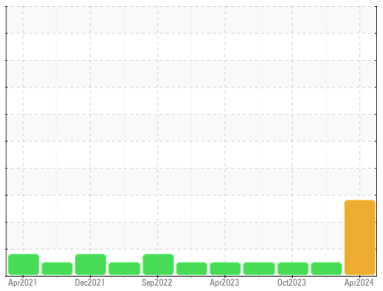
OIL ANALYSIS REPORT

Sample Rating Trend



DIRT

Machine Id
641M
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
An increase in the copper level is noted.

Contamination
Fuel content negligible. Elemental level of silicon (Si) above normal indicating ingress of seal material.

Fluid Condition
The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**GFL0116890**	GFL0107707	GFL0096534
Sample Date		Client Info		**18 Apr 2024**	05 Feb 2024	30 Oct 2023
Machine Age	hrs	Client Info		**9210**	9909	9219
Oil Age	hrs	Client Info		**600**	600	600
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**ABNORMAL**	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
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	>120	**43**	22	22
Chromium	ppm	ASTM D5185m	>20	**1**	2	<1
Nickel	ppm	ASTM D5185m	>5	**<1**	9	6
Titanium	ppm	ASTM D5185m	>2	**0**	<1	0
Silver	ppm	ASTM D5185m	>2	**0**	0	0
Aluminum	ppm	ASTM D5185m	>20	**4**	2	2
Lead	ppm	ASTM D5185m	>40	**<1**	<1	0
Copper	ppm	ASTM D5185m	>330	▲ **159**	3	<1
Tin	ppm	ASTM D5185m	>15	**2**	<1	<1
Vanadium	ppm	ASTM D5185m		**<1**	0	0
Cadmium	ppm	ASTM D5185m		**0**	<1	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	**111**	1	5
Barium	ppm	ASTM D5185m	0	**<1**	0	0
Molybdenum	ppm	ASTM D5185m	60	**106**	67	60
Manganese	ppm	ASTM D5185m	0	**4**	<1	<1
Magnesium	ppm	ASTM D5185m	1010	**749**	1052	927
Calcium	ppm	ASTM D5185m	1070	**1318**	1181	1067
Phosphorus	ppm	ASTM D5185m	1150	**797**	1027	986
Zinc	ppm	ASTM D5185m	1270	**974**	1347	1283
Sulfur	ppm	ASTM D5185m	2060	**2638**	2815	2756

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	▲ **58**	6	5
Sodium	ppm	ASTM D5185m		**3**	<1	3
Potassium	ppm	ASTM D5185m	>20	**8**	2	0
Fuel	%	ASTM D3524	>3.0	**0.4**	<1.0	<1.0

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>4	**0.5**	0.8	0.6
Nitration	Abs/cm	*ASTM D7624	>20	**10.5**	9.4	8.0
Sulfation	Abs/.1mm	*ASTM D7415	>30	**23.6**	20.7	20.3

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**22.0**	16.2	15.8
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	**6.3**	5.9	7.2

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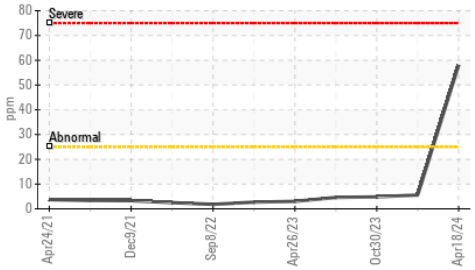
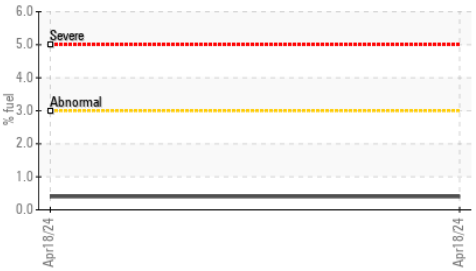
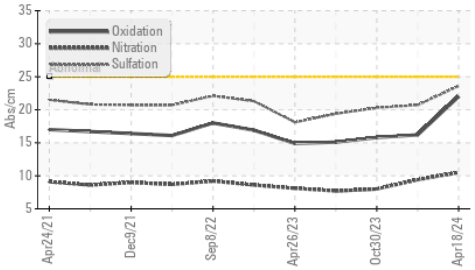
Silicon (ppm)



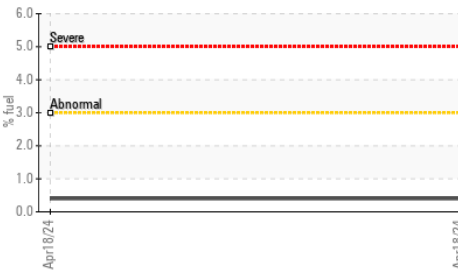
Fuel Dilution



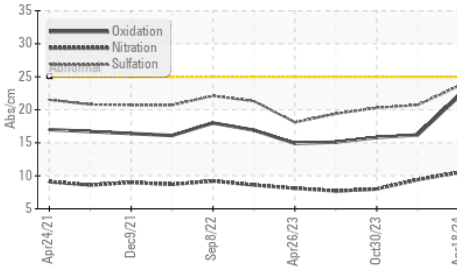
FT-IR (Direct Trend)



Fuel Dilution



FT-IR (Direct Trend)

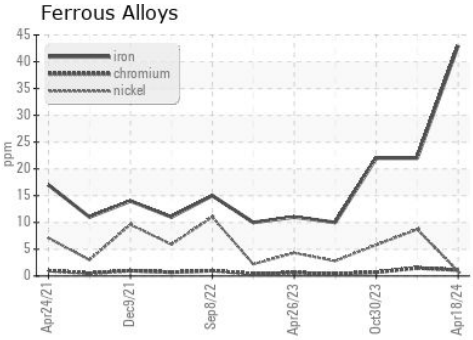


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

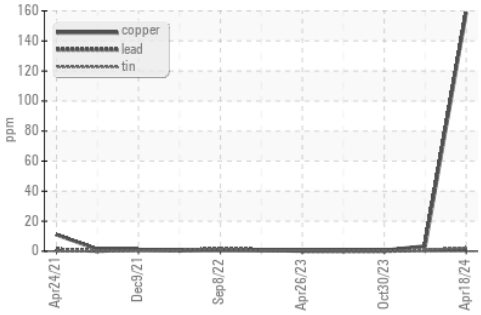
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	**10.7**	14.0	13.8

GRAPHS

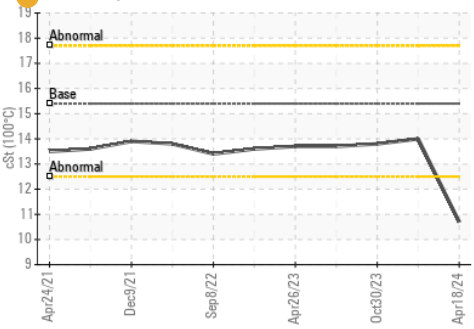
Ferrous Alloys



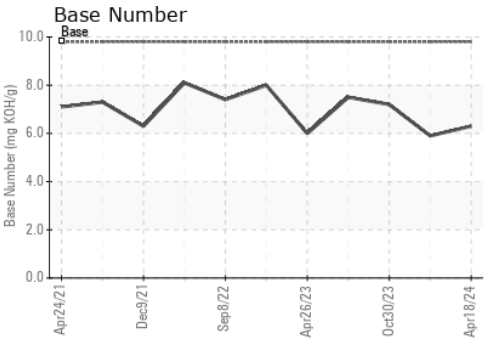
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : GFL0116890
Lab Number : 06157501
Unique Number : 10992924
Test Package : FLEET (Additional Tests: FuelDilution, PercentFuel)

Received : 23 Apr 2024
Tested : 25 Apr 2024
Diagnosed : 25 Apr 2024 - Jonathan Hester

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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