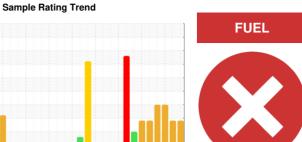


PROBLEM SUMMARY

Jun

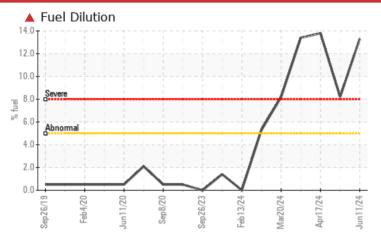


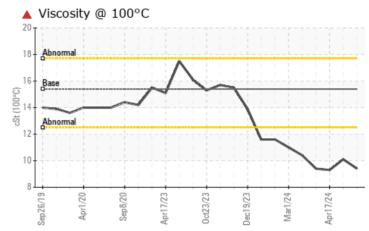
(83J3TW) 229035-632119

Diesel Engine

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

COMPONENT CONDITION SUMMARY





RECOMMENDATION

We advise that you check the fuel injection system. We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

PROBLEMAT	IC TES	T RESULT	S				
Sample Status				SEVERE	SEVERE	SEVERE	
Fuel	%	ASTM D3524	>5	13.3	▲ 8.2	1 3.8	
Visc @ 100°C	cSt	ASTM D445	15.4	9.4	▲ 10.1	9.3	

Customer Id: GFL837 Sample No.: GFL0122890 Lab Number: 06212972 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

RECOMMENDED ACTIONS					
Action	Status	Date	Done By	Description	
Change Fluid			?	We recommend that you drain the oil from the component if this has not already been done.	
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

17 May 2024 Diag: Wes Davis

FUEL



We advise that you check the fuel injection system. We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition. All component wear rates are normal. There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil. 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.



FUEL



17 Apr 2024 Diag: Don Baldridge
We advise that you check the fuel injection system. Oil and filter change at the time of sampling has been noted.
We recommend an early resample to monitor this condition.All component wear rates are normal. There is a high amount of fuel present in the oil. Elemental level of silicon (Si) above normal indicating ingress of seal material.
Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.



FUEL



16 Apr 2024 Diag: Jonathan Hester

We advise that you check the fuel injection system. 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. All component wear rates are normal. There is a high amount of fuel present in the oil. Elemental level of silicon (Si) above normal indicating ingress of seal material. Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.





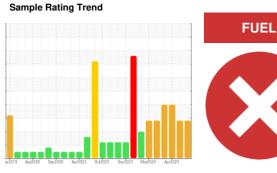
OIL ANALYSIS REPORT

(83J3TW) 229035-632119

Diesel Engine

Eluid

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



DIAGNOSIS

▲ Recommendation

We advise that you check the fuel injection system. We recommend that you drain the oil from the component if this has not already been done. 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.

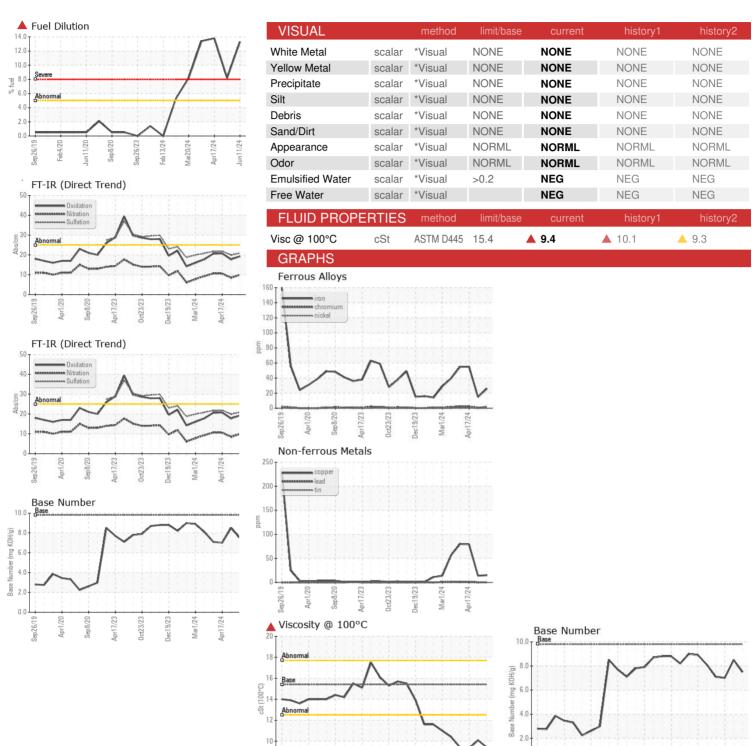
▲ Fluid Condition

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 GFL0122890 GFL0122814 GFL011880 Sample Date Client Info 11 Jun 2024 17 May 2024 17 Apr 2024	CAMPLE INCOR	MATION	method	lipoit/le e e	ou we ob	biotemat	-biotem (C
Sample Date		WATION					history2
Machine Age hrs Client Info 11107 10966 10802							
Oil Age hrs Client Info 11693 164 10401 Oil Changed Client Info Not Changed NIA Changed Sample Status SEVERE SEVERE SEVERE CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 26 15 55 Chromium ppm ASTM D5185m >100 26 15 55 Chromium ppm ASTM D5185m >20 1 <1 2 Nickel ppm ASTM D5185m >3 <1 0 1 Silver ppm ASTM D5185m >3 <1 0 <1 Silver ppm ASTM D5185m >30 15 14 79 Titanium ppm	•						
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WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 26 15 55 Chromium ppm ASTM D5185m >20 1 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 1 <1 2 Nickel ppm ASTM D5185m >4 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	26	15	55
Titanium	Chromium	ppm	ASTM D5185m	>20	1	<1	2
Silver	Nickel	ppm	ASTM D5185m	>4	<1	0	1
Silver	Titanium		ASTM D5185m		<1	0	1
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Sulfur ppm ASTM D5185m 2060 2938 3438 2681 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 8 ▲ 36 Sodium ppm ASTM D5185m 20 3 3 8 Potassium ppm ASTM D5185m >20 3 3 8 Fuel % ASTM D3524 >5 ▲ 13.3 ▲ 8.2 ▲ 13.8 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.3 0.7 Nitration Abs/cm *ASTM D7624 >20 9.9 8.5 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 20.9 19.9 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 </td <td>Molybdenum Manganese</td> <td>ppm ppm</td> <td>ASTM D5185m ASTM D5185m ASTM D5185m</td> <td>60 0 1010</td> <td>48 1 916</td> <td>50 1 971</td> <td>46 5 645</td>	Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010	48 1 916	50 1 971	46 5 645
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 8 △ 36 Sodium ppm ASTM D5185m >20 3 3 8 Potassium ppm ASTM D5185m >20 3 3 8 Fuel % ASTM D3524 >5 ▲ 13.3 ▲ 8.2 ▲ 13.8 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.3 0.7 Nitration Abs/cm *ASTM D7624 >20 9.9 8.5 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 20.9 19.9 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.3 17.7 20.8	Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010 1070	48 1 916 749	50 1 971 789	46 5 645 1162
Silicon ppm ASTM D5185m >25 8 8 ▲ 36 Sodium ppm ASTM D5185m 4 4 2 Potassium ppm ASTM D5185m >20 3 3 8 Fuel % ASTM D3524 >5 ▲ 13.3 ▲ 8.2 ▲ 13.8 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.3 0.7 Nitration Abs/cm *ASTM D7624 >20 9.9 8.5 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 20.9 19.9 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.3 17.7 20.8	Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010 1070 1150	48 1 916 749 957	50 1 971 789 963	46 5 645 1162 900
Sodium ppm ASTM D5185m 4 4 2 Potassium ppm ASTM D5185m >20 3 3 8 Fuel % ASTM D3524 >5 ▲ 13.3 ▲ 8.2 ▲ 13.8 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.3 0.7 Nitration Abs/cm *ASTM D7624 >20 9.9 8.5 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 20.9 19.9 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.3 17.7 20.8	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010 1070 1150 1270	48 1 916 749 957 1076	50 1 971 789 963 1141	46 5 645 1162 900 1050
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Fuel % ASTM D3524 >5 ▲ 13.3 ▲ 8.2 ▲ 13.8 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.3 0.7 Nitration Abs/cm *ASTM D7624 >20 9.9 8.5 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 20.9 19.9 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.3 17.7 20.8	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010 1070 1150 1270 2060	48 1 916 749 957 1076 2938	50 1 971 789 963 1141 3438 history1	46 5 645 1162 900 1050 2681 history2
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.3 0.7 Nitration Abs/cm *ASTM D7624 >20 9.9 8.5 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 20.9 19.9 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.3 17.7 20.8	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m	60 0 1010 1070 1150 1270 2060	48 1 916 749 957 1076 2938 current	50 1 971 789 963 1141 3438 history1	46 5 645 1162 900 1050 2681 history2 ▲ 36
Soot % % *ASTM D7844 >3 0.5 0.3 0.7 Nitration Abs/cm *ASTM D7624 >20 9.9 8.5 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 20.9 19.9 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.3 17.7 20.8	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	60 0 1010 1070 1150 1270 2060 limit/base >25	48 1 916 749 957 1076 2938 current 8	50 1 971 789 963 1141 3438 history1 8	46 5 645 1162 900 1050 2681 history2 ▲ 36 2
Nitration Abs/cm *ASTM D7624 >20 9.9 8.5 10.6 Sulfation Abs/.1mm *ASTM D7615 >30 20.9 19.9 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.3 17.7 20.8	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m	60 0 1010 1070 1150 1270 2060 limit/base >25	48 1 916 749 957 1076 2938 current 8 4	50 1 971 789 963 1141 3438 history1 8 4	46 5 645 1162 900 1050 2681 history2 ▲ 36 2 8
Sulfation Abs/.1mm *ASTM D7415 >30 20.9 19.9 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.3 17.7 20.8	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm	ASTM D5185m Method ASTM D5185m	60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5	48 1 916 749 957 1076 2938 current 8 4 3 • 13.3	50 1 971 789 963 1141 3438 history1 8 4 3	46 5 645 1162 900 1050 2681 history2 ▲ 36 2 8
Sulfation Abs/.1mm *ASTM D7415 >30 20.9 19.9 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.3 17.7 20.8	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D3524	60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5	48 1 916 749 957 1076 2938	50 1 971 789 963 1141 3438 history1 8 4 3 ▲ 8.2 history1	46 5 645 1162 900 1050 2681 history2 ▲ 36 2 8 ▲ 13.8 history2
Oxidation Abs/.1mm *ASTM D7414 >25 19.3 17.7 20.8	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844	60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5	48 1 916 749 957 1076 2938	50 1 971 789 963 1141 3438 history1 8 4 3 ▲ 8.2 history1 0.3	46 5 645 1162 900 1050 2681 history2 ▲ 36 2 8 ▲ 13.8 history2
	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185m Method ASTM D5185m ASTM D7844 *ASTM D7624	60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base	48 1 916 749 957 1076 2938	50 1 971 789 963 1141 3438 history1 8 4 3 ▲ 8.2 history1 0.3 8.5	46 5 645 1162 900 1050 2681 history2 ▲ 36 2 8 ▲ 13.8 history2 0.7 10.6
	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m ASTM D76185m	60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >3 >20 >30	48 1 916 749 957 1076 2938	50 1 971 789 963 1141 3438 history1 8 4 3 ▲ 8.2 history1 0.3 8.5 19.9	46 5 645 1162 900 1050 2681 history2 ▲ 36 2 8 ▲ 13.8 history2 0.7 10.6
	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7844	60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >3 >20 >3 limit/base	48 1 916 749 957 1076 2938	50 1 971 789 963 1141 3438 history1 8 4 3 ▲ 8.2 history1 0.3 8.5 19.9 history1	46 5 645 1162 900 1050 2681 history2 ▲ 36 2 8 ▲ 13.8 history2 0.7 10.6 21.9 history2



OIL ANALYSIS REPORT







Certificate 12367

Laboratory Sample No.

Lab Number : 06212972 Unique Number : 11085836

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0122890

Received **Tested**

: 17 Jun 2024 : 20 Jun 2024 Diagnosed

: 20 Jun 2024 - Wes Davis Test Package : FLEET (Additional Tests: PercentFuel)

0.0

22820 S State Route 291 Harrisonville, MO US 64701

GFL Environmental - 837 - Harrison TS

Contact: SARA PATRICK spatrick@gflenv.com

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)

Report Id: GFL837 [WUSCAR] 06212972 (Generated: 06/21/2024 10:57:25) Rev: 1

Submitted By: JEREMY BROWN

T:

F: