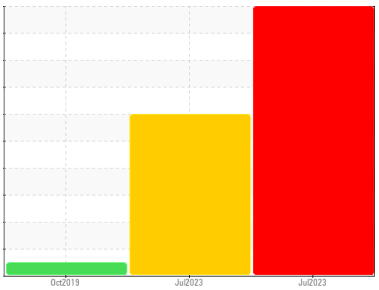
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Machine Id
OR917
Component
Diesel Engine
Fluid
CAT TDTO 30W (--- 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. We recommend an early resample to monitor this condition. No other corrective action is recommended at this time.

Wear

Iron ppm levels are severe. PQ levels are abnormal. Aluminum ppm levels are noted. Cylinder, crank, or cam shaft wear is indicated. The high ferrous density (PQ) index indicates that abnormal wear is occurring.

Contamination

Light fuel dilution occurring. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. High amount of ingressed dirt has caused abrasive wear to the component. No other contaminants were detected in the oil.

Fluid Condition

Viscosity of sample indicates oil is within SAE 20 range, advise investigate. 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		**PC0078066**	PC0078063	PC0021370
Sample Date		Client Info		**21 Jul 2023**	11 Jul 2023	08 Oct 2019
Machine Age	hrs	Client Info		**7510**	7510	5917
Oil Age	hrs	Client Info		**1000**	500	5473
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**SEVERE**	SEVERE	NORMAL

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*		▲ **201**	15	---
Iron	ppm	ASTM D5185(m)	>100	⬢ **335**	⬢ 313	33
Chromium	ppm	ASTM D5185(m)	>20	**6**	10	14
Nickel	ppm	ASTM D5185(m)	>4	**0**	<1	<1
Titanium	ppm	ASTM D5185(m)		**3**	<1	<1
Silver	ppm	ASTM D5185(m)	>3	**<1**	0	0
Aluminum	ppm	ASTM D5185(m)	>20	▲ **56**	9	8
Lead	ppm	ASTM D5185(m)	>40	**<1**	2	<1
Copper	ppm	ASTM D5185(m)	>330	**<1**	11	4
Tin	ppm	ASTM D5185(m)	>15	**0**	2	1
Antimony	ppm	ASTM D5185(m)		**0**	0	<1
Vanadium	ppm	ASTM D5185(m)		**<1**	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**	33	46
Barium	ppm	ASTM D5185(m)		**<1**	0	0
Molybdenum	ppm	ASTM D5185(m)		**4**	62	68
Manganese	ppm	ASTM D5185(m)		**3**	4	<1
Magnesium	ppm	ASTM D5185(m)		**37**	1209	1159
Calcium	ppm	ASTM D5185(m)	2980	**3208**	948	1061
Phosphorus	ppm	ASTM D5185(m)	1100	**1096**	1135	1062
Zinc	ppm	ASTM D5185(m)	1270	**1234**	1350	1303
Sulfur	ppm	ASTM D5185(m)		**8990**	2692	2843
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	⬢ **235**	17	14
Sodium	ppm	ASTM D5185(m)		**14**	6	4
Potassium	ppm	ASTM D5185(m)	>20	**22**	1	1
Fuel	%	ASTM D7593*	>5	**1.1**	<1.0	<1.0
Glycol	%	ASTM D7922*		**0.0**	NEG	NEG

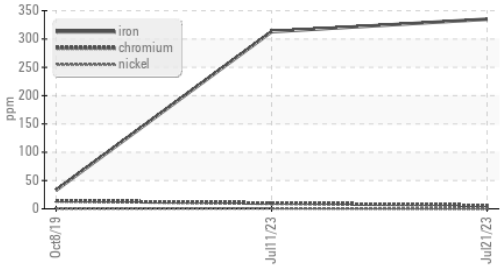
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	>3	**0**	0.5	0.5
Nitration	Abs/cm	ASTM D7624*	>20	**4.7**	12.8	12.0
Sulfation	Abs/.1mm	ASTM D7415*	>30	**17.8**	24.3	24.7

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*	>25	**3.5**	23.9	21.5

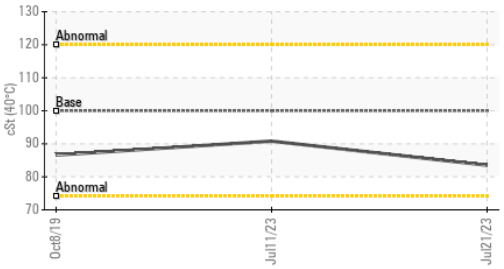
OIL ANALYSIS REPORT

LUBE 360 DIAGNOSTICS

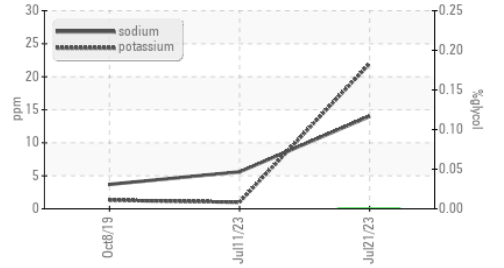
Ferrous Alloys



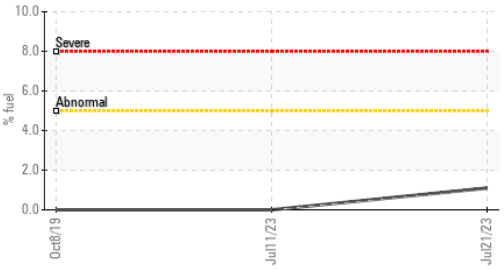
Viscosity @ 40°C



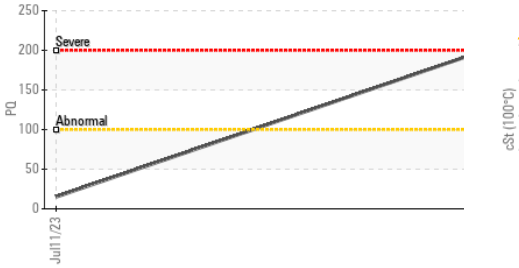
Glycol Contamination



Fuel Dilution



PQ

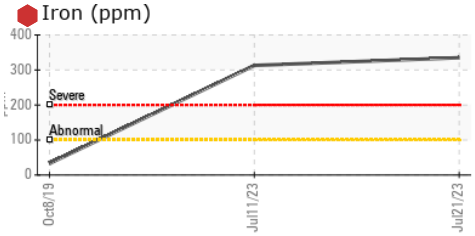


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	**NONE**	---	---
Yellow Metal	scalar	Visual*	NONE	**NONE**	---	---
Precipitate	scalar	Visual*	NONE	**NONE**	---	---
Silt	scalar	Visual*	NONE	**LIGHT**	---	---
Debris	scalar	Visual*	NONE	**NONE**	---	---
Sand/Dirt	scalar	Visual*	NONE	**NONE**	---	---
Appearance	scalar	Visual*	NORML	**NORML**	---	---
Odor	scalar	Visual*	NORML	**NORML**	NORML	---
Emulsified Water	scalar	Visual*	>0.2	**NEG**	NEG	NEG
Free Water	scalar	Visual*		**NEG**	NEG	NEG

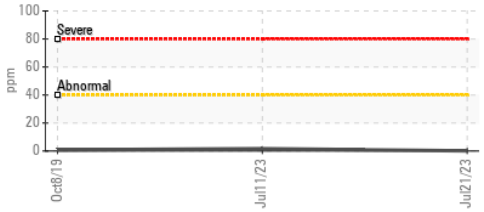
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	100	▲ **83.5**	90.8	86.6
Visc @ 100°C	cSt	ASTM D7279(m)	11.1	▲ **9**	14.1	13.8
Viscosity Index (VI)	Scale	ASTM D2270*	95	**76**	159	163

GRAPHS

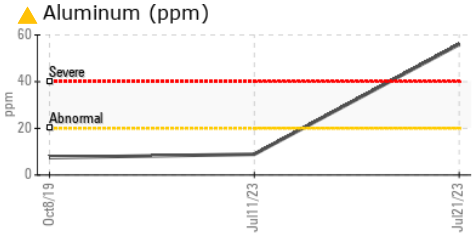
Iron (ppm)



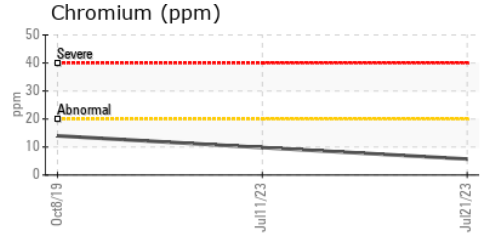
Lead (ppm)



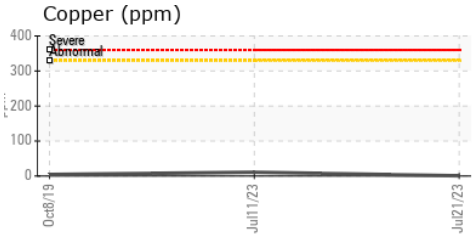
Aluminum (ppm)



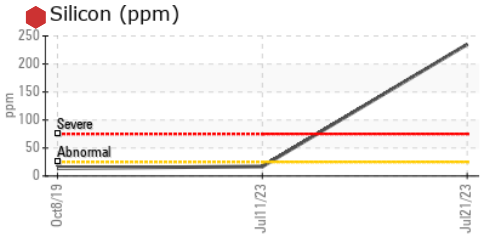
Chromium (ppm)



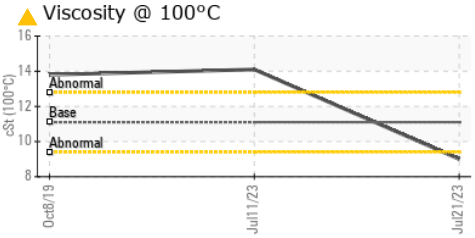
Copper (ppm)



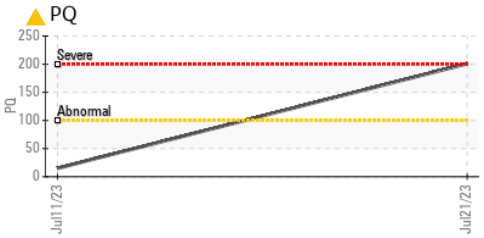
Silicon (ppm)



Viscosity @ 100°C



PQ



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Green Infrastructure and Partners Inc (GIPI) - 286 - Shoring & Foundations
Sample No. : PC0078066 **Received** : 25 Jul 2023 151 Ram Forest Rd,
Lab Number : 02571850 **Diagnosed** : 26 Jul 2023 Stouffville, ON
Unique Number : 5616901 **Diagnostician** : Kevin Marson CA L4A 2G8
Test Package : MOB 1 (Additional Tests: FuelDilution, Glycol, KV40, PercentFuel, PQ, VI, Visual) Contact: Shannon Abbott

To discuss this sample report, contact Customer Service at 1-800-268-2131. sabbott@gipi.com
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. T: (905)750-5900
Validity of results and interpretation are based on the sample and information as supplied. F: