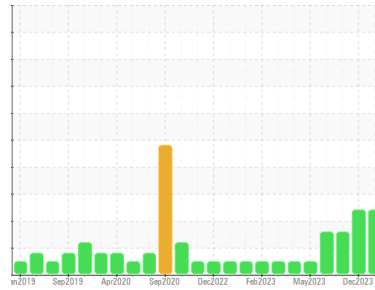




OIL ANALYSIS REPORT

Sample Rating Trend



DIRT



Machine Id
721012-361637

Component
Diesel Engine

Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear

The copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core).

Contamination

Elemental level of silicon (Si) above normal indicating ingress of seal material.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	GFL0102492	GFL0102525	GFL0098584
Sample Date	Client Info	29 Dec 2023	05 Dec 2023	19 Nov 2023
Machine Age	hrs	27642	27507	27381
Oil Age	hrs	0	0	0
Oil Changed	Client Info	Changed	N/A	N/A
Sample Status		ABNORMAL	ABNORMAL	ABNORMAL

CONTAMINATION

method	limit/base	current	history1	history2
Fuel	WC Method >5	<1.0	<1.0	<1.0
Water	WC Method >0.2	NEG	NEG	NEG
Glycol	WC Method	NEG	NEG	NEG

WEAR METALS

method	limit/base	current	history1	history2
Iron	ppm ASTM D5185m >80	45	32	23
Chromium	ppm ASTM D5185m >5	2	2	1
Nickel	ppm ASTM D5185m >2	0	<1	0
Titanium	ppm ASTM D5185m	0	<1	<1
Silver	ppm ASTM D5185m >3	<1	<1	<1
Aluminum	ppm ASTM D5185m >30	5	4	4
Lead	ppm ASTM D5185m >30	2	5	2
Copper	ppm ASTM D5185m >150	▲ 173	▲ 91	19
Tin	ppm ASTM D5185m >5	2	2	2
Vanadium	ppm ASTM D5185m	0	<1	<1
Cadmium	ppm ASTM D5185m	0	0	0

ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm ASTM D5185m 0	30	27	30
Barium	ppm ASTM D5185m 0	0	0	0
Molybdenum	ppm ASTM D5185m 60	50	40	38
Manganese	ppm ASTM D5185m 0	4	4	3
Magnesium	ppm ASTM D5185m 1010	667	492	507
Calcium	ppm ASTM D5185m 1070	2098	1687	1787
Phosphorus	ppm ASTM D5185m 1150	1002	755	746
Zinc	ppm ASTM D5185m 1270	1183	956	949
Sulfur	ppm ASTM D5185m 2060	3319	2482	2479

CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >20	▲ 31	▲ 27	▲ 26
Sodium	ppm ASTM D5185m	6	4	4
Potassium	ppm ASTM D5185m >20	5	4	3

INFRA-RED

method	limit/base	current	history1	history2
Soot %	% *ASTM D7844 >3	0.3	0.2	0.2
Nitration	Abs/cm *ASTM D7624 >20	9.6	8.7	7.0
Sulfation	Abs/.1mm *ASTM D7415 >30	22.4	22.7	20.8

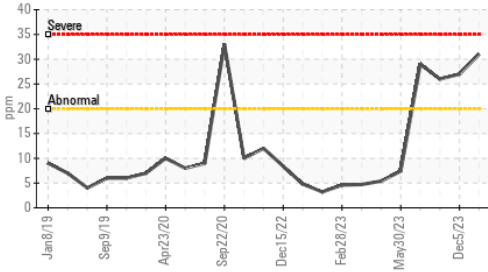
FLUID DEGRADATION

method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414 >25	22.4	22.1	19.1
Base Number (BN)	mg KOH/g ASTM D2896 9.8	8.4	9.0	7.6

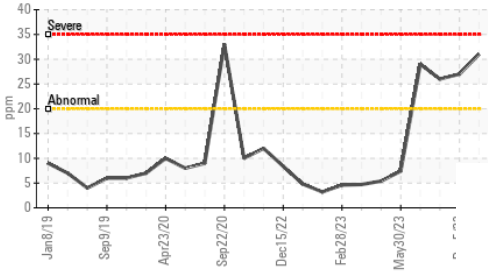


OIL ANALYSIS REPORT

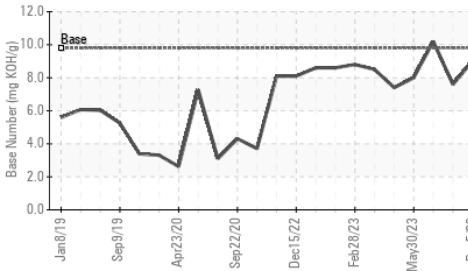
▲ Silicon (ppm)



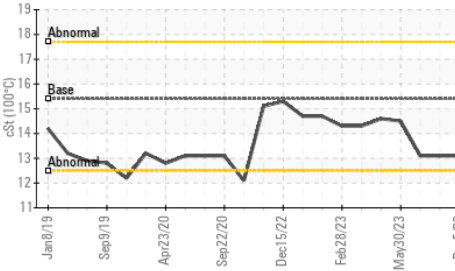
▲ Silicon (ppm)



Base Number



Viscosity @ 100°C



VISUAL

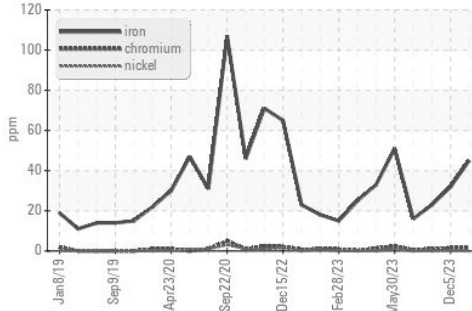
	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar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

FLUID PROPERTIES

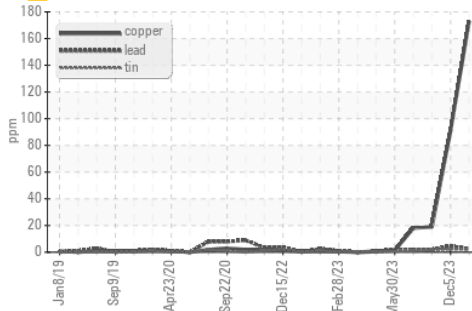
	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.2	13.1

GRAPHS

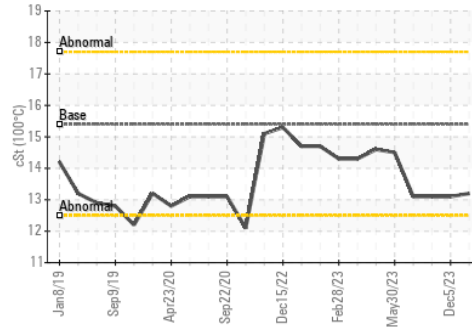
Ferrous Alloys



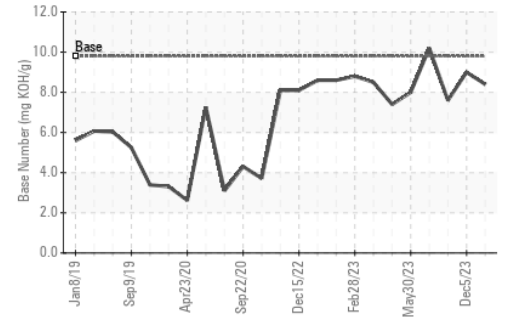
▲ Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
 Sample No. : GFL0102492
 Lab Number : 06055792
 Unique Number : 10821741
 Test Package : FLEET

GFL Environmental - 837 - Harrison TS
 22820 S State Route 291
 Harrisonville, MO
 US 64701
 Contact: BRYAN SWANSON
 bryanswanson@gflenv.com

To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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F: