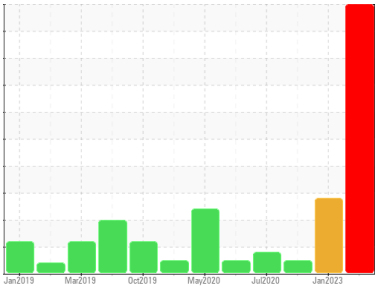
PROBLEM SUMMARY

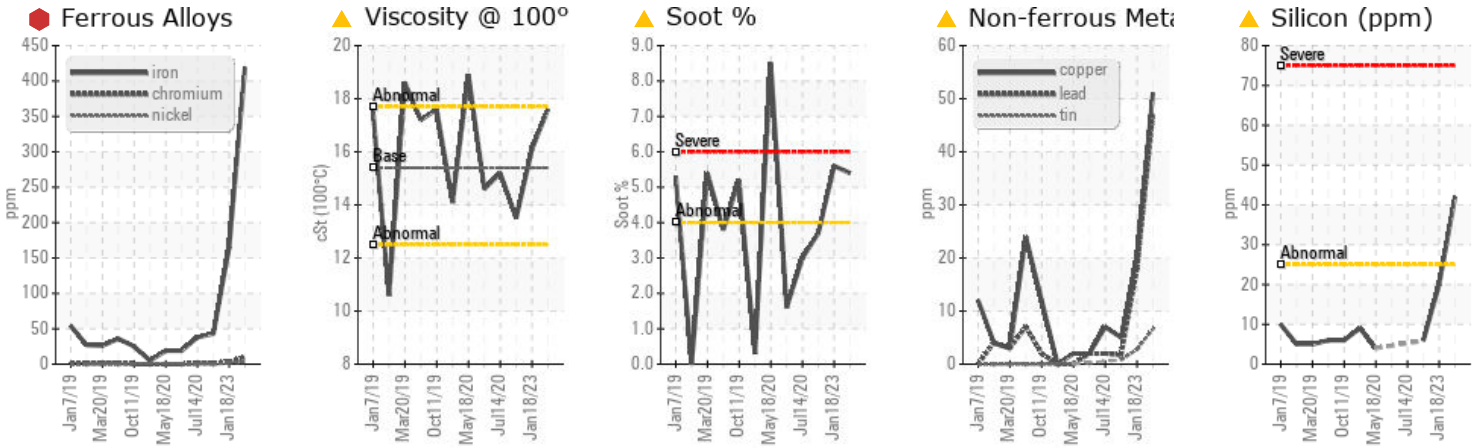
Machine Id
727077-361319
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

Sample Rating Trend



WEAR

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. We recommend that you drain the oil and perform a filter service on this component if not already done. We advise that you inspect for the source(s) of wear. 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	ABNORMAL	NORMAL
Iron	ppm	ASTM D5185m	>120	**419**	165	43
Aluminum	ppm	ASTM D5185m	>20	**13**	6	2
Lead	ppm	ASTM D5185m	>40	**47**	18	2
Silicon	ppm	ASTM D5185m	>25	**42**	20	6
Soot %	%	*ASTM D7844	>4	**5.4**	5.6	3.7
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	**0.0**	0.0	6.7
Visc @ 100°C	cSt	ASTM D445	15.4	**17.6**	16.1	13.5

Customer Id: GFL829
Sample No.: GFL0065535
Lab Number: 05789396
Test Package: FLEET

To manage this report scan the QR code

To discuss the diagnosis or test data:
Jonathan Hester +1 919-379-4092 x4092
jhester@wearcheckusa.com

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

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Inspect Wear Source	MISSED	Mar 29 2023	?	We advise that you inspect for the source(s) of wear.
Change Fluid	MISSED	Mar 29 2023	?	We recommend that you drain the oil and perform a filter service on this component if not already done.
Change Filter	MISSED	Mar 29 2023	?	We recommend that you drain the oil and perform a filter service on this component if not already done.
Resample	MISSED	Mar 29 2023	?	We recommend an early resample to monitor this condition.
Alert	MISSED	Mar 29 2023	?	NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.
Check Combustion	MISSED	Mar 29 2023	?	We advise that you check for faulty combustion, plugged air filters, or aftercoolers.
Check Dirt Access	MISSED	Mar 29 2023	?	We advise that you check the air filter, air induction system, and any areas where dirt may enter the component.

HISTORICAL DIAGNOSIS

18 Jan 2023 Diag: Don Baldridge

DEGRADATION

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.Cylinder, crank, or cam shaft wear is indicated. There is an abnormal amount of solids and carbon present in the oil. The BN level is low.

view report

26 May 2022 Diag: Wes Davis

NORMAL

Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.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

14 Jul 2020 Diag: Wes Davis

SOOT

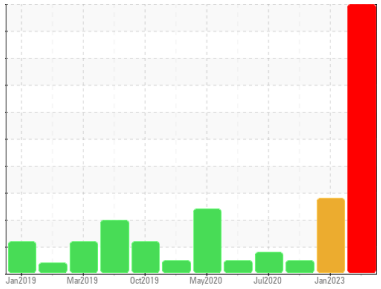
We recommend that you drain the oil from the component if this has not already been done.All component wear rates are normal. Light concentration of carbon/soot present in the oil. The oil is no longer serviceable due to the presence of contaminants.

view report

OIL ANALYSIS REPORT

Machine Id
727077-361319
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

Sample Rating Trend



WEAR

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. We recommend that you drain the oil and perform a filter service on this component if not already done. We advise that you inspect for the source(s) of wear. 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. Bearing and/or bushing 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. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**GFL0065535**	GFL0065565	GFL0051275
Sample Date		Client Info		**06 Mar 2023**	18 Jan 2023	26 May 2022
Machine Age	hrs	Client Info		**0**	0	11196
Oil Age	hrs	Client Info		**0**	0	450
Oil Changed		Client Info		**Not Changd**	Changed	Changed
Sample Status				**SEVERE**	ABNORMAL	NORMAL

CONTAMINATION	method	limit/base	current	history1	history2
Glycol	WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	**419**	165	43
Chromium	ppm	ASTM D5185m	>20	**10**	3	1
Nickel	ppm	ASTM D5185m	>5	**3**	2	<1
Titanium	ppm	ASTM D5185m	>2	**<1**	<1	0
Silver	ppm	ASTM D5185m	>2	**0**	0	<1
Aluminum	ppm	ASTM D5185m	>20	**13**	6	2
Lead	ppm	ASTM D5185m	>40	**47**	18	2
Copper	ppm	ASTM D5185m	>330	**51**	20	5
Tin	ppm	ASTM D5185m	>15	**7**	3	<1
Antimony	ppm	ASTM D5185m		**---**	---	---
Vanadium	ppm	ASTM D5185m		**<1**	<1	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	**3**	3	9
Barium	ppm	ASTM D5185m	0	**2**	0	0
Molybdenum	ppm	ASTM D5185m	60	**82**	66	55
Manganese	ppm	ASTM D5185m	0	**3**	1	<1
Magnesium	ppm	ASTM D5185m	1010	**1216**	986	838
Calcium	ppm	ASTM D5185m	1070	**1425**	1214	1104
Phosphorus	ppm	ASTM D5185m	1150	**1312**	1107	974
Zinc	ppm	ASTM D5185m	1270	**1605**	1348	1247
Sulfur	ppm	ASTM D5185m	2060	**2953**	2690	3006

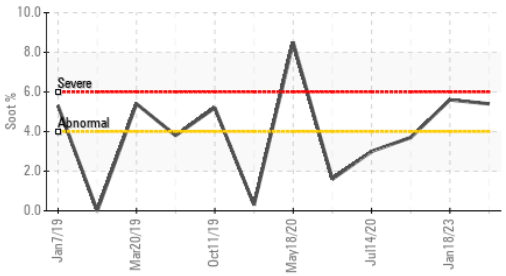
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**42**	20	6
Sodium	ppm	ASTM D5185m		**2**	1	2
Potassium	ppm	ASTM D5185m	>20	**3**	2	<1
Fuel	%	ASTM D3524	>5	**<1.0**	<1.0	<1.0

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>4	**5.4**	5.6	3.7
Nitration	Abs/cm	*ASTM D7624	>20	**12.0**	15.5	12.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	**37.8**	34.2	26.9

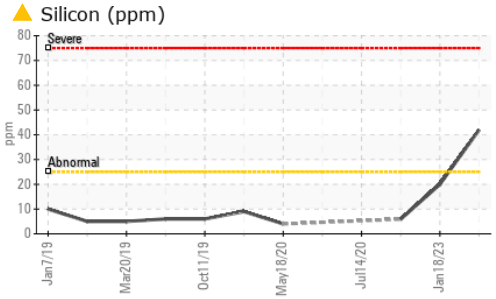
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**13.2**	21.3	16.7
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	**0.0**	0.0	6.7

OIL ANALYSIS REPORT

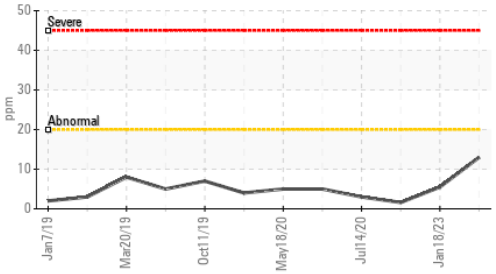
Soot %



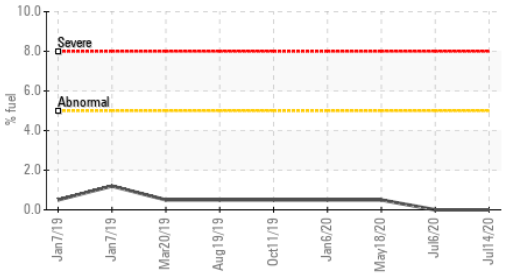
Silicon (ppm)



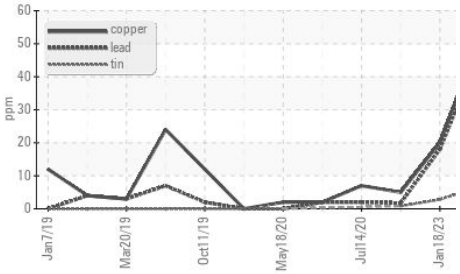
Aluminum (ppm)



Fuel Dilution



Non-ferrous Metals

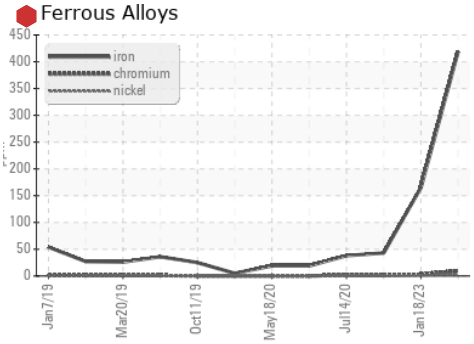


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

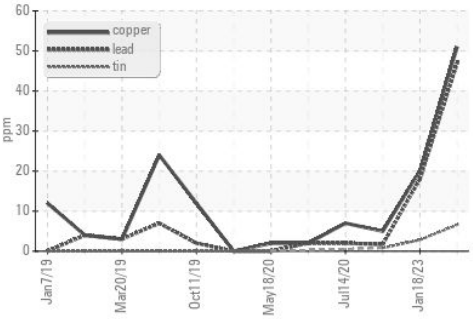
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	▲ **17.6**	16.1	13.5

GRAPHS

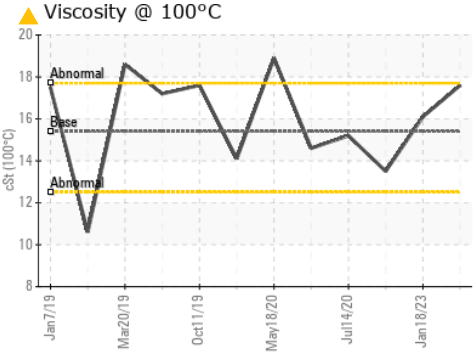
Ferrous Alloys



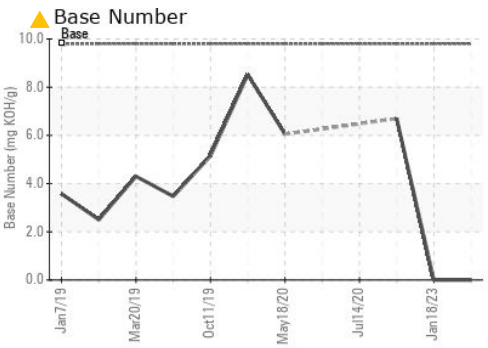
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : GFL0065535 **Received** : 13 Mar 2023
Lab Number : 05789396 **Diagnosed** : 14 Mar 2023
Unique Number : 10374067 **Diagnostician** : Jonathan Hester
Test Package : FLEET (Additional Tests: FuelDilution)

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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