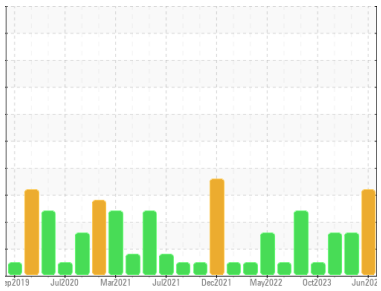
OIL ANALYSIS REPORT

Area
(YA152770) GFL035
Machine Id
12061
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (32 QTS)

Sample Rating Trend



DIRT

DIAGNOSIS

Recommendation
We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. 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). All other component wear rates are normal.

Contamination
Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Fluid Condition
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**GFL0116501**	GFL0116467	GFL0116430
Sample Date		Client Info		**05 Jun 2024**	25 Apr 2024	01 Apr 2024
Machine Age	hrs	Client Info		**17020**	17020	17020
Oil Age	hrs	Client Info		**600**	600	600
Oil Changed		Client Info		**Not Changd**	Not Changd	Not Changd
Sample Status				**ABNORMAL**	ABNORMAL	ABNORMAL

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	>75	**49**	▲ 92	▲ 126
Chromium	ppm	ASTM D5185m	>5	**1**	▲ 5	▲ 7
Nickel	ppm	ASTM D5185m	>4	**2**	<1	2
Titanium	ppm	ASTM D5185m	>2	**<1**	<1	<1
Silver	ppm	ASTM D5185m	>2	**<1**	0	0
Aluminum	ppm	ASTM D5185m	>15	● **9**	7	9
Lead	ppm	ASTM D5185m	>25	**<1**	2	2
Copper	ppm	ASTM D5185m	>100	▲ **100**	6	8
Tin	ppm	ASTM D5185m	>4	**2**	2	1
Vanadium	ppm	ASTM D5185m		**0**	0	<1
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	**30**	3	2
Barium	ppm	ASTM D5185m	0	**14**	0	<1
Molybdenum	ppm	ASTM D5185m	60	**41**	66	67
Manganese	ppm	ASTM D5185m	0	**3**	<1	1
Magnesium	ppm	ASTM D5185m	1010	**478**	1026	998
Calcium	ppm	ASTM D5185m	1070	**2239**	1263	1266
Phosphorus	ppm	ASTM D5185m	1150	**786**	1138	1100
Zinc	ppm	ASTM D5185m	1270	**1075**	1404	1390
Sulfur	ppm	ASTM D5185m	2060	**3004**	3720	3517

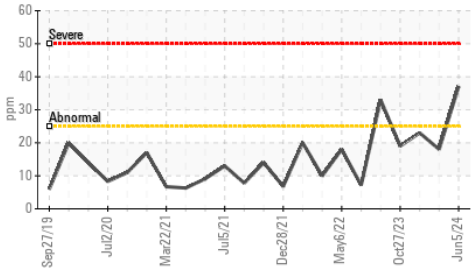
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	▲ **37**	18	23
Sodium	ppm	ASTM D5185m		**6**	6	8
Potassium	ppm	ASTM D5185m	>20	**17**	<1	2

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>6	**0.5**	1.1	1.5
Nitration	Abs/cm	*ASTM D7624	>20	**8.8**	9.9	12.6
Sulfation	Abs/.1mm	*ASTM D7415	>30	**21.3**	22.0	24.5

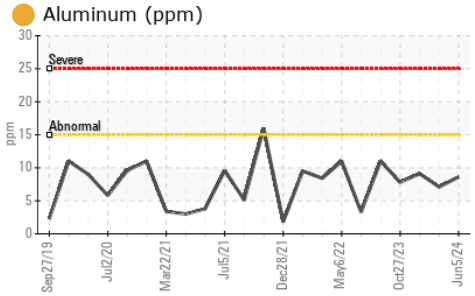
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**19.7**	18.3	21.6
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	**6.9**	8.2	6.3

OIL ANALYSIS REPORT

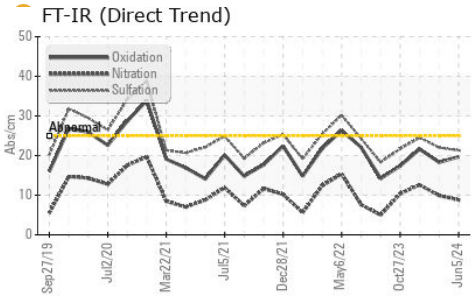
Silicon (ppm)



Aluminum (ppm)



FT-IR (Direct Trend)



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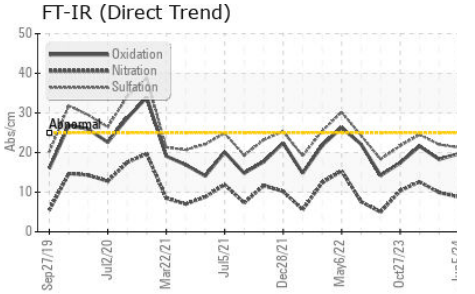
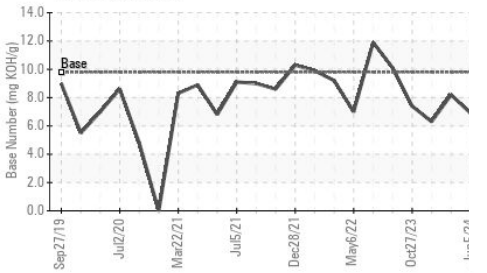


Base Number

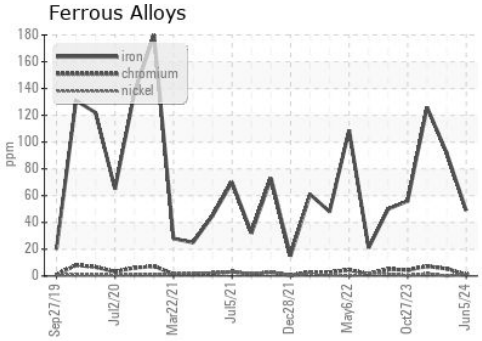


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

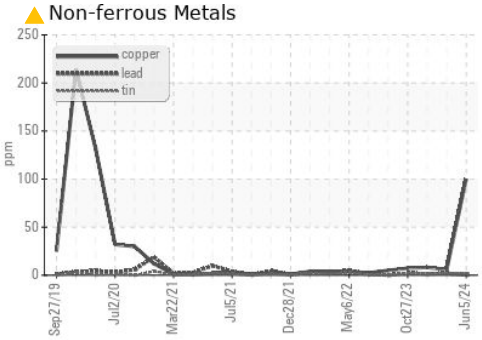
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	**13.5**	14.7	14.6

GRAPHS

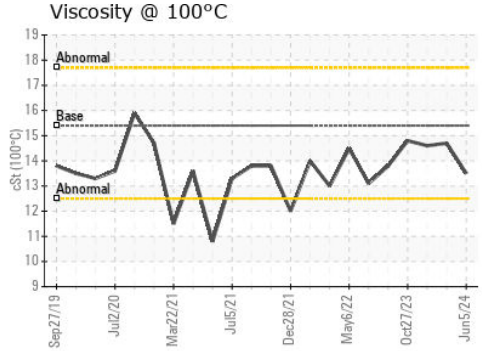
Ferrous Alloys



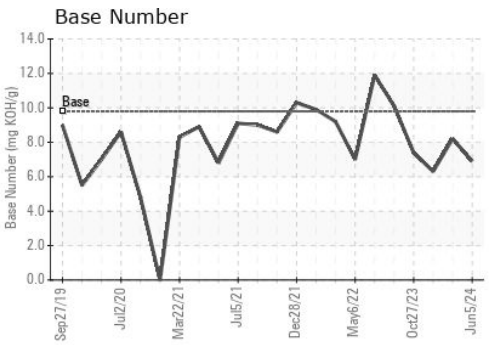
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : GFL0116501
Lab Number : 06201359
Unique Number : 11063482
Test Package : FLEET

Received : 06 Jun 2024
Tested : 07 Jun 2024
Diagnosed : 09 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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