

PROBLEM SUMMARY

Sample Rating Trend





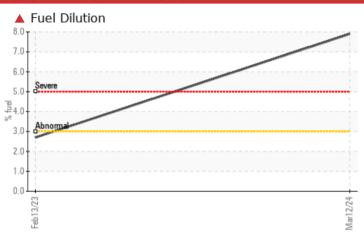


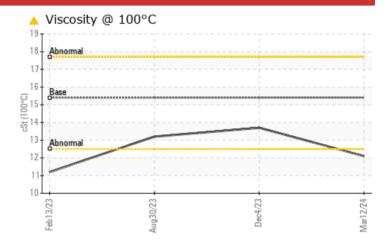
Machine Id
213005
Component
Diesel Engin

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)

COMPONENT CONDITION SUMMARY





RECOMMENDATION

We advise that you check the fuel injection system. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS									
Sample Status				SEVERE	NORMAL	NORMAL			
Fuel	%	ASTM D3524	>3.0	1.9	<1.0	<1.0			
Visc @ 100°C	cSt	ASTM D445	15.4	12.1	13.7	13.2			

Customer Id: GFL932 Sample No.: GFL0113987 Lab Number: 06120525 Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data: Wes Davis +1 905-569-8600 x223 wesd@wearcheck.ca

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

Action Status Date Done By Description Resample --- ? We recommend an early resample to monitor this condition. Check Fuel/injector System --- ? We advise that you check the fuel injection system.

HISTORICAL DIAGNOSIS

04 Dec 2023 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.



30 Aug 2023 Diag: Wes Davis

NORMAL



Resample at the next service interval to monitor. Metal levels are typical for a new component breaking in. 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

13 Feb 2023 Diag: Jonathan Hester

FUEL



No corrective action is recommended at this time. Resample at the next service interval to monitor.All component wear rates are normal. Light fuel dilution occurring. The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.



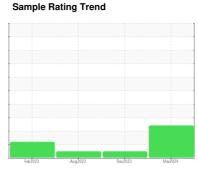


OIL ANALYSIS REPORT



Machine Id 213005 Component **Diesel Engine**

PETRO CANADA DURON SHP 15W40 (--- GAL)





DIAGNOSIS

Recommendation

We advise that you check the fuel injection system. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

▲ Contamination

There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

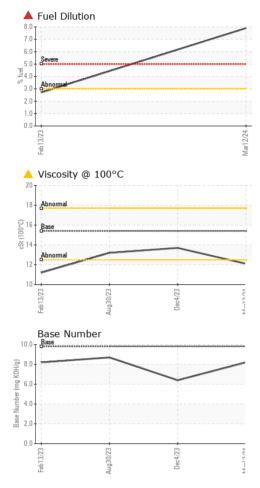
▲ Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

Sample Number Client Info GFL0113987 GFL0086734 GFL007129	N SHP 15W40 (-	GAL)	Feb 202	3 Aug2023	Dec2023 N	lar2024	
Sample Date	SAMPLE INFOR	RMATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info Dil Changed Changed Changed Not Changed Sample Status CONTAMINATION method Imitibase current history1 history2 Water WC Method NEG NEG NEG NEG Glycol WC Method NEG NEG NEG NEG Silvol WC Method NEG	Sample Number		Client Info		GFL0113987	GFL0086734	GFL007129
Dil Age	Sample Date		Client Info		12 Mar 2024	04 Dec 2023	30 Aug 2023
Contact Con	•	hrs	Client Info		2608	2773	_
Sever NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history2 NEG N	Oil Age	hrs	Client Info		0	2773	1696
Sever NORMAL NORMAL NORMAL NORMAL			Client Info		Changed	Changed	Not Changd
Water WC Method >0.2 NEG NEG NEG Biycol WC Method Ilmit/base NEG NEG NEG WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5185m >120 15 12 11 Chromium ppm ASTM D5185m >20 0 <1 <1 Chromium ppm ASTM D5185m >5 0 <1 <1 Citickel ppm ASTM D5185m >2 0 0 0 Siliver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 1 3 <1 Lead ppm ASTM D5185m >40 0 2 <1 Chromium ppm ASTM D5185m >30 0 5 2 Citin ppm ASTM D5185m 0 0 1 <1 <th< td=""><td></td><td></td><td></td><td></td><td>SEVERE</td><td>NORMAL</td><td>NORMAL</td></th<>					SEVERE	NORMAL	NORMAL
WEAR METALS	CONTAMINAT	TION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5185m >120 15 12 11 -1 Chromium ppm ASTM D5185m >20 0 -1 -1 -1 Nickel ppm ASTM D5185m >2 0	Water		WC Method	>0.2	NEG	NEG	NEG
Post	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METAL	_S	method	limit/base	current	history1	history2
Sickel	ron	ppm	ASTM D5185m	>120	15	12	11
Silver	Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>5	0	<1	0
Aluminum	Titanium	ppm	ASTM D5185m	>2	0	0	0
Aluminum	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >330 0 5 2 Fin ppm ASTM D5185m >15 0 1 <1	Aluminum		ASTM D5185m	>20	1	3	<1
Tin	Lead	ppm	ASTM D5185m	>40	0	2	<1
Tin	Copper	ppm	ASTM D5185m	>330	0	5	2
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 2 3 Barium ppm ASTM D5185m 0 0 0 0 0 Manganese ppm ASTM D5185m 0 0 <1 1 Magnesium ppm ASTM D5185m 1010 917 1008 965 Calcium ppm ASTM D5185m 1070 1021 1075 1059 Phosphorus ppm ASTM D5185m 1150 951 1078 1030 Zinc ppm ASTM D5185m 2060 3303 3238 3636 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3					0		<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 2 3 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 53 61 57 Magnesium ppm ASTM D5185m 0 0 <1	/anadium		ASTM D5185m		0	<1	0
Soron ppm ASTM D5185m 0 0 0 0 0 0 0 0 0					_		
Description	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 53 61 57 Manganese ppm ASTM D5185m 0 0 <1	Boron	ppm	ASTM D5185m	0	0	2	3
Manganese ppm ASTM D5185m 0 0 <1 1 Magnesium ppm ASTM D5185m 1010 917 1008 965 Calcium ppm ASTM D5185m 1070 1021 1075 1059 Phosphorus ppm ASTM D5185m 1150 951 1078 1030 Zinc ppm ASTM D5185m 1270 1183 1280 1244 Sulfur ppm ASTM D5185m 2060 3303 3238 3636 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 6 4 Godium ppm ASTM D5185m >20 0 5 3 Potassium ppm ASTM D5185m >20 0 5 3 Potassium ppm ASTM D5185m >20 0 5 3 Potassium ppm ASTM D5185m	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 917 1008 965 Calcium ppm ASTM D5185m 1070 1021 1075 1059 Phosphorus ppm ASTM D5185m 1150 951 1078 1030 Zinc ppm ASTM D5185m 1270 1183 1280 1244 Sulfur ppm ASTM D5185m 2060 3303 3238 3636 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 6 4 Sodium ppm ASTM D5185m >20 0 5 3 Potassium ppm ASTM D5185m >20 0 0 5 Fuel % ASTM D5185m >20 0 0 5 Soot % ASTM D5185m >20 0 0 5 Soot % *ASTM D7844 >4 0.1	Molybdenum	ppm	ASTM D5185m	60	53	61	57
Calcium ppm ASTM D5185m 1070 1021 1075 1059 Phosphorus ppm ASTM D5185m 1150 951 1078 1030 Zinc ppm ASTM D5185m 1270 1183 1280 1244 Sulfur ppm ASTM D5185m 2060 3303 3238 3636 CONTAMINANTS method limit/base current history1 history2 Gilicon ppm ASTM D5185m >25 3 6 4 Godium ppm ASTM D5185m >20 0 5 3 Potassium ppm ASTM D5185m >20 0 0 5 Fuel % ASTM D5185m >20 0 0 5 Fuel % ASTM D5185m >20 0 0 5 Godium ppm ASTM D5185m >20 0 0 5 Fuel % ASTM D3524 >3.0	Manganese	ppm	ASTM D5185m	0	0	<1	1
Calcium ppm ASTM D5185m 1070 1021 1075 1059 Phosphorus ppm ASTM D5185m 1150 951 1078 1030 Zinc ppm ASTM D5185m 1270 1183 1280 1244 Sulfur ppm ASTM D5185m 2060 3303 3238 3636 CONTAMINANTS method limit/base current history1 history2 Gilicon ppm ASTM D5185m >25 3 6 4 Sodium ppm ASTM D5185m >20 0 0 5 Fuel % ASTM D3524 >3.0 7.9<	Magnesium	ppm	ASTM D5185m	1010	917	1008	965
Phosphorus ppm ASTM D5185m 1150 951 1078 1030 Zinc ppm ASTM D5185m 1270 1183 1280 1244 Sulfur ppm ASTM D5185m 2060 3303 3238 3636 CONTAMINANTS method limit/base current history1 history2 Sillicon ppm ASTM D5185m >25 3 6 4 Sodium ppm ASTM D5185m >0 5 3 Potassium ppm ASTM D5185m >20 0 0 5 Fuel % ASTM D3524 >3.0 7.9 <1.0	-		ASTM D5185m	1070	1021	1075	1059
Zinc ppm ASTM D5185m 1270 1183 1280 1244 Sulfur ppm ASTM D5185m 2060 3303 3238 3636 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 6 4 Sodium ppm ASTM D5185m 0 5 3 Potassium ppm ASTM D5185m >20 0 0 5 Fuel % ASTM D5185m >20 0 0 5 Fuel % ASTM D3524 >3.0 7.9 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Goot % % *ASTM D7844 >4 0.1 0.3 0 Nitration Abs/cm *ASTM D7845 >30 18.6 18.7 21.9 FLUID DEGRADATION method limit/base current h	Phosphorus	ppm	ASTM D5185m	1150	951	1078	1030
Sulfur ppm ASTM D5185m 2060 3303 3238 3636 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 6 4 Sodium ppm ASTM D5185m 0 5 3 Potassium ppm ASTM D5185m >20 0 0 5 Fuel % ASTM D3524 >3.0 ^7.9 <1.0			ASTM D5185m	1270	1183	1280	1244
Solition ppm ASTM D5185m >25 3 6 4	Sulfur		ASTM D5185m	2060	3303		3636
Sodium ppm ASTM D5185m 0 5 3 Potassium ppm ASTM D5185m >20 0 0 5 Fuel % ASTM D3524 >3.0 ▲ 7.9 <1.0	CONTAMINAN	NTS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 0 5 Fuel % ASTM D3524 >3.0 ▲ 7.9 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 >4 0.1 0.3 0 Vitration Abs/cm *ASTM D7624 >20 8.0 7.6 7.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.6 18.7 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.1 15.7 17.6	Silicon	ppm	ASTM D5185m	>25	3	6	4
Fuel % ASTM D3524 >3.0 ▲ 7.9 <1.0 <1.0 INFRA-RED	Sodium	ppm	ASTM D5185m		0	5	3
INFRA-RED	Potassium	ppm	ASTM D5185m	>20	0	0	5
Soot % % *ASTM D7844 >4 0.1 0.3 0 Nitration Abs/cm *ASTM D7624 >20 8.0 7.6 7.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.6 18.7 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.1 15.7 17.6	-uel	%	ASTM D3524	>3.0	▲ 7.9	<1.0	<1.0
Nitration Abs/cm *ASTM D7624 >20 8.0 7.6 7.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.6 18.7 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.1 15.7 17.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.6 18.7 21.9 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 16.1 15.7 17.6	Soot %	%	*ASTM D7844	>4	0.1	0.3	0
Sulfation Abs/.1mm *ASTM D7415 >30 18.6 18.7 21.9 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 16.1 15.7 17.6	Nitration	Abs/cm	*ASTM D7624	>20	8.0	7.6	7.4
Oxidation Abs/.1mm *ASTM D7414 >25 16.1 15.7 17.6	Sulfation	Abs/.1mm	*ASTM D7415	>30		18.7	21.9
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.2 6.4 8.7	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.1	15.7	17.6
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.2	6.4	8.7



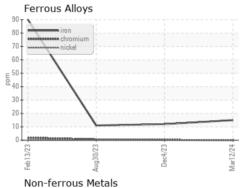
OIL ANALYSIS REPORT

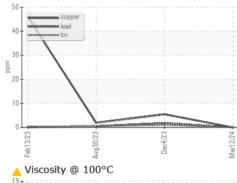


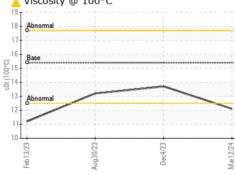
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

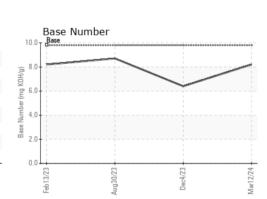
FLUID PROP	EHIIES	method	iimivbase	current	riistory i	nistoryz
Visc @ 100°C	cSt	ASTM D445	15.4	<u> </u>	13.7	13.2

GRAPHS











Laboratory Sample No. Lab Number : 06120525 Unique Number : 10929358

: GFL0113987

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Received **Tested** Diagnosed

: 18 Mar 2024

: 20 Mar 2024 : 20 Mar 2024 - Wes Davis

W144 S6400 College Ct. Muskego, WI US 53150

GFL Environmental - 932 - Muskego HC

Contact: Brian Schlomann brian.schlomann@gflenv.com T: (262)510-4586

* - 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)

Test Package: FLEET (Additional Tests: FuelDilution, PercentFuel)