

# **PROBLEM SUMMARY**

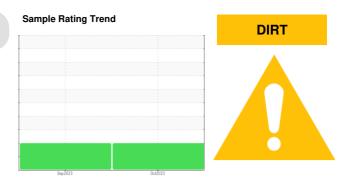


# {UNASSIGNED} Machine Id 914022

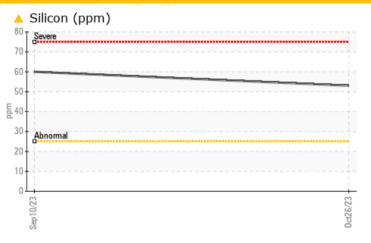
Component

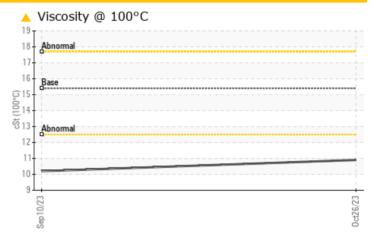
1 Diesel Engine

PETRO CANADA DURON SHP 15W40 (9 GAL)



## **COMPONENT CONDITION SUMMARY**





#### 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	ABNORMAL	
Silicon	ppm	ASTM D5185m	>25	<b>△</b> 53	<b>△</b> 60	
Visc @ 100°C	cSt	ASTM D445	15.4	<b>10.9</b>	<b>△</b> 10.2	

Customer Id: GFL405 Sample No.: GFL0097718 Lab Number: 06009362 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

10 Sep 2023 Diag: Don Baldridge





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. Metal levels are typical for a new component breaking in. Fuel content negligible. Elemental level of silicon (Si) above normal indicating ingress of seal material. The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.



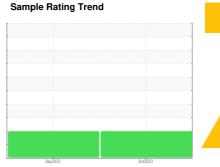


# **OIL ANALYSIS REPORT**



1 Diesel Engine

PETRO CANADA DURON SHP 15W40 (9 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

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

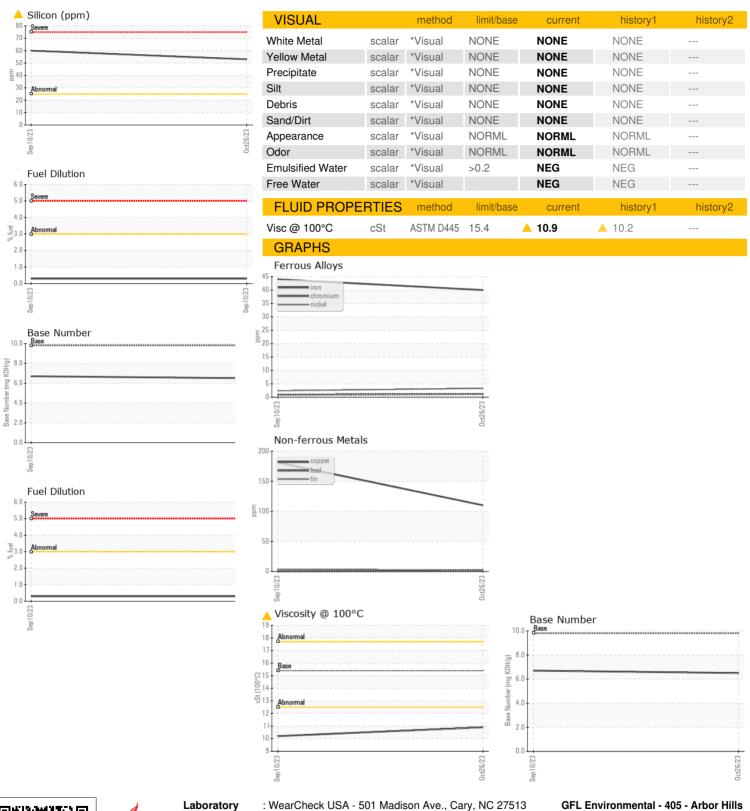
#### Fluid Condition

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

CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.2         NEG         NEG            Glycol         WC Method         NEG         NEG            WEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM D5185m         >120         40         44            Chromium         ppm         ASTM D5185m         >20         1         <1            Nickel         ppm         ASTM D5185m         >20         1         <1            Silver         ppm         ASTM D5185m         >2         <1         <1            Aluminum         ppm         ASTM D5185m         >2         3         6            Aluminum         ppm         ASTM D5185m         >20         3         6            Aluminum         ppm         ASTM D5185m         >40         <1         <1            Aluminum         ppm         ASTM D5185m         >15         2         3	N SHP 15W40 (	9 GAL)		Sep2023	Oct2023		
Sample Date   Client Info   26 Oct 2023   10 Sep 2023	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Company   Com	Sample Number		Client Info		GFL0097718	GFL0087252	
Machine Age			Client Info		26 Oct 2023	10 Sep 2023	
Dil Changed	•	hrs					
Changed   Changed   Changed   Changed   Changed   Changed   ABNORMAL   CONTAMINATION   method   limit/base   current   history1   history2		hrs	Client Info		500	741	
ABNORMAL   ABNORMAL					Changed	Changed	
Water         WC Method         >0.2         NEG         NEG            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         40         44            Chromium         ppm         ASTM D5185m         >20         1         <1            Vickel         ppm         ASTM D5185m         >20         1         <1            Silver         ppm         ASTM D5185m         >2         0         <1            Silver         ppm         ASTM D5185m         >20         3         6            Silver         ppm         ASTM D5185m         >20         3         6            Copper         ppm         ASTM D5185m         >40         <1         <1            Copper         ppm         ASTM D5185m         >33         110         181            Tin         ppm         ASTM D5185m         >40         <1         <1            Copper         ppm         ASTM D5185m         0         80         140	Sample Status				ABNORMAL	ABNORMAL	
WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         40         44	Water		WC Method	>0.2	NEG	NEG	
Pop	Glycol		WC Method		NEG	NEG	
Description	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>120	40	44	
Description	Chromium	ppm	ASTM D5185m	>20	1	<1	
Salver	Nickel	ppm	ASTM D5185m	>5	3	2	
Aluminum ppm ASTM D5185m >20 3 6 Lead ppm ASTM D5185m >40 <1 <1 Copper ppm ASTM D5185m >330 110 181 Copper ppm ASTM D5185m >15 2 3 Vanadium ppm ASTM D5185m >15 2 3 Vanadium ppm ASTM D5185m O 0 0 Codmium ppm ASTM D5185m O 0 0 Codmium ppm ASTM D5185m O 140 Codmium ppm ASTM D5185m O 140 Codmium ppm ASTM D5185m O 103 121 Codmium ppm ASTM D5185m O 1010 757 666 Codecium ppm ASTM D5185m 1070 1392 1430 Collecium ppm ASTM D5185m 1070 1392 1430 Collecium ppm ASTM D5185m 1270 945 889 Collecium ppm ASTM D5185m 1270 945 889 Contramination ppm ASTM D5185m 1270 945 889 Contramination ppm ASTM D5185m 2060 2142 2409 CONTAMINANTS method limit/base current history1 history2 Contramination ppm ASTM D5185m >25 ▲ 53 ▲ 60 Contramination ppm ASTM D5185m >20 5 9 Contramination Abs/Lmm *ASTM D7844 >4 0.6 0.5 Contramination Abs/Lmm *ASTM D7844 >20 10.5 10.6 Contramin	Γitanium	ppm	ASTM D5185m	>2	<1	<1	
Lead         ppm         ASTM D5185m         >40         <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         <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         <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         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Silver	ppm	ASTM D5185m	>2	0	<1	
Copper	Aluminum	ppm	ASTM D5185m	>20	3	6	
Tin	_ead	ppm	ASTM D5185m	>40	<1	<1	
Anadium         ppm         ASTM D5185m         <1         0            Cadmium         ppm         ASTM D5185m         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         80         140            Barium         ppm         ASTM D5185m         0         <1         0            Molybdenum         ppm         ASTM D5185m         0         4         5            Manganese         ppm         ASTM D5185m         1010         757         666            Magnesium         ppm         ASTM D5185m         1070         1392         1430            Phosphorus         ppm         ASTM D5185m         1270         945         889            Zinc         ppm         ASTM D5185m         1270         945         889            Sulfur         ppm         ASTM D5185m         2060         2142         2409            CONTAMINANTS         method         limit/base         current         history1 <td>Copper</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;330</td> <td>110</td> <td>181</td> <td></td>	Copper	ppm	ASTM D5185m	>330	110	181	
Cadmium         ppm         ASTM D5185m         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         80         140            Barium         ppm         ASTM D5185m         0         <1	Γin	ppm	ASTM D5185m	>15	2	3	
## ADDITIVES   method   limit/base   current   history1   history2   ## Boron   ppm   ASTM D5185m   0   40     ## Barium   ppm   ASTM D5185m   0   <1   0     ## Molybdenum   ppm   ASTM D5185m   0   4   5     ## Manganese   ppm   ASTM D5185m   0   4   5     ## Manganesium   ppm   ASTM D5185m   1010   757   666     ## Calcium   ppm   ASTM D5185m   1070   1392   1430     ## Phosphorus   ppm   ASTM D5185m   1150   755   696     ## Zinc   ppm   ASTM D5185m   1270   945   889     ## CONTAMINANTS   method   limit/base   current   history1   history2   ## CONTAMINANTS   method   limit/base   current   history1   history2   ## Contassium   ppm   ASTM D5185m   >20   5   9     ## Countassium   ppm   ASTM D7844   >4   0.6   0.5     ## Countassium   Abs/cm   *ASTM D7844   >4   0.6   0.5     ## Countassium   Abs/cm   *ASTM D7845   >30   23.7   23.9     ## FLUID DEGRADATION   method   limit/base   current   history1   history2   ## Dxidation   Abs/cm   *ASTM D7414   >25   22.7   23.7	/anadium	ppm	ASTM D5185m		<1	0	
Boron	Cadmium	ppm	ASTM D5185m		0	0	
Sarium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         103         121            Manganese         ppm         ASTM D5185m         0         4         5            Magnesium         ppm         ASTM D5185m         1010         757         666            Calcium         ppm         ASTM D5185m         1070         1392         1430            Phosphorus         ppm         ASTM D5185m         1150         755         696            Zinc         ppm         ASTM D5185m         1270         945         889            Sulfur         ppm         ASTM D5185m         2060         2142         2409            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         53         60            Potassium         ppm         ASTM D5185m         >20         5         9            Fuel         %         ASTM D3524         >3.0         <1.0	Boron	ppm	ASTM D5185m	0	80	140	
Manganese         ppm         ASTM D5185m         0         4         5            Magnesium         ppm         ASTM D5185m         1010         757         666            Calcium         ppm         ASTM D5185m         1070         1392         1430            Phosphorus         ppm         ASTM D5185m         1150         755         696            Zinc         ppm         ASTM D5185m         1270         945         889            Sulfur         ppm         ASTM D5185m         2060         2142         2409            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         53         60            Sodium         ppm         ASTM D5185m         7         2            Potassium         ppm         ASTM D5185m         >20         5         9            Fuel         %         ASTM D3185m         >20         5         9            Fuel         %         *ASTM D7844         >4         0.6 <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <td>&lt;1</td> <td>0</td> <td></td>	Barium	ppm	ASTM D5185m	0	<1	0	
Magnesium         ppm         ASTM D5185m         1010         757         666            Calcium         ppm         ASTM D5185m         1070         1392         1430            Phosphorus         ppm         ASTM D5185m         1150         755         696            Zinc         ppm         ASTM D5185m         1270         945         889            Sulfur         ppm         ASTM D5185m         2060         2142         2409            CONTAMINANTS         method         limit/base         current         history1         history2           Soliticon         ppm         ASTM D5185m         >25         53         60            Soliticon         ppm         ASTM D5185m         >25         53         60            Potassium         ppm         ASTM D5185m         >20         5         9            Fuel         %         ASTM D3524         >3.0         <1.0	Molybdenum	ppm	ASTM D5185m	60	103	121	
Calcium         ppm         ASTM D5185m         1 070         1392         1 430            Phosphorus         ppm         ASTM D5185m         1 150         755         696            Zinc         ppm         ASTM D5185m         1 270         945         889            Sulfur         ppm         ASTM D5185m         2060         2142         2409            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         53         60            Sodium         ppm         ASTM D5185m         >20         5         9            Potassium         ppm         ASTM D5185m         >20         5         9            Fuel         %         ASTM D3524         >3.0         <1.0	Manganese	ppm	ASTM D5185m	0	4	5	
Phosphorus         ppm         ASTM D5185m         1150         755         696            Zinc         ppm         ASTM D5185m         1270         945         889            Sulfur         ppm         ASTM D5185m         2060         2142         2409            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         53         60            Sodium         ppm         ASTM D5185m         7         2            Potassium         ppm         ASTM D5185m         >20         5         9            Fuel         %         ASTM D585m         >20         5         9            Fuel         %         ASTM D7844         >4         0.6         0.5	Magnesium	ppm	ASTM D5185m	1010	757	666	
Zinc         ppm         ASTM D5185m         1270         945         889            Sulfur         ppm         ASTM D5185m         2060         2142         2409            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         53         60            Sodium         ppm         ASTM D5185m         7         2            Potassium         ppm         ASTM D5185m         >20         5         9            Fuel         %         ASTM D7844         >4         0.6         0.5            Soot %         %         *ASTM D7844         >4         0.6         0.5	Calcium	ppm	ASTM D5185m	1070	1392	1430	
Sulfur         ppm         ASTM D5185m         2060         2142         2409            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         53         60            Sodium         ppm         ASTM D5185m         7         2            Potassium         ppm         ASTM D5185m         >20         5         9            Fuel         %         ASTM D3524         >3.0         <1.0	Phosphorus	ppm	ASTM D5185m	1150	755	696	
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         ▲ 53         ▲ 60            Sodium         ppm         ASTM D5185m         7         2            Potassium         ppm         ASTM D5185m         >20         5         9            Fuel         %         ASTM D3524         >3.0         <1.0	Zinc	ppm	ASTM D5185m	1270	945	889	
Silicon         ppm         ASTM D5185m         >25         ▲ 53         ▲ 60            Sodium         ppm         ASTM D5185m         7         2            Potassium         ppm         ASTM D5185m         >20         5         9            Fuel         %         ASTM D3524         >3.0         <1.0         0.3            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.6         0.5            Nitration         Abs/cm         *ASTM D7624         >20         10.5         10.6            Sulfation         Abs/.1mm         *ASTM D7415         >30         23.7         23.9            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         22.7         23.7	Sulfur	ppm	ASTM D5185m	2060	2142	2409	
Sodium	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         5         9            Fuel         %         ASTM D3524         >3.0         <1.0         0.3            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.6         0.5            Nitration         Abs/cm         *ASTM D7624         >20         10.5         10.6            Sulfation         Abs/.1mm         *ASTM D7415         >30         23.7         23.9            FLUID DEGRADATION         method         limit/base         current         history1         history2           Dxidation         Abs/.1mm         *ASTM D7414         >25         22.7         23.7	Silicon	ppm	ASTM D5185m	>25	<b>53</b>	<b>6</b> 0	
Fuel   %   ASTM D3524   >3.0   <1.0   0.3	Sodium	ppm	ASTM D5185m		7	2	
INFRA-RED	Potassium	ppm	ASTM D5185m	>20	5	9	
Soot %         %         *ASTM D7844         >4         0.6         0.5            Nitration         Abs/cm         *ASTM D7624         >20         10.5         10.6            Sulfation         Abs/.1mm         *ASTM D7415         >30         23.7         23.9            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         22.7         23.7	Fuel	%	ASTM D3524	>3.0	<1.0	0.3	
Nitration         Abs/cm         *ASTM D7624         >20         10.5         10.6            Sulfation         Abs/.1mm         *ASTM D7415         >30         23.7         23.9            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         22.7         23.7	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         *ASTM D7624         >20         10.5         10.6            Sulfation         Abs/.1mm         *ASTM D7415         >30         23.7         23.9            FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         22.7         23.7	Soot %	%	*ASTM D7844	>4	0.6	0.5	
Sulfation         Abs/.1mm         *ASTM D7415         >30         23.7         23.9            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         22.7         23.7	Vitration	Abs/cm	*ASTM D7624	>20	10.5		
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30		23.9	
	FLUID DEGRAI	DATION	method	limit/base	current	history1	history2
	1 LOID BLOT II II				Janone		,
	Oxidation						ĺ



## **OIL ANALYSIS REPORT**







Certificate L2367

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

: GFL0097718 : 06009362

: 10743124

Received : 16 Nov 2023 Diagnosed : 19 Nov 2023 Diagnostician : Don Baldridge

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

7400 Napier Rd NORTHVILLE, MI US 48168

Contact: Anthony Hopkins ahopkins@gflenv.com

T: F:

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