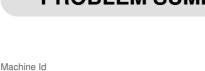
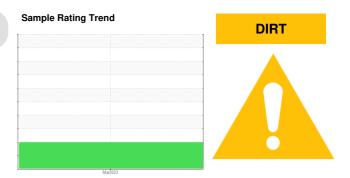


PROBLEM SUMMARY

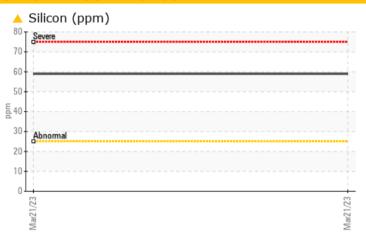


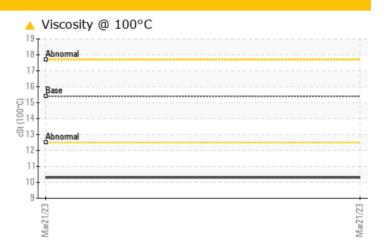
913054
Component
Diesel Engine

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









RECOMMENDATION

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS

Sample Status				ABNORMAL	
Silicon	ppm	ASTM D5185m	>25	<u> </u>	
Visc @ 100°C	cSt	ASTM D445	15.4	10.3	

Customer Id: GFL918 Sample No.: GFL0071466 Lab Number: 05810287 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

RECOMMEND	ED ACTIONS			
Action	Status	Date	Done By	Description
Change Fluid			?	Oil and filter change at the time of sampling has been noted.
Change Filter			?	Oil and filter change at the time of sampling has been noted.

HISTORICAL DIAGNOSIS







Machine Id 913054 Component **Diesel Engine**

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





DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

Wear

Metal levels are typical for a new component breaking in.

Contamination

Fuel content negligible. Elemental level of silicon (Si) above normal indicating ingress of seal material.

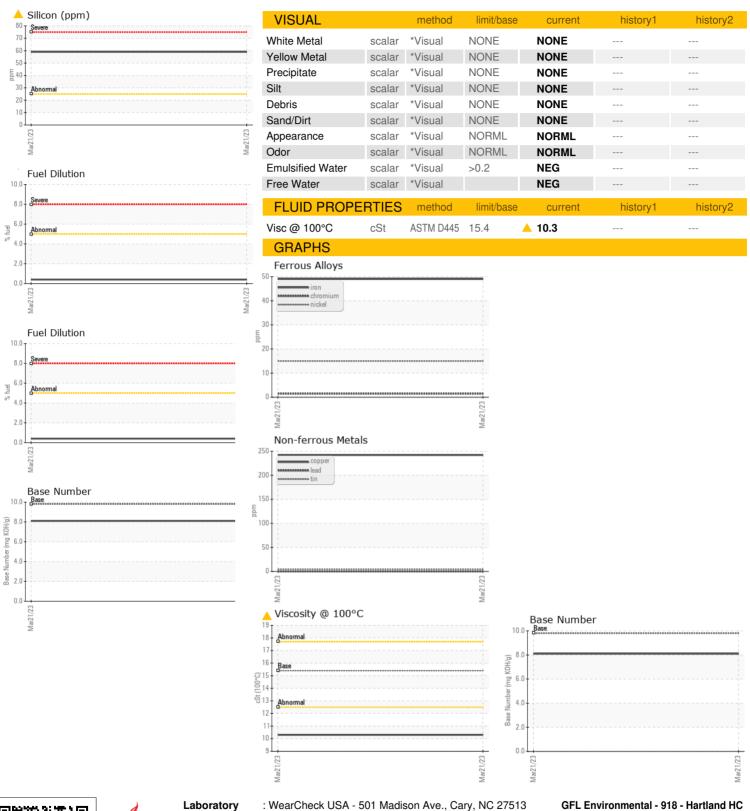
▲ Fluid Condition

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

SAMPLE INFORMATION method limit/base current history1 history2	N SHP 15W40 (- GAL)			Mar2023	<u> </u>	
Sample Date Client Info 21 Mar 2023	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 0 0 0 0 0 0 0 0 0	Sample Number		Client Info		GFL0071466		
Coli Age	Sample Date		Client Info		21 Mar 2023		
Contained Client Info Changed Changed	Machine Age	hrs	Client Info		512		
CONTAMINATION method limit/base current history1 history2	Oil Age	hrs	Client Info		0		
CONTAMINATION method limit/base current history1 history2	Oil Changed		Client Info		Changed		
WEAR METALS	Sample Status				ABNORMAL		
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 49 Chromium ppm ASTM D5185m >20 2 Nickel ppm ASTM D5185m >2 <1 Siliver ppm ASTM D5185m >2 <1 Aluminum ppm ASTM D5185m >2 <1 Aluminum ppm ASTM D5185m >2 <1 Aluminum ppm ASTM D5185m >40 0 Aluminum ppm ASTM D5185m >40 0 Aluminum ppm ASTM D5185m >15 5 Copper ppm ASTM D5185m 0 0 Vanadium ppm ASTM D5185m 0	CONTAMINAT	ION	method	limit/base	current	history1	history2
Chromium	Glycol		WC Method		NEG		
Description	WEAR METAL	S	method	limit/base	current	history1	history2
Chromium	ron	ppm	ASTM D5185m	>120	49		
Nickel	Chromium			>20	2		
Silver							
ASTM D5185m >2							
Aluminum							
Lead ppm ASTM D5185m >40 0 Copper ppm ASTM D5185m >330 242 Tin ppm ASTM D5185m >15 5 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 Barium ppm ASTM D5185m 0 0 Molybdenum ppm ASTM D5185m 0 4 Magnesium ppm ASTM D5185m 1010 734 Phosphorus ppm ASTM D5185m 1070 1511 Zinc ppm ASTM D5185m 1270 869							
Copper ppm ASTM D5185m >330 242 Tin ppm ASTM D5185m >15 5 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 238 Barium ppm ASTM D5185m 0 0 Molybdenum ppm ASTM D5185m 0 0 Manganese ppm ASTM D5185m 0 4 Magnesium ppm ASTM D5185m 1010 734 Calcium ppm ASTM D5185m 1070 1511 Phosphorus ppm ASTM D5185m 1270 869 <							
Tin ppm ASTM D5185m >15 5							
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ADDITIVES							
Boron		PPIII					
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Molybdenum ppm ASTM D5185m 60 112 Manganese ppm ASTM D5185m 0 4 Magnesium ppm ASTM D5185m 1010 734 Calcium ppm ASTM D5185m 1070 1511 Phosphorus ppm ASTM D5185m 1150 696 Zinc ppm ASTM D5185m 1270 869 Sulfur ppm ASTM D5185m 2060 2697 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 59 Sodium ppm ASTM D5185m >20 6 Fuel % ASTM D3524 >5 0.4 INFRA-RED method							
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Magnesium ppm ASTM D5185m 1010 734 Calcium ppm ASTM D5185m 1070 1511 Phosphorus ppm ASTM D5185m 1150 696 Zinc ppm ASTM D5185m 1270 869 Sulfur ppm ASTM D5185m 2060 2697 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 59 Sodium ppm ASTM D5185m 2 Potassium ppm ASTM D5185m >20 6 Fuel % ASTM D3524 >5 0.4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 <t< td=""><td>-</td><td>ppm</td><td>ASTM D5185m</td><td>60</td><td>112</td><td></td><td></td></t<>	-	ppm	ASTM D5185m	60	112		
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Zinc ppm ASTM D5185m 1270 869 Sulfur ppm ASTM D5185m 2060 2697 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 59 Sodium ppm ASTM D5185m 2 Potassium ppm ASTM D5185m >20 6 Fuel % ASTM D3524 >5 0.4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 10.1 Sulfation Abs/.1mm *ASTM D7415 >30 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 <td>-</td> <td></td> <td>ASTM D5185m</td> <td>1010</td> <td></td> <td></td> <td></td>	-		ASTM D5185m	1010			
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CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 59 Sodium ppm ASTM D5185m 2 Potassium ppm ASTM D5185m >20 6 Fuel % ASTM D3524 >5 0.4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.6 Sulfation Abs/.mm *ASTM D7624 >20 10.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.4	Magnesium Calcium	ppm	ASTM D5185m ASTM D5185m	1010 1070	734 1511		
Silicon ppm ASTM D5185m >25 ▲ 59 Sodium ppm ASTM D5185m 2 Potassium ppm ASTM D5185m >20 6 Fuel % ASTM D3524 >5 0.4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.6 Nitration Abs/cm *ASTM D7624 >20 10.1 Sulfation Abs/.1mm *ASTM D7415 >30 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.4	Magnesium Calcium Phosphorus	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150	734 1511 696		
Sodium ppm ASTM D5185m 2	Magnesium Calcium Phosphorus Zinc	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150 1270	734 1511 696 869		
Potassium ppm ASTM D5185m >20 6 Fuel % ASTM D3524 >5 0.4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.6 Nitration Abs/cm *ASTM D7624 >20 10.1 Sulfation Abs/.1mm *ASTM D7415 >30 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.4	Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	1010 1070 1150 1270 2060	734 1511 696 869 2697		
Fuel % ASTM D3524 >5 0.4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.6 Nitration Abs/cm *ASTM D7624 >20 10.1 Sulfation Abs/.1mm *ASTM D7415 >30 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.4	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	1010 1070 1150 1270 2060	734 1511 696 869 2697 current		
INFRA-RED	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m	1010 1070 1150 1270 2060	734 1511 696 869 2697 current	 history1	 history2
Soot % % *ASTM D7844 >4 0.6 Nitration Abs/cm *ASTM D7624 >20 10.1 Sulfation Abs/.1mm *ASTM D7415 >30 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.4	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150 1270 2060 limit/base >25	734 1511 696 869 2697 current \$\triangle\$ 59	 history1	 history2
Nitration Abs/cm *ASTM D7624 >20 10.1 Sulfation Abs/.1mm *ASTM D7415 >30 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.4	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150 1270 2060 limit/base >25	734 1511 696 869 2697 current \$\triangle\$ 59 2	 history1	 history2
Sulfation Abs/.1mm *ASTM D7415 >30 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.4	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	1010 1070 1150 1270 2060 limit/base >25 >20 >5	734 1511 696 869 2697 current 59 2 6	 history1	 history2
Sulfation Abs/.1mm *ASTM D7415 >30 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.4	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D3524	1010 1070 1150 1270 2060 Iimit/base >25 >20 >5	734 1511 696 869 2697 current 59 2 6 0.4 current	history1 history1	history2 history2
Oxidation	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D3524 method *ASTM D7844	1010 1070 1150 1270 2060 Iimit/base >25 >20 >5 Iimit/base	734 1511 696 869 2697 current 59 2 6 0.4 current 0.6	history1 history1 history1	history2 history2
	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D7824 method *ASTM D7844 *ASTM D7624	1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base	734 1511 696 869 2697	history1 history1	history2 history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.1	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7624 *ASTM D7415	1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >4 >20 >30	734 1511 696 869 2697 current ▲ 59 2 6 0.4 current 0.6 10.1 23.8	history1 history1 history1	history2 history2
	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm	ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7624 *ASTM D7415 method	1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >4 >20 >30 limit/base	734 1511 696 869 2697	history1 history1 history1 history1	history2 history2 history2 history2



OIL ANALYSIS REPORT







Certificate L2367

Laboratory Sample No. Lab Number **Unique Number**

: GFL0071466 : 05810287 : 10413079

Received Diagnosed

: 06 Apr 2023 Diagnostician : Don Baldridge

: 04 Apr 2023

Test Package : FLEET (Additional Tests: FuelDilution, PercentFuel) To discuss this sample report, contact Customer Service at 1-800-237-1369.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

GFL Environmental - 918 - Hartland HC

630 E Industrial Drive Hartland, WI US 53029

Contact: Matthew Taylor matthew.taylor@gflenv.com

T: F: