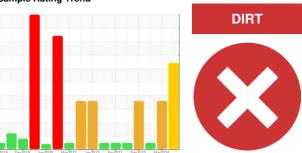


PROBLEM SUMMARY

Sample Rating Trend



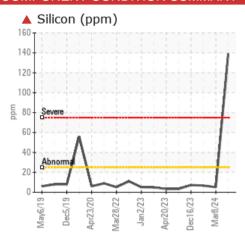
Machine Id

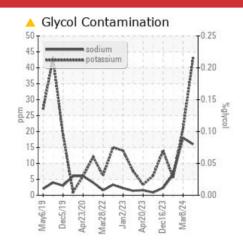
225054-632108

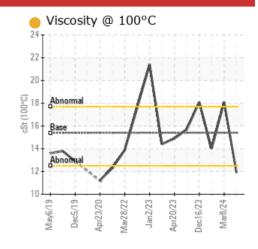
Diesel Engine

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

COMPONENT CONDITION SUMMARY







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. (Customer Sample Comment: Engine sample)

PROBLEMATIC TEST RESULTS										
Sample Status				SEVERE	SEVERE	NORMAL				
Silicon	ppm	ASTM D5185m	>25	139	5	7				
Potassium	mqq	ASTM D5185m	>20	43	21	6				

Customer Id: GFL865 **Sample No.:** GFL0125179 Lab Number: 06225634 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 ihester@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
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

08 Mar 2024 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. The oil is no longer serviceable due to the presence of contaminants.



28 Dec 2023 Diag: Jonathan Hester



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.



16 Dec 2023 Diag: Sean Felton



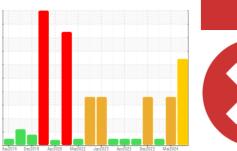
We advise that you check for faulty combustion, plugged air filters, or aftercoolers. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including 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. The oil is no longer serviceable due to the presence of contaminants.





OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

225054-632108

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- G

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. (Customer Sample Comment: Engine sample)

Wear

All component wear rates are normal.

▲ Contamination

Sodium and/or potassium levels are high. Fuel content negligible. Elemental level of silicon (Si) above normal indicating ingress of dirt/seal material. Test for glycol is negative.

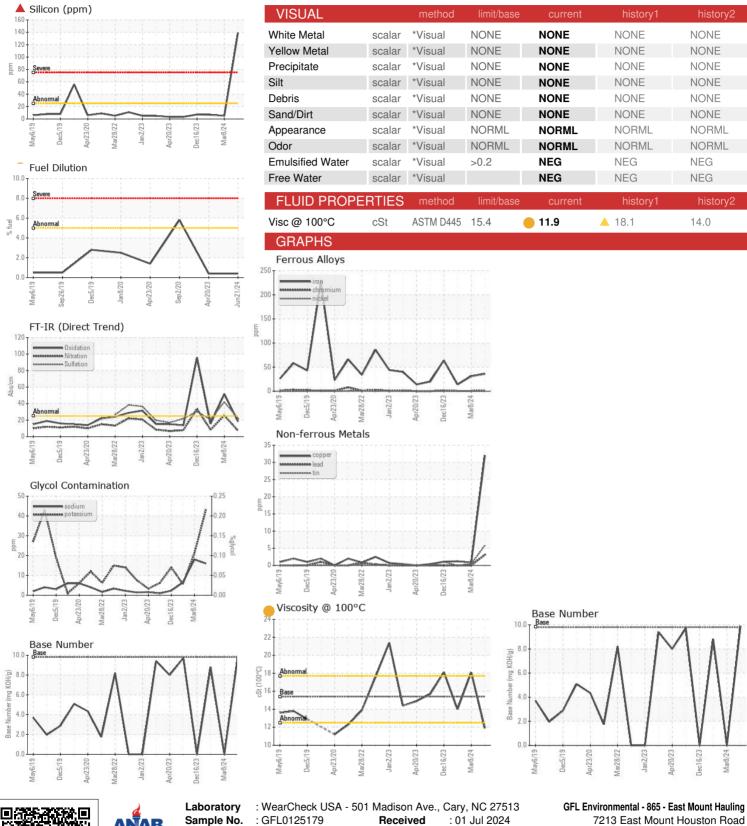
Fluid Condition

The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

Sample Number Client Info GFL0125179 GFL0114486 GFL010395 Sample Date Client Info 21 Jun 2024 08 Mar 2024 28 Dec 2023 Machine Age hrs Client Info 0 0 20213 Dil Age hrs Client Info Not Changed Changed Not Changed Sample Status SEVERE SEVERE NEG NC Changed CONTAMINATION method Imit base current history1 history2 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit base current history1 history2 Iron ppm ASTM 05185m >10.0 36 31 14 Chromium ppm ASTM 05185m >20 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	AL)		May2019 Dec	2019 Apr2020 Mar2022	Jan2023 Apr2023 Dec2023	Mar2024	
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info Dil Age hrs Client Info Dil Age hrs Client Info Dil Changed hrs Client Info Sample Status CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Intron ppm ASTM D5185m >10.0 36 31 14 Chromium ppm ASTM D5185m >2.0 1 <1 <1 <1 Chromium ppm ASTM D5185m >4 0 0 0 0 Dilkikele ppm ASTM D5185m >3 0 0 0 0 Sikiver ppm ASTM D5185m >2.0 1 <1 <1 <1 Chromium ppm ASTM D5185m >2.0 1 <1 <1 <1 Chromium ppm ASTM D5185m >3 0 0 0 0 Sikiver ppm ASTM D5185m >2.0 4 7 1 Lead ppm ASTM D5185m >4.0 3 0 0 0 Chopper ppm ASTM D5185m >4.0 3 0 0 0 Chopper ppm ASTM D5185m >15 6 <1 0 Vanadium ppm ASTM D5185m >15 6 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Barrium ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Magnesium ppm ASTM D5185m 10 0 0 0 ADDITIVES method limit/base current history1 history2 Barrium ppm ASTM D5185m 10 0 0 0 0 Calcinium ppm ASTM D5185m 10 0 0 0 0 Calcinium ppm ASTM D5185m 10 0 1561 872 1025 Calcilium ppm ASTM D5185m 1070 1507 1124 1122 Phosphorus ppm ASTM D5185m 1070 1507 1124 11122 Phosphorus ppm ASTM D5185m 1070 1507 1124 11122 Phosphorus ppm ASTM D5185m 1070 1507 1124 11129 Phosphorus ppm ASTM D5185m 20 0 2687 3475 3238 CONTAMINANTS method limit/base current history1 history2 Sillicon ppm ASTM D5185m 20 0 4 43 21 6 Potassium ppm ASTM D5185m 20 0 4 43 21 6 Potassium ppm ASTM D5185m 20 0 4 43 21 6 FULID DEGRADATION method limit/base current history1 history2 Sillicon Abs://mm ASTM D7184 >3 0.8 6 6.1 0.7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Sample Number		Client Info		GFL0125179	GFL0114486	GFL0103957
Dil Age	Sample Date		Client Info		21 Jun 2024	08 Mar 2024	28 Dec 2023
Dil Changed Client Info Severe Severe Severe Not Changed Severe Severe Normal Not Changed Severe Severe Normal	Machine Age	hrs	Client Info		20903	20664	20213
Several Sev	Oil Age	hrs	Client Info		0	0	20213
CONTAMINATION method Imit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5185m >100 36 31 14 Chromium ppm ASTM D5185m >20 1 <1 <1 Nickel ppm ASTM D5185m >20 0 0 0 Siliver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 4 7 1 Lead ppm ASTM D5185m >30 32 <1 1 Capper ppm ASTM D5185m >40 3 0 0 Capper ppm ASTM D5185m >15 6 <1 0 Alamadium ppm ASTM D5185m 0 0 0 0 </td <td>Oil Changed</td> <td></td> <td>Client Info</td> <td></td> <td>Not Changd</td> <td>Changed</td> <td>Not Changd</td>	Oil Changed		Client Info		Not Changd	Changed	Not Changd
Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history2 Iron ppm ASTM D5185m >100 36 31 14 Chromium ppm ASTM D5185m >20 1 <1	Sample Status				SEVERE	SEVERE	NORMAL
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 36 31 14 Chromium ppm ASTM D5185m >20 1 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Chromium	Water		WC Method	>0.2	NEG	NEG	NEG
Description	WEAR METAL	S	method	limit/base	current	history1	history2
Sickel	ron	ppm	ASTM D5185m	>100	36	31	14
Description	Chromium	ppm	ASTM D5185m	>20	1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>4	0	0	0
Aluminum ppm ASTM D5185m >20 4 7 1 Lead ppm ASTM D5185m >40 3 0 0 Copper ppm ASTM D5185m >330 32 <1 1 In ppm ASTM D5185m >15 6 <1 0 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Soron ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Soron ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Soron ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Soron ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Soron ppm ASTM D5185m 1010 561 872 1025 Calcium ppm ASTM D5185m 1070 1507 1124 1122 Phosphorus ppm ASTM D5185m 1070 1507 1124 1122 Phosphorus ppm ASTM D5185m 1150 764 1022 1062 Zinc ppm ASTM D5185m 1270 907 1244 1319 Sollfur ppm ASTM D5185m 2060 2687 3475 3238 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >20 A 43 21 6 Fuel % ASTM D5185m >20 A 43 21 6	Γitanium	ppm	ASTM D5185m		0	0	0
Lead ppm ASTM D5185m >40 3 0 0 Copper ppm ASTM D5185m >330 32 <1 1 Fin ppm ASTM D5185m >15 6 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 61 10 3 Boron ppm ASTM D5185m 0 61 10 3 Boron ppm ASTM D5185m 0 0 0 0 Boron ppm ASTM D5185m 0 1 <1 0 Boron ppm ASTM D5185m 0 1 <1 0 Manganese ppm ASTM D5185m 1010 561 872 1025 Calcium ppm ASTM D5185m 1070 1507 1124	Silver	ppm	ASTM D5185m	>3	0	0	0
Description	Aluminum	ppm	ASTM D5185m	>20	4	7	1
A	_ead	ppm	ASTM D5185m	>40	3	0	0
Anadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 61 10 3 Boron ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 0 Manganese ppm ASTM D5185m 0 1 <1 0 0 Magnesium ppm ASTM D5185m 1010 561 872 1025 1122 1124 1122 1122 1124 1122	Copper	ppm	ASTM D5185m	>330	32	<1	1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 61 10 3 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 53 54 61 Manganese ppm ASTM D5185m 0 1 <1	Γin	ppm	ASTM D5185m	>15	6	<1	0
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 61 10 3 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 53 54 61 Manganese ppm ASTM D5185m 0 1 <1	/anadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 0 0 0 0 0 0 0 0	Cadmium	ppm	ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 53 54 61 Manganese ppm ASTM D5185m 0 1 <1 0 Magnesium ppm ASTM D5185m 1010 561 872 1025 Calcium ppm ASTM D5185m 1070 1507 1124 1122 Phosphorus ppm ASTM D5185m 1150 764 1022 1062 Zinc ppm ASTM D5185m 1270 907 1244 1319 Sulfur ppm ASTM D5185m 2060 2687 3475 3238 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 139 5 7 Solicon ppm ASTM D5185m >20 43 21 6 Fuel % ASTM D5185m >20 43 21 6 Fuel % ASTM D5185m	Boron	ppm	ASTM D5185m	0	61	10	3
Manganese ppm ASTM D5185m 0 1 <1 0 Magnesium ppm ASTM D5185m 1010 561 872 1025 Calcium ppm ASTM D5185m 1070 1507 1124 1122 Phosphorus ppm ASTM D5185m 1150 764 1022 1062 Zinc ppm ASTM D5185m 1270 907 1244 1319 Sulfur ppm ASTM D5185m 2060 2687 3475 3238 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 ▲ 139 5 7 Sodium ppm ASTM D5185m >20 ▲ 43 21 6 Potassium ppm ASTM D5185m >20 ▲ 43 21 6 Fuel % ASTM D3524 >5 0.4 <1.0	Barium	ppm	ASTM D5185m	0	0	0	0
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Calcium ppm ASTM D5185m 1070 1507 1124 1122 Phosphorus ppm ASTM D5185m 1150 764 1022 1062 Zinc ppm ASTM D5185m 1270 907 1244 1319 Sulfur ppm ASTM D5185m 2060 2687 3475 3238 CONTAMINANTS method limit/base current history1 history2 Sillicon ppm ASTM D5185m >25 ▲ 139 5 7 Sodium ppm ASTM D5185m >20 ▲ 43 21 6 Potassium ppm ASTM D5185m >20 ▲ 43 21 6 Fuel % ASTM D5185m >20 ▲ 43 21 6 Glycol % ASTM D5185m >20 ▲ 43 21 6 Fuel % ASTM D3524 >5 0.4 <1.0	Manganese	ppm	ASTM D5185m	0	1	<1	0
Phosphorus ppm ASTM D5185m 1150 764 1022 1062 Zinc ppm ASTM D5185m 1270 907 1244 1319 Sulfur ppm ASTM D5185m 2060 2687 3475 3238 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 ▲ 139 5 7 Sodium ppm ASTM D5185m >20 ▲ 43 21 6 Fuel % ASTM D5185m >20 ▲ 43 21 6 Gruel % ASTM D5185m >20 ▲ 43 21 6 Gruel % ASTM D3524 >5 0.4 <1.0	Magnesium	ppm	ASTM D5185m	1010	561	872	1025
Zinc ppm ASTM D5185m 1270 907 1244 1319 Sulfur ppm ASTM D5185m 2060 2687 3475 3238 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 ▲ 139 5 7 Sodium ppm ASTM D5185m >20 ▲ 43 21 6 Fuel % ASTM D5185m >20 ▲ 43 21 6 Fuel % ASTM D5185m >20 ▲ 43 21 6 Fuel % ASTM D5185m >20 ▲ 43 21 6 Fuel % ASTM D5185m >20 ▲ 43 21 6 Fuel % ASTM D3524 >5 0.4 <1.0	Calcium	ppm	ASTM D5185m	1070	1507	1124	1122
Sulfur ppm ASTM D5185m 2060 2687 3475 3238 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 ▲ 139 5 7 Sodium ppm ASTM D5185m >25 ▲ 16 18 6 Potassium ppm ASTM D5185m >20 ▲ 43 21 6 Fuel % ASTM D3524 >5 0.4 <1.0 <1.0 Glycol % *ASTM D3524 >5 0.4 <1.0 <1.0 Rilycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.2 25.6 8.3 Sulfation Abs/:mm *ASTM D7415 >30 22.4 41.9 20.6 FLUID DEGRADATION method limit/base	Phosphorus	ppm	ASTM D5185m	1150	764	1022	1062
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 ▲ 139 5 7 Sodium ppm ASTM D5185m 16 18 6 Potassium ppm ASTM D5185m >20 ▲ 43 21 6 Fuel % ASTM D3524 >5 0.4 <1.0	Zinc	ppm	ASTM D5185m	1270	907	1244	1319
Solition ppm ASTM D5185m >25	Sulfur	ppm	ASTM D5185m	2060	2687	3475	3238
Sodium ppm ASTM D5185m 16 18 6 Potassium ppm ASTM D5185m >20 ▲ 43 21 6 Fuel % ASTM D3524 >5 0.4 <1.0	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 ▲ 43 21 6 Fuel % ASTM D3524 >5 0.4 <1.0 <1.0 <1.0 Glycol % *ASTM D2982 NEG NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.8 ♠ 6.1 0.7 Vitration Abs/cm *ASTM D7624 >20 7.2 25.6 8.3 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 41.9 20.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.3 51.8 15.6	Silicon	ppm	ASTM D5185m	>25	139	5	7
Fuel % ASTM D3524 >5 0.4 <1.0 <1.0 Silycol % *ASTM D2982 NEG	Sodium	ppm	ASTM D5185m		16	18	6
NEG	Potassium	ppm	ASTM D5185m	>20	43	21	6
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.8 ▲ 6.1 0.7 Nitration Abs/cm *ASTM D7624 >20 7.2 25.6 8.3 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 41.9 20.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.3 51.8 15.6	-uel	%	ASTM D3524	>5	0.4	<1.0	<1.0
Soot %	Glycol	%	*ASTM D2982		NEG	NEG	NEG
Nitration Abs/cm *ASTM D7624 >20 7.2 25.6 8.3 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 41.9 20.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.3 51.8 15.6	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 7.2 25.6 8.3 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 41.9 20.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.3 51.8 15.6	Soot %	%	*ASTM D7844	>3	8.0	▲ 6.1	0.7
FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 18.3 51.8 15.6	Nitration	Abs/cm	*ASTM D7624	>20	7.2	25.6	8.3
Dxidation Abs/.1mm *ASTM D7414 >25 18.3 51.8 15.6	Sulfation	Abs/.1mm	*ASTM D7415	>30	22.4	41.9	20.6
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.3	51.8	15.6



OIL ANALYSIS REPORT







Certificate 12367

Sample No.

: GFL0125179 Lab Number : 06225634

Unique Number : 11103831

Tested

Diagnosed : 08 Jul 2024 - Jonathan Hester Test Package: FLEET (Additional Tests: FuelDilution, Glycol, PercentFuel)

: 08 Jul 2024

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

 st - 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)

7213 East Mount Houston Road

Houston, TX US 77050

Contact: Saul Castillo saul.castillo@gflenv.com

T: F: