D5185(m)		<1	0	1
Silver	ppm	ASTM D5185(m)	>3	0	0	0
Aluminum	ppm	ASTM D5185(m)	>15	2	1	1
Lead	ppm	ASTM D5185(m)	>30	0	<1	<1
Copper	ppm	ASTM D5185(m)	>125	2	3	7
Tin	ppm	ASTM D5185(m)	>5	0	<1	<1
Vanadium	ppm	ASTM D5185(m)		0	0	0

CONTAMINATION

There is no indication of any contamination in the oil.

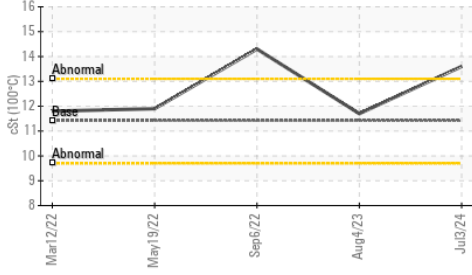
Silicon	ppm	ASTM D5185(m)	>60	7	7	6
Potassium	ppm	ASTM D5185(m)	>20	<1	<1	<1
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	ASTM D7844*	>3	0	0	0
Nitration	Abs/cm	ASTM D7624*	>20	10.0	10.3	6.3
Sulfation	Abs/.1mm	ASTM D7415*	>30	19.6	21.6	19.4
Emulsified Water	scalar	Visual*	>0.2	NEG	NEG	NEG

FLUID CONDITION

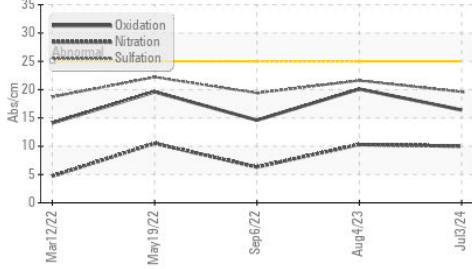
Viscosity of sample indicates oil is within SAE 40 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The condition of the oil is acceptable for the time in service.

Sodium	ppm	ASTM D5185(m)		2	4	2
Boron	ppm	ASTM D5185(m)	186	36	31	6
Barium	ppm	ASTM D5185(m)	<1	<1	0	0
Molybdenum	ppm	ASTM D5185(m)	79	81	57	54
Manganese	ppm	ASTM D5185(m)	0	0	<1	<1
Magnesium	ppm	ASTM D5185(m)	578	140	1132	915
Calcium	ppm	ASTM D5185(m)	1002	1985	805	1121
Phosphorus	ppm	ASTM D5185(m)	745	938	1081	1068
Zinc	ppm	ASTM D5185(m)	837	1115	1225	1158
Sulfur	ppm	ASTM D5185(m)	2502	3012	2792	2641
Oxidation	Abs/.1mm	ASTM D7414*	>25	16.4	20.1	14.6
Visc @ 100°C	cSt	ASTM D7279(m)	11.42	▲ 13.6	11.7	14.3

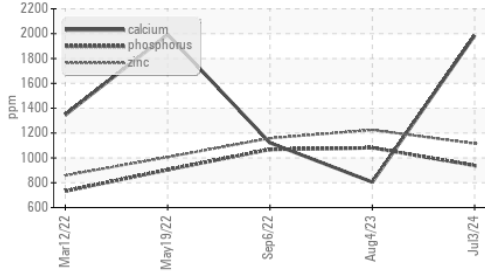
▲ Viscosity @ 100°C



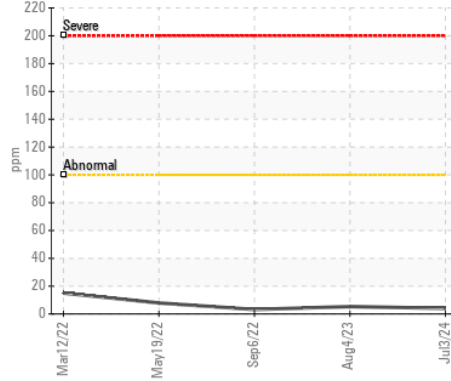
FT-IR (Direct Trend)



