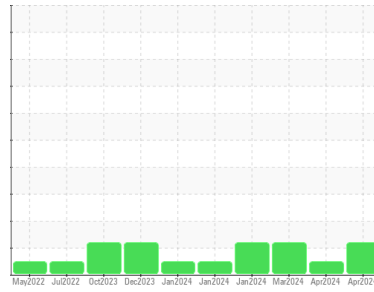




OIL ANALYSIS REPORT

Sample Rating Trend



GLYCOL



Machine Id
4517M
 Component
Diesel Engine
 Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

We advise that you check for possible coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels remain high.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	GFL0104485	GFL0104410	GFL0104299
Sample Date	Client Info	03 Apr 2024	02 Apr 2024	07 Mar 2024
Machine Age	hrs	23881	23881	23736
Oil Age	hrs	600	300	600
Oil Changed	Client Info	Changed	Changed	Changed
Sample Status		ABNORMAL	NORMAL	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

WEAR METALS

method	limit/base	current	history1	history2
Iron	ppm ASTM D5185m >80	25	23	17
Chromium	ppm ASTM D5185m >5	2	2	<1
Nickel	ppm ASTM D5185m >2	<1	<1	0
Titanium	ppm ASTM D5185m	<1	<1	0
Silver	ppm ASTM D5185m >3	0	<1	0
Aluminum	ppm ASTM D5185m >30	3	2	<1
Lead	ppm ASTM D5185m >30	<1	<1	0
Copper	ppm ASTM D5185m >150	2	2	2
Tin	ppm ASTM D5185m >5	<1	<1	0
Vanadium	ppm ASTM D5185m	<1	<1	0
Cadmium	ppm ASTM D5185m	<1	<1	0

ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm ASTM D5185m 0	4	1	4
Barium	ppm ASTM D5185m 0	0	0	0
Molybdenum	ppm ASTM D5185m 60	66	63	57
Manganese	ppm ASTM D5185m 0	<1	<1	0
Magnesium	ppm ASTM D5185m 1010	914	993	840
Calcium	ppm ASTM D5185m 1070	1023	1107	955
Phosphorus	ppm ASTM D5185m 1150	913	1044	927
Zinc	ppm ASTM D5185m 1270	1190	1294	1078
Sulfur	ppm ASTM D5185m 2060	2819	2992	3073

CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >20	15	6	12
Sodium	ppm ASTM D5185m	206	6	194
Potassium	ppm ASTM D5185m >20	8	2	4
Glycol	% *ASTM D2982	0.0	NEG	NEG

INFRA-RED

method	limit/base	current	history1	history2
Soot %	% *ASTM D7844 >3	0.6	0.4	0.5
Nitration	Abs/cm *ASTM D7624 >20	9.3	10.6	9.1
Sulfation	Abs/.1mm *ASTM D7415 >30	20.1	21.8	19.8

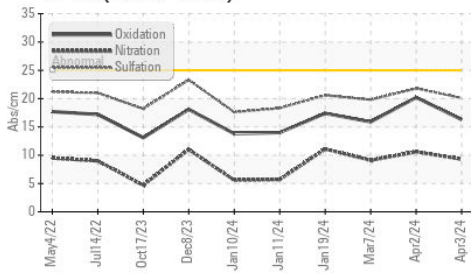
FLUID DEGRADATION

method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414 >25	16.3	20.2	15.9
Base Number (BN)	mg KOH/g ASTM D2896 9.8	8.3	6.4	8.4

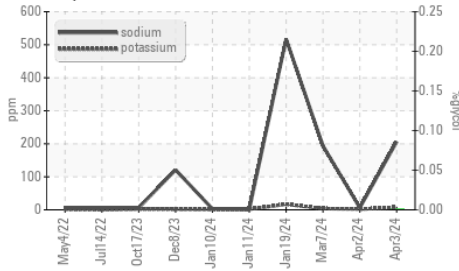


OIL ANALYSIS REPORT

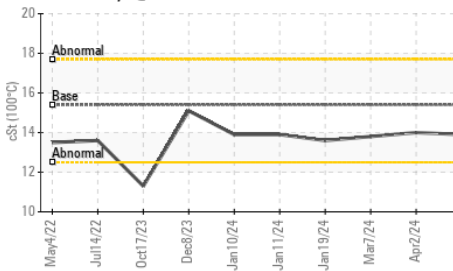
FT-IR (Direct Trend)



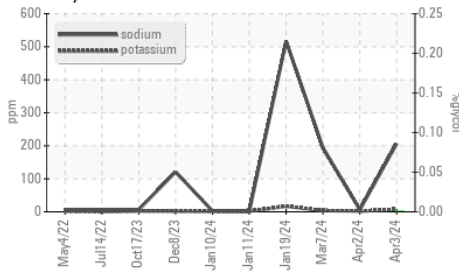
Glycol Contamination



Viscosity @ 100°C



Glycol Contamination

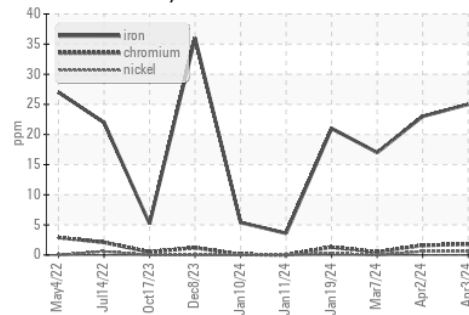


PARAMETER	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	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

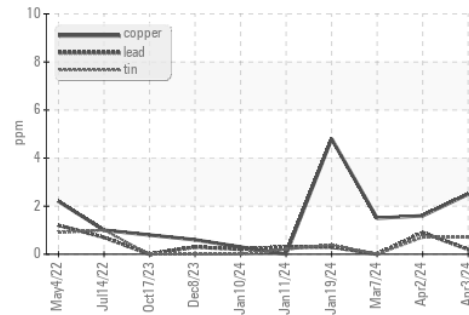
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.9	14.0

GRAPHS

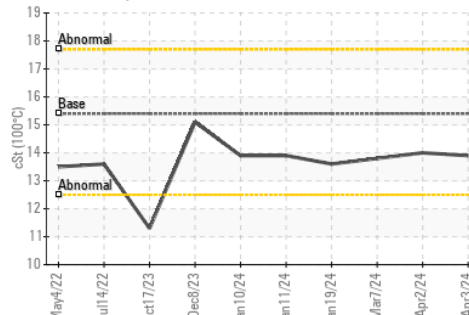
Ferrous Alloys



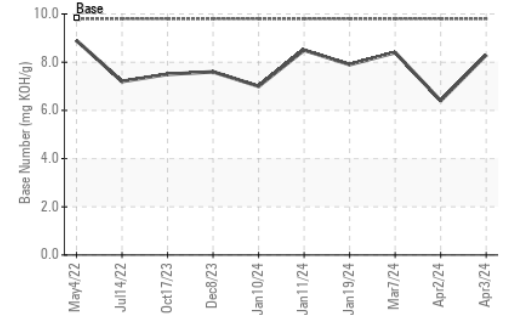
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : GFL0104485

Lab Number : 06140949

Unique Number : 10965757

Test Package : FLEET (Additional Tests: Glycol)

Received : 08 Apr 2024

Tested : 10 Apr 2024

Diagnosed : 10 Apr 2024 - Jonathan Hester

GFL Environmental - 410 - Michigan West

39000 Van Born Rd

Wayne, MI

US 48184

Contact: Belal Dgheish

bdgheish@gflenv.com

T: (734)714-2340

F:

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)