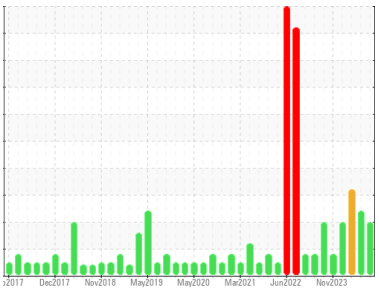
OIL ANALYSIS REPORT

Sample Rating Trend



DEGRADATION

Machine Id
2449 MACK GRANITE
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (48 QTS)

DIAGNOSIS

Recommendation
We advise that you check for faulty combustion, plugged air filters, or aftercoolers. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor. NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.

Wear
All component wear rates are normal.

Contamination
There is an abnormal amount of solids and carbon present in the oil.

Fluid Condition
The BN level is low.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**GFL0117508**	GFL0117490	GFL0094655
Sample Date		Client Info		**29 May 2024**	03 May 2024	12 Mar 2024
Machine Age	hrs	Client Info		**44080**	43868	43459
Oil Age	hrs	Client Info		**0**	0	0
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**ABNORMAL**	ABNORMAL	SEVERE

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	**<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	>120	**71**	48	97
Chromium	ppm	ASTM D5185m	>20	**<1**	1	2
Nickel	ppm	ASTM D5185m	>5	**0**	0	<1
Titanium	ppm	ASTM D5185m	>2	**0**	0	<1
Silver	ppm	ASTM D5185m	>2	**0**	0	<1
Aluminum	ppm	ASTM D5185m	>20	**2**	3	3
Lead	ppm	ASTM D5185m	>40	**3**	3	7
Copper	ppm	ASTM D5185m	>330	**48**	43	113
Tin	ppm	ASTM D5185m	>15	**2**	2	3
Vanadium	ppm	ASTM D5185m		**0**	0	<1
Cadmium	ppm	ASTM D5185m		**0**	0	<1

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	**2**	3	2
Barium	ppm	ASTM D5185m	0	**0**	0	0
Molybdenum	ppm	ASTM D5185m	60	**59**	64	55
Manganese	ppm	ASTM D5185m	0	**1**	1	2
Magnesium	ppm	ASTM D5185m	1010	**938**	897	952
Calcium	ppm	ASTM D5185m	1070	**1041**	1159	1107
Phosphorus	ppm	ASTM D5185m	1150	**1056**	1032	953
Zinc	ppm	ASTM D5185m	1270	**1240**	1213	1224
Sulfur	ppm	ASTM D5185m	2060	**3236**	3275	3052

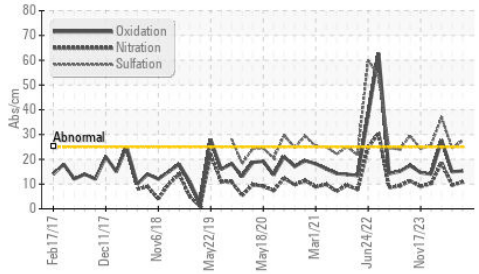
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**5**	6	4
Sodium	ppm	ASTM D5185m		**2**	▲ 82	4
Potassium	ppm	ASTM D5185m	>20	**<1**	▲ 134	3

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>4	▲ **4.7**	3.1	▲ 7.2
Nitration	Abs/cm	*ASTM D7624	>20	**10.8**	9.5	18.6
Sulfation	Abs/.1mm	*ASTM D7415	>30	**27.4**	24.6	36.9

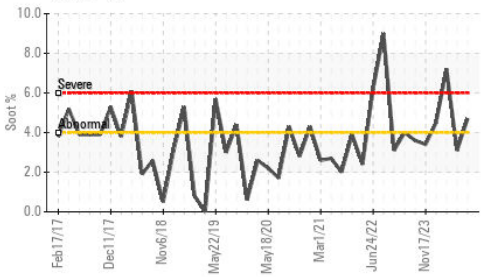
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**15.3**	14.9	27.7
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	▲ **0.0**	8.6	▲ 0.0

OIL ANALYSIS REPORT

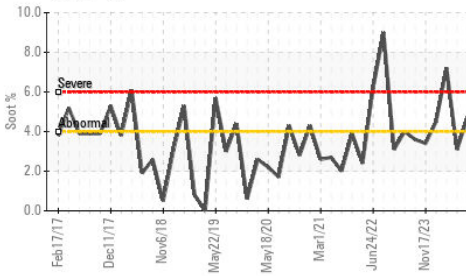
FT-IR (Direct Trend)



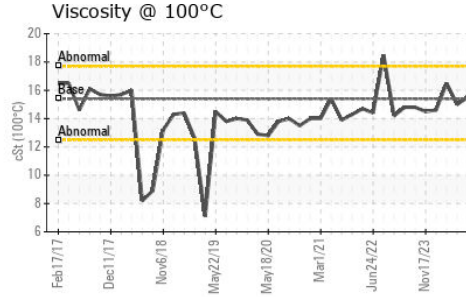
Soot %



Soot %



Viscosity @ 100°C

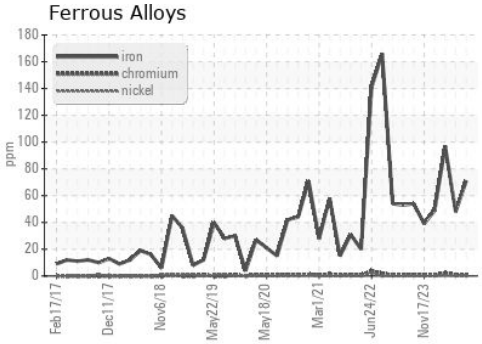


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

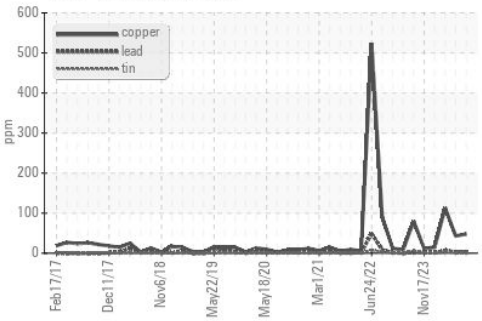
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	**15.5**	15.0	16.5

GRAPHS

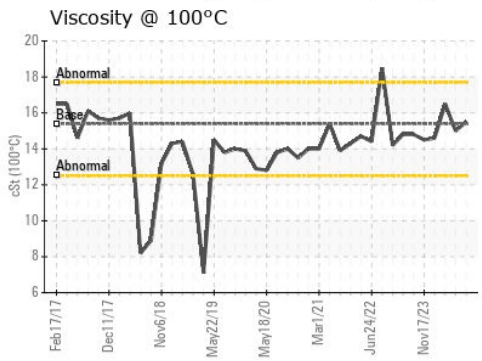
Ferrous Alloys



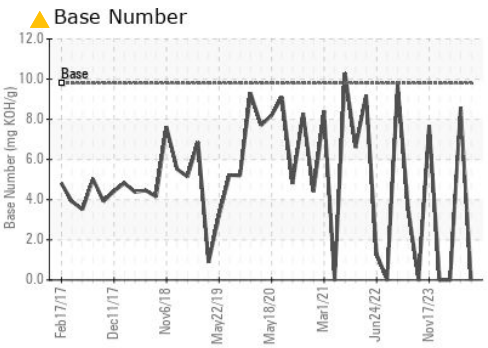
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : GFL0117508
Lab Number : 06196241
Unique Number : 11058364
Test Package : FLEET

Received : 31 May 2024
Tested : 03 Jun 2024
Diagnosed : 03 Jun 2024 - Don Baldridge

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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