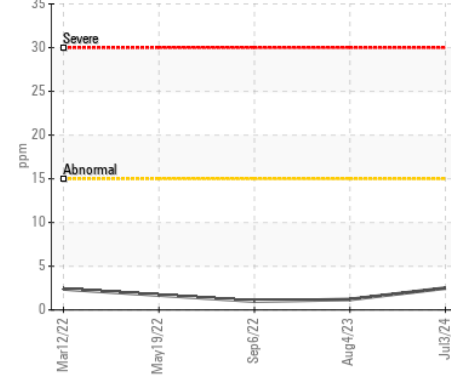
Additives



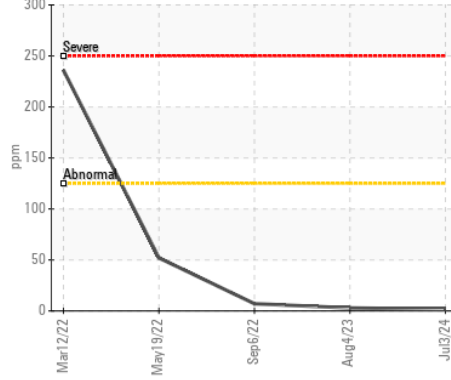
Iron (ppm)



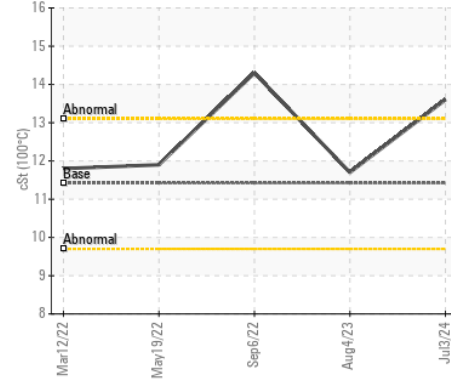
Aluminum (ppm)



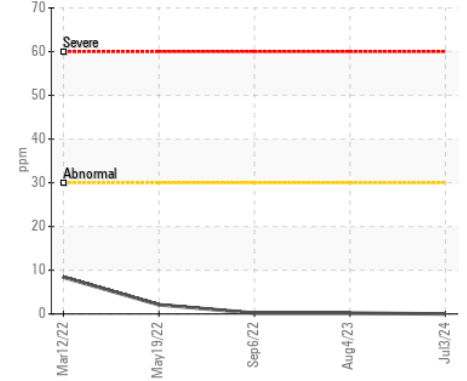
Copper (ppm)



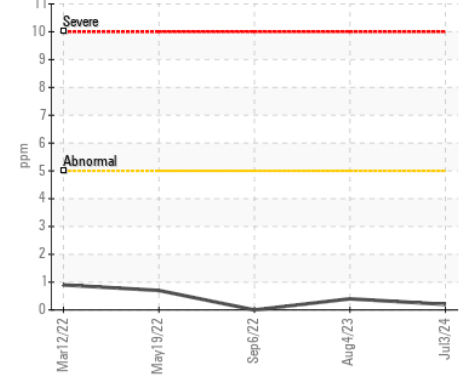
▲ Viscosity @ 100°C



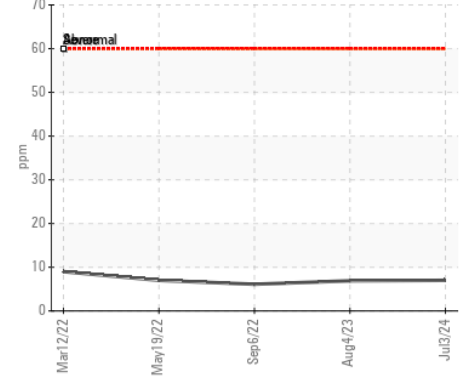
Lead (ppm)



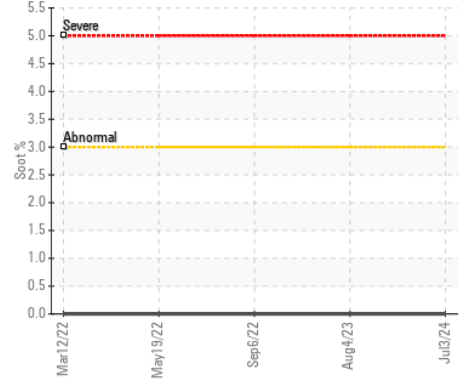
Chromium (ppm)



Silicon (ppm)



Soot %



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : LH0294725
Lab Number : 02645376
Unique Number : 5802915
Test Package : MOB 1

AMERICAN IRON AND METAL RECYCLING
 116 GOVERNMENT RD N
 TIMMINS, ON
 CA P4R 1M9
 Contact: Service Manager

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.

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 F: