

PROBLEM SUMMARY

Sample Rating Trend

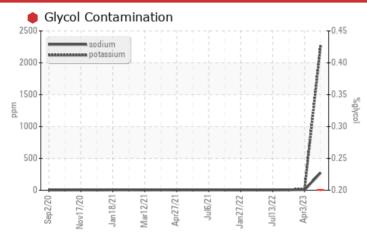
GLYCOL

927014-9023

Component **Diesel Engine**

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

COMPONENT CONDITION SUMMARY



RECOMMENDATION

We advise that you check for the source of the coolant leak. Check for low coolant level. We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS								
Sample Status				SEVERE	NORMAL	NORMAL		
Sodium	ppm	ASTM D5185m		<u> </u>	6	5		
Potassium	ppm	ASTM D5185m	>20	2269	18	9		
Glycol	%	*ASTM D2982		0.20	NEG	NEG		

Customer Id: GFL652 Sample No.: GFL0061545 Lab Number: 05966019 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			?	We recommend that you drain the oil and perform a filter service on this component if not already done.			
Change Filter			?	We recommend that you drain the oil and perform a filter service on this component if not already done.			
Resample			?	We recommend an early resample to monitor this condition.			
Check Glycol Access			?	We advise that you check for the source of the coolant leak.			

HISTORICAL DIAGNOSIS

03 Apr 2023 Diag: Wes Davis





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.



03 Nov 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.



13 Jul 2022 Diag: Don Baldridge

NORMAL



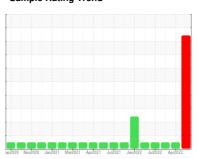
Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.





OIL ANALYSIS REPORT

Sample Rating Trend



GLYCOL



Machine Id **927014-9023**

Component

Diesel Engine

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

DIAGNOSIS

Recommendation

We advise that you check for the source of the coolant leak. Check for low coolant level. We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels are high. There is a high concentration of glycol present in the oil.

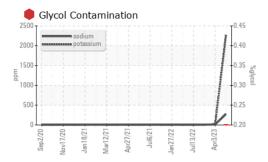
▲ Fluid Condition

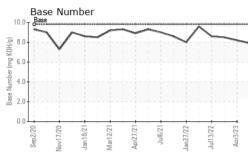
The oil is no longer serviceable due to the presence of contaminants.

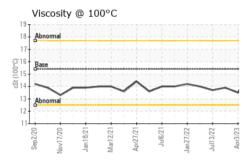
Sample Number Client Info GFL0061545 GFL0061561 GF	TR)		ep2020 Nov20	120 Jan2021 Mar2021 Ap	n2021 Jul2021 Jan2022 Jul2022	AprŽ023	
Client Info 27 Sep 2023 03 Apr 2023 03 Nov 202	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 21155 17515 0 0 0 0 0 0 0 0 0	Sample Number		Client Info		GFL0061545	GFL0061561	GFL0047848
Oil Age hrs Client Info 21155 17515 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status SEVERE NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	Sample Date		Client Info		27 Sep 2023	03 Apr 2023	03 Nov 2022
Dil Changed Client Info NA N/A N/A N/A N/A Severe NORMAL NORMAL	Machine Age	hrs	Client Info		21155	17515	0
Sample Status	Oil Age	hrs	Client Info		21155	17515	0
CONTAMINATION method limit/base current history1 history2 VEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >10 20 35 Chromium ppm ASTM D5185m >2 1 -1 0 Olickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >25 12 2 6 Lead ppm ASTM D5185m >85 9 1 3 Tin ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 1 7 10 Bari	Oil Changed		Client Info		N/A	N/A	N/A
WEAR METALS	Sample Status				SEVERE	NORMAL	NORMAL
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >11 0 97 20 35 Chromium ppm ASTM D5185m >4 5 1 2 Nickel ppm ASTM D5185m >2 1 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Iron	Fuel		WC Method	>5	<1.0	<1.0	<1.0
Chromium ppm ASTM D5185m ≥4 5 1 2 Nickel ppm ASTM D5185m ≥2 1 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>110	97	20	35
Titanium	Chromium	ppm	ASTM D5185m	>4	5	1	2
Silver	Nickel	ppm	ASTM D5185m	>2	1	<1	0
Aluminum ppm ASTM D5185m >25 12 2 6 Lead ppm ASTM D5185m >45 43 1 7 Copper ppm ASTM D5185m >45 43 1 7 Copper ppm ASTM D5185m >44 4 1 1 3 Tin ppm ASTM D5185m >4 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Titanium	ppm	ASTM D5185m		<1	0	0
Lead ppm ASTM D5185m >45 43 1 7 Copper ppm ASTM D5185m >85 9 1 3 Tin ppm ASTM D5185m >4 4 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 <1 7 10 Boron ppm ASTM D5185m 0 <1 7 10 Barium ppm ASTM D5185m 0 <1 7 10 Barium ppm ASTM D5185m 0 0 0 0 0 Manganese ppm ASTM D5185m 0 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <td>Silver</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>2</td> <td>0</td> <td>0</td> <td>0</td>	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >85 9 1 3 Tin ppm ASTM D5185m >4 4 <1	Aluminum	ppm	ASTM D5185m	>25	12	2	6
Tin	Lead	ppm	ASTM D5185m	>45	43	1	7
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 7 10 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 1 <1 <1 <1 Manganese ppm ASTM D5185m 1010 963 850 863 Calcium ppm ASTM D5185m 1070 1082 1103 1084 Phosphorus ppm ASTM D5185m 1270 1304 1179 1161 Sulfur ppm ASTM D5185m 2060 2743 2681 3127 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30	Copper	ppm	ASTM D5185m	>85	9	1	3
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>4	4	<1	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 286 62 61 Manganese ppm ASTM D5185m 0 1 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 286 62 61 Manganese ppm ASTM D5185m 0 1 <1 <1 Magnesium ppm ASTM D5185m 1010 963 850 863 Calcium ppm ASTM D5185m 1070 1082 1103 1084 Phosphorus ppm ASTM D5185m 1150 1022 995 945 Zinc ppm ASTM D5185m 1270 1304 1179 1161 Sulfur ppm ASTM D5185m 2060 2743 2681 3127 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 29 10 12 Sodium ppm ASTM D5185m >30 29 18 9 Glycol % *ASTM D2982 0.20 NEG NEG INFRA-RED method limit/base curr	Boron	ppm	ASTM D5185m	0	<1	7	10
Manganese ppm ASTM D5185m 0 1 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 963 850 863 Calcium ppm ASTM D5185m 1070 1082 1103 1084 Phosphorus ppm ASTM D5185m 1150 1022 995 945 Zinc ppm ASTM D5185m 1270 1304 1179 1161 Sulfur ppm ASTM D5185m 2060 2743 2681 3127 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 29 10 12 Sodium ppm ASTM D5185m >20 273 6 5 Potassium ppm ASTM D5185m >20 2269 18 9 Glycol % *ASTM D7844 >3 1.8 0.8 1.8 INFRA-RED metho	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 963 850 863 Calcium ppm ASTM D5185m 1070 1082 1103 1084 Phosphorus ppm ASTM D5185m 1150 1022 995 945 Zinc ppm ASTM D5185m 1270 1304 1179 1161 Sulfur ppm ASTM D5185m 2060 2743 2681 3127 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 29 10 12 Sodium ppm ASTM D5185m >20 2269 18 9 Potassium ppm ASTM D5185m >20 2269 18 9 Glycol % *ASTM D5185m >20 2269 18 9 NEG NEG NEG NEG NEG INFRA-RED method limit/base current	Molybdenum	ppm	ASTM D5185m	60	286	62	61
Calcium ppm ASTM D5185m 1070 1082 1103 1084 Phosphorus ppm ASTM D5185m 1150 1022 995 945 Zinc ppm ASTM D5185m 1270 1304 1179 1161 Sulfur ppm ASTM D5185m 2060 2743 2681 3127 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 29 10 12 Sodium ppm ASTM D5185m >30 29 10 12 Sodium ppm ASTM D5185m >20 2269 18 9 Potassium ppm ASTM D5185m >20 2269 18 9 Glycol % *ASTM D2982 0.20 NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20	Manganese	ppm	ASTM D5185m	0	1	<1	<1
Phosphorus ppm ASTM D5185m 1150 1022 995 945 Zinc ppm ASTM D5185m 1270 1304 1179 1161 Sulfur ppm ASTM D5185m 2060 2743 2681 3127 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 29 10 12 Sodium ppm ASTM D5185m >30 29 10 12 Sodium ppm ASTM D5185m >20 2269 18 9 Potassium ppm ASTM D5185m >20 2269 18 9 Glycol % *ASTM D2982 0.20 NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 14.8 9.1 11.7 Sulfation Abs/.1mm *ASTM D7415 <t< td=""><td>Magnesium</td><td>ppm</td><td>ASTM D5185m</td><td>1010</td><td>963</td><td>850</td><td>863</td></t<>	Magnesium	ppm	ASTM D5185m	1010	963	850	863
Zinc ppm ASTM D5185m 1270 1304 1179 1161 Sulfur ppm ASTM D5185m 2060 2743 2681 3127 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 29 10 12 Sodium ppm ASTM D5185m >20 273 6 5 Potassium ppm ASTM D5185m >20 2269 18 9 Glycol % *ASTM D5185m >20 2269 18 9 Glycol % *ASTM D5185m >20 2269 18 9 Glycol % *ASTM D2982 © 0.20 NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 14.8 9.1 11.7 Sulfation Abs/.1mm *ASTM D7415 >30 <td>Calcium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1070</td> <td>1082</td> <td>1103</td> <td>1084</td>	Calcium	ppm	ASTM D5185m	1070	1082	1103	1084
Sulfur ppm ASTM D5185m 2060 2743 2681 3127 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 29 10 12 Sodium ppm ASTM D5185m >273 6 5 Potassium ppm ASTM D5185m >20 2269 18 9 Glycol % *ASTM D2982 0.20 NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.8 0.8 1.8 Nitration Abs/cm *ASTM D7624 >20 14.8 9.1 11.7 Sulfation Abs/.1mm *ASTM D7415 >30 28.1 20.9 26.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 <td< td=""><td>Phosphorus</td><td>ppm</td><td>ASTM D5185m</td><td>1150</td><td>1022</td><td>995</td><td>945</td></td<>	Phosphorus	ppm	ASTM D5185m	1150	1022	995	945
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 29 10 12 Sodium ppm ASTM D5185m >273 6 5 Potassium ppm ASTM D5185m >20 2269 18 9 Glycol % *ASTM D2982 • 0.20 NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.8 0.8 1.8 Nitration Abs/cm *ASTM D7624 >20 14.8 9.1 11.7 Sulfation Abs/.1mm *ASTM D7415 >30 28.1 20.9 26.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.4 16.2 20.1	Zinc	ppm	ASTM D5185m	1270	1304	1179	1161
Silicon ppm ASTM D5185m >30 29 10 12 Sodium ppm ASTM D5185m ▲ 273 6 5 Potassium ppm ASTM D5185m >20 ▲ 2269 18 9 Glycol % *ASTM D2982 ● 0.20 NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.8 0.8 1.8 Nitration Abs/cm *ASTM D7624 >20 14.8 9.1 11.7 Sulfation Abs/.1mm *ASTM D7415 >30 28.1 20.9 26.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.4 16.2 20.1	Sulfur	ppm	ASTM D5185m	2060	2743	2681	3127
Sodium ppm ASTM D5185m ▲ 273 6 5 Potassium ppm ASTM D5185m >20 ▲ 2269 18 9 Glycol % *ASTM D2982 ● 0.20 NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.8 0.8 1.8 Nitration Abs/cm *ASTM D7624 >20 14.8 9.1 11.7 Sulfation Abs/.1mm *ASTM D7415 >30 28.1 20.9 26.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.4 16.2 20.1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2269 18 9 Glycol % *ASTM D2982 0.20 NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.8 0.8 1.8 Nitration Abs/cm *ASTM D7624 >20 14.8 9.1 11.7 Sulfation Abs/.1mm *ASTM D7415 >30 28.1 20.9 26.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.4 16.2 20.1	Silicon	ppm	ASTM D5185m	>30	29	10	12
Potassium ppm ASTM D5185m >20 2269 18 9 Glycol % *ASTM D2982 0.20 NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.8 0.8 1.8 Nitration Abs/cm *ASTM D7624 >20 14.8 9.1 11.7 Sulfation Abs/.1mm *ASTM D7415 >30 28.1 20.9 26.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.4 16.2 20.1	Sodium		ASTM D5185m		273	6	5
Soot %	Potassium	ppm	ASTM D5185m	>20	2269	18	9
Soot % % *ASTM D7844 >3 1.8 0.8 1.8 Nitration Abs/cm *ASTM D7624 >20 14.8 9.1 11.7 Sulfation Abs/.1mm *ASTM D7415 >30 28.1 20.9 26.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.4 16.2 20.1	Glycol	%	*ASTM D2982		0.20	NEG	NEG
Nitration Abs/cm *ASTM D7624 >20 14.8 9.1 11.7 Sulfation Abs/.1mm *ASTM D7415 >30 28.1 20.9 26.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.4 16.2 20.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 28.1 20.9 26.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.4 16.2 20.1	Soot %	%	*ASTM D7844	>3	1.8	0.8	1.8
Sulfation Abs/.1mm *ASTM D7415 >30 28.1 20.9 26.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.4 16.2 20.1		Abs/cm	*ASTM D7624	>20	14.8	9.1	11.7
Oxidation Abs/.1mm *ASTM D7414 >25 22.4 16.2 20.1							
	Sulfation	Abs/.1mm	*ASTM D7415	>30	28.1	20.9	20.0
Base Number (BN) mg KOH/g ASTM D2896 9.8 7.9 8.2 8.5							history2
	FLUID DEGRAI	DATION	method	limit/base	current	history1	history2



OIL ANALYSIS REPORT



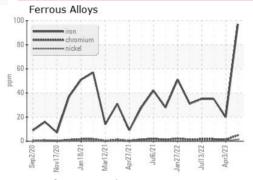


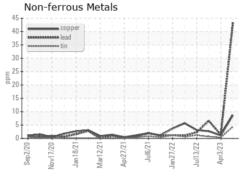


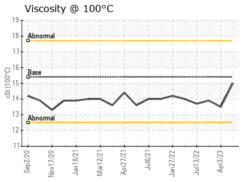
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

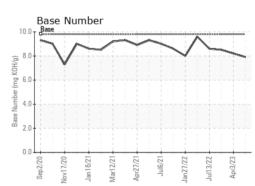
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	15.0	13.5	13.9

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Unique Number

: GFL0061545 : 05966019 : 10672570

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 02 Oct 2023

Diagnosed : 03 Oct 2023 Diagnostician : Don Baldridge

Test Package : FLEET (Additional Tests: Glycol)

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)

GFL Environmental - 652 - Fredericksburg Hauling

10954 Houser Drive Fredericksburg, VA US 22408

Contact: WILLIAM MILO

wmilo@gflenv.com

T: F: