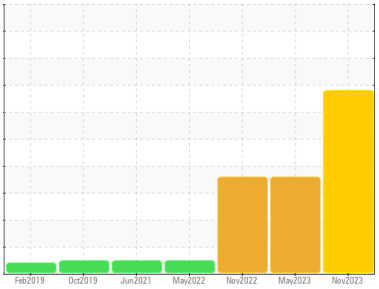
PROBLEM SUMMARY

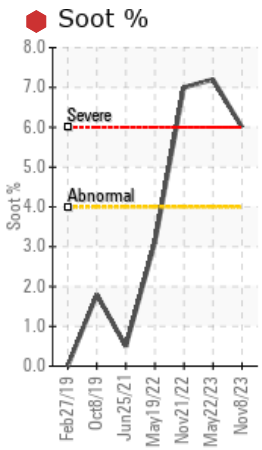
Machine Id
425045-402188
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

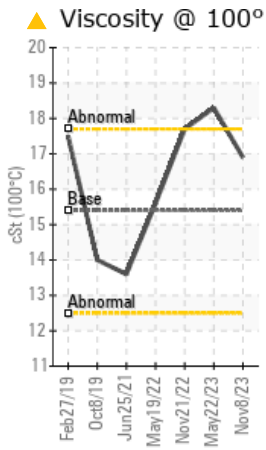
Sample Rating Trend

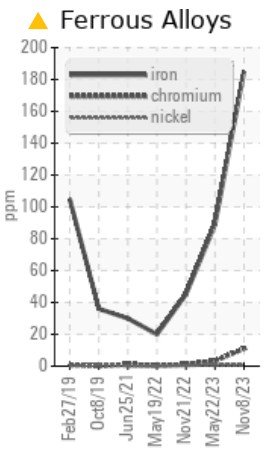


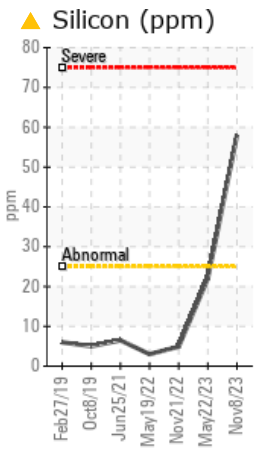
SOOT

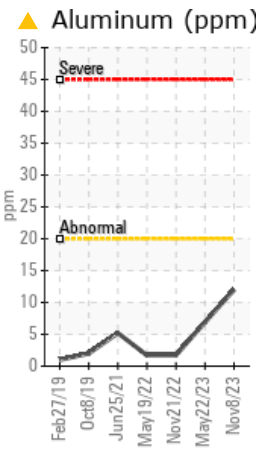
COMPONENT CONDITION SUMMARY











RECOMMENDATION

We advise that you check for faulty combustion, plugged air filters, or aftercoolers. We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.

PROBLEMATIC TEST RESULTS

Sample Status				**SEVERE**	SEVERE	SEVERE
Iron	ppm	ASTM D5185m	>120	▲ **185**	89	45
Aluminum	ppm	ASTM D5185m	>20	▲ **12**	7	2
Silicon	ppm	ASTM D5185m	>25	▲ **58**	22	5
Soot %	%	*ASTM D7844	>4	⬢ **6**	⬢ 7.2	⬢ 7
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	▲ **0.0**	▲ 0.0	▲ 0.0
Visc @ 100°C	cSt	ASTM D445	15.4	▲ **16.9**	▲ 18.3	▲ 17.7

Customer Id: GFL891
Sample No.: GFL0093535
Lab Number: 06003456
Test Package: FLEET

To manage this report scan the QR code

To discuss the diagnosis or test data:
Don Baldridge +1
don.b505@comcast.net

To change component or sample information:
Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Fluid	---	---	?	Oil and filter change at the time of sampling has been noted.
Change Filter	---	---	?	Oil and filter change at the time of sampling has been noted.
Resample	---	---	?	We recommend an early resample to monitor this condition.
Alert	---	---	?	NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.
Check Combustion	---	---	?	We advise that you check for faulty combustion, plugged air filters, or aftercoolers.
Check Dirt Access	---	---	?	We advise that you check the air filter, air induction system, and any areas where dirt may enter the component.

HISTORICAL DIAGNOSIS

22 May 2023 Diag: Jonathan Hester

SOOT

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. We recommend an early resample to monitor this condition. NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.All component wear rates are normal. There is an abnormal amount of solids and carbon present in the oil. The oil viscosity is higher than normal. The BN level is low.

view report

21 Nov 2022 Diag: Jonathan Hester

SOOT

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. We recommend an early resample to monitor this condition. NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.All component wear rates are normal. There is an abnormal amount of solids and carbon present in the oil. The oil viscosity is higher than normal. The BN level is low.

view report

19 May 2022 Diag: Wes Davis

NORMAL

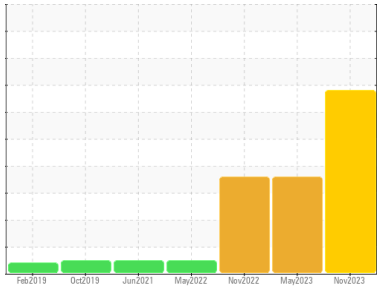
Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

view report

OIL ANALYSIS REPORT

Machine Id
425045-402188
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

Sample Rating Trend



SOOT

DIAGNOSIS

Recommendation
We advise that you check for faulty combustion, plugged air filters, or aftercoolers. We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.

Wear
Cylinder, crank, or cam shaft wear is indicated.

Contamination
There is an abnormal amount of solids and carbon present in the oil. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Fluid Condition
The oil viscosity is higher than normal. The BN level is low.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**GFL0093535**	GFL0060591	GFL0051924
Sample Date		Client Info		**08 Nov 2023**	22 May 2023	21 Nov 2022
Machine Age	hrs	Client Info		**35699**	35132	34529
Oil Age	hrs	Client Info		**0**	604	600
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**SEVERE**	SEVERE	SEVERE

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	**<1.0**	<1.0	<1.0
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	▲ **185**	89	45
Chromium	ppm	ASTM D5185m	>20	**11**	3	1
Nickel	ppm	ASTM D5185m	>5	**<1**	<1	<1
Titanium	ppm	ASTM D5185m	>2	**<1**	1	<1
Silver	ppm	ASTM D5185m	>2	**0**	0	0
Aluminum	ppm	ASTM D5185m	>20	▲ **12**	7	2
Lead	ppm	ASTM D5185m	>40	**5**	5	2
Copper	ppm	ASTM D5185m	>330	**6**	14	5
Tin	ppm	ASTM D5185m	>15	**0**	2	<1
Vanadium	ppm	ASTM D5185m		**0**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	**<1**	3	4
Barium	ppm	ASTM D5185m	0	**0**	0	0
Molybdenum	ppm	ASTM D5185m	60	**63**	63	61
Manganese	ppm	ASTM D5185m	0	**2**	2	<1
Magnesium	ppm	ASTM D5185m	1010	**1060**	1017	985
Calcium	ppm	ASTM D5185m	1070	**1230**	1227	1124
Phosphorus	ppm	ASTM D5185m	1150	**1142**	1036	1013
Zinc	ppm	ASTM D5185m	1270	**1387**	1362	1293
Sulfur	ppm	ASTM D5185m	2060	**3139**	3379	3382

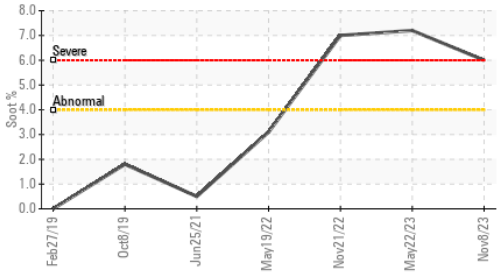
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	▲ **58**	22	5
Sodium	ppm	ASTM D5185m		**4**	3	2
Potassium	ppm	ASTM D5185m	>20	**6**	6	0

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>4	● **6**	● 7.2	● 7
Nitration	Abs/cm	*ASTM D7624	>20	**16.2**	37.2	16.2
Sulfation	Abs/.1mm	*ASTM D7415	>30	**33.8**	67.4	35.2

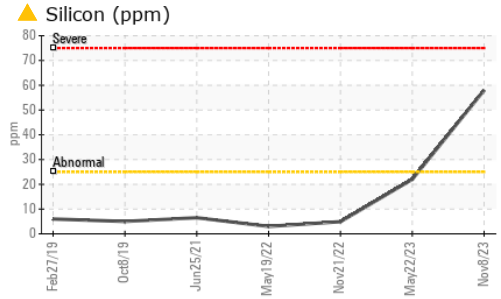
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**25.2**	85.7	23.7
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	▲ **0.0**	▲ 0.0	▲ 0.0

OIL ANALYSIS REPORT

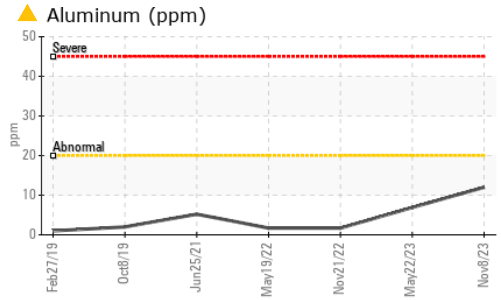
Soot %



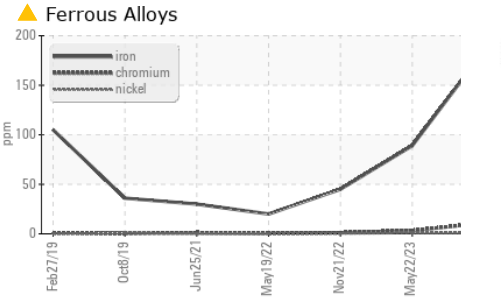
Silicon (ppm)



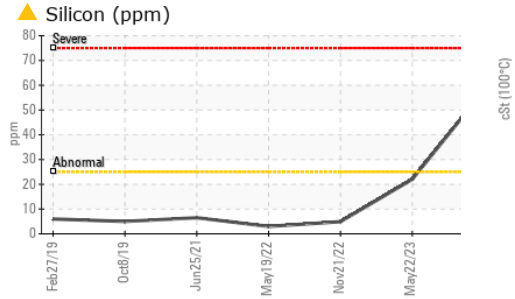
Aluminum (ppm)



Ferrous Alloys



Silicon (ppm)

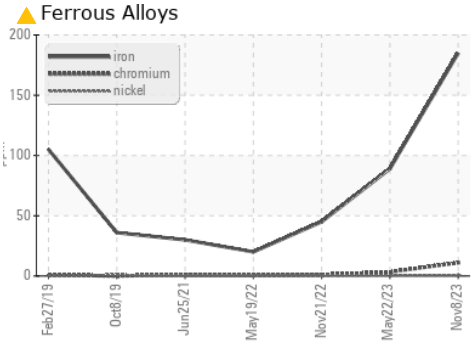


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

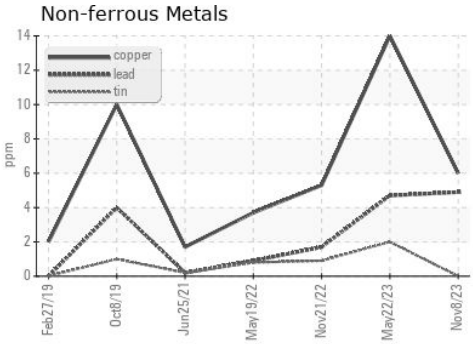
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	▲ **16.9**	▲ 18.3	▲ 17.7

GRAPHS

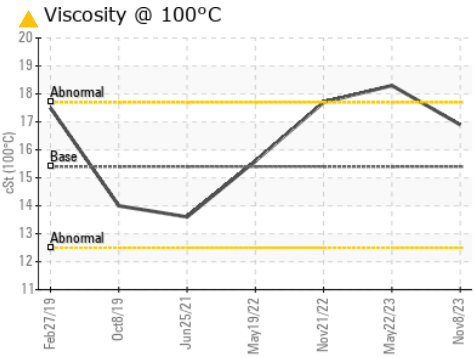
Ferrous Alloys



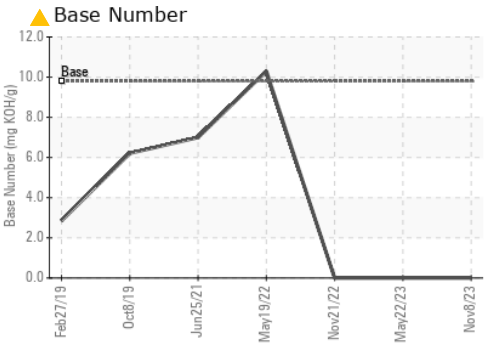
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : GFL0093535
Lab Number : 06003456
Unique Number : 10737218
Test Package : FLEET

Received : 09 Nov 2023
Diagnosed : 13 Nov 2023
Diagnostician : 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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US 73128
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andrew.smith@gflenv.com
T: (405)306-1651
F